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WHAT AM I?

A

POPULAR INTRODUCTION

TO

MENTAL PHILOSOPHY

AND

PSYCHOLOGY.

By EDWARD W. COX,

SERJEANT-AT-LAW.

VOLUME I.

THE MECHANISM OF MAN.

LONDON:

LONGMAN AND CO.

PATERNOSTER ROW.

1873.

PREFACE.

THE study of Psychology has not kept pace with the progress of the Physical Sciences. Its Professors can be counted upon the fingers; its disciples are few; its literature is scanty and unsatisfactory. To the multitude, even of the educated classes, it is an almost unknown Science.

But what study can rival it in real importance or in interest? What Science concerns us all so directly and so seriously? For what is Psychology but the Science of Ourselves? Physiology deals with the structure of our bodies and the functions of the various parts of that structure. The Forces that direct its actions are the greater subjects of Psychological Science. The province of Physiology is Body. The province of Psychology is Mind and Soul.

Opponents will say, perhaps, that although it is universally admitted that we have Minds, it is denied by great authorities that we have Souls.

True. And a primary purpose of Psychology is to inquire if there be a Soul in Man, and if such there be, what are its dwelling, its functions, its capacities, and its immediate destiny, so far, at least, as Science can trace or reasonably conjecture them. Its *far future* is the

province of Theology. My purpose here is to treat the *scientific* question only.

Of late we may perceive a slight rising of the tide of favour of Psychological inquiry. Phrenology gave to it the first great impulse, by reducing the study of Mind from metaphysics to physics; from inner consciousness to observation; from conjecture to fact; in brief, by applying to the Science of Mind the Baconian process of investigation, which has wrought such miracles in all the Physical Sciences.

The small progress made by Psychology and Mental Philosophy, when other Science has been advancing with such giant strides, appears to be the consequence of the obsolete method of investigation pursued by the few who have undertaken the study of them. The Chemist seizes the substance into whose composition and qualities he is desirous to inquire, and applies to it certain tests, by which he transforms it into other substances or reduces it to its elements. The Physiologist takes his organised material, scrutinises it with his microscope, marks its composition and its form, and, to find its functions, he severs a living fibre or a throbbing nerve, and notes what loss of power results from his vivisection. But the Psychologist cannot seize, and confine, and carve, and scrutinise, and torture the material of which Mind and Soul are made. He cannot even discern them by either of his senses, nor with the help of his most powerful instruments. What then remains for him? How is he to ascertain their existence at all, or to learn what are their structure, qualities, and functions? Obviously

he can do this only by studying their *manifestations*. Their substance being imponderable and imperceptible the Psychologist, having no tangible material wherewith to work, can investigate Mind and Soul only by observing the movements they impart to the material organs through which alone they can hold communication with the material world, and by carefully noting the action of the mechanism they direct.

But, instead of dealing thus with these subjects, Philosophers have been content with consulting only their own inner consciousness, and this being very limited, it has followed, as a necessary consequence, that the nineteenth century sees us but little better acquainted, *scientifically*, than we were in the ninth century, with Mind and Soul, their structure, functions, and capacities, and their relationship to the body, to each other, and to the world on which they exist.

Nor until this error of procedure be distinctly recognised, and Psychology treated in the same fashion as are the Physical Sciences—that is to say, by the gathering together of *facts*, attested by good and sufficient evidence, trying them by experiments carefully conducted, rejecting nothing on merely *à priori* argument, nor because of its apparent impossibility, or improbability, or seeming inconsistency with some fact or law already assumed to be true,—can any hope be entertained of substantial progress in this the noblest of the Sciences. We must first observe with care and caution, test with skill, and note with accuracy. Not until facts are accumulated should we venture to assign causes. The golden rule of

all true Science is, first, to collect your facts, and then, and not till then, to construct your theory.

Smatterers in Science and the outside world never recognise this rule. When a new fact is observed and asserted, they ask the observer how he explains that new fact, and if he cannot do so, they deny the fact itself.

A fact can only be proved or disproved by experiment. It cannot be answered by argument. Try it for yourself, if you doubt the authority. *If it is,* you will find it. If *it is not,* you will do Science a service by dissipating a delusion.

There is but one philosophical method of meeting the assertion of a fact in science, made by credible and competent witnesses,—by yourself making trial of it under the same conditions.

It was with an impression that there are now many persons who desire to obtain some knowledge of Psychology, but who are deterred from its study by the ponderous volumes of abstruse argument, clothed in a difficult and strange nomenclature, to which they are usually referred, and which are intelligible only to the far advanced Philosopher, that the thought occurred to me, if it might not be possible to make a book that should present to the beginner an Introductory outline of the Science of Psychology, written in plain language, such as the ordinary Mind might be enabled to comprehend without much difficulty.

As I reflected upon it, the design grew. I found that I could not well describe the Mind without also giving some account of the Body. A description of the

Anatomy and Physiology of the human structure was of course impracticable within the limits of such a work as I had contemplated. But a rude outline of the general scheme on which that structure is framed appeared to be necessary to the understanding of the construction and functions of those parts of the human organization which are the proper subjects of Psychology.

It then became an obvious suggestion that the design should be completed by making the object of the work to be, a description of A MAN, such as would supply to the popular intelligence an appropriate answer to the question, "WHAT AM I?"

The plan pursued has been to divide the entire subject into two parts.

The *first* part, which occupies this first volume, is devoted to a description of the Human Mechanism—Body —Mind—Soul—merely as it is constructed.

The *second* part will be devoted to a description of this *Machinery in action*, and it will embrace all the phenomena of *intellectual existence*, as distinguished from purely organic life, viewing it in its normal and abnormal conditions, in health and in disease—the *manifestations*, in fact, alluded to above, from which alone any knowledge can be obtained, or any satisfactory judgment formed, of the being, capacities, functions, and powers of the Forces, whatever they may be, by which the machine is moved to action and by which its actions are directed.

These will be found to be full of the most curious interest, not merely from the strange character of many

of the facts that will be gathered together, but by reason of the overwhelming importance of some of the conclusions to which they appear to point.

Among the special conditions of the human organism that will thus pass under review in the second and concluding volume will be those of Sleep and Dream, Insanity, Hallucination, Unconscious Cerebration, Trance, Delirium, Psychic Force, and Natural and Artificial Somnambulism. The near relationship of these conditions to Health and Disease, and the light they cast on many of the seeming mysteries of Mind and Soul, will form a prominent part of the treatment of these themes, lying as they do entirely within the proper province of Psychology.

For it is with Psychology as with Medicine, function is best studied when it is disordered. When the Forces and the frame work together in harmony, it is difficult to discern their precise relationships; but when the machine is out of gear, are we enabled to discover the hidden mechanism by the jarring of the dislocated or broken wheels.

I am not a Scientist, but, if I may without affectation use the term as descriptive of one who recognises scientific rules and methods of research as the only permissible form of inquiry into *any* region of Nature, I am a Student of Science. And it is in the true spirit of such an one, with a single-minded endeavour to learn the very truth, without prejudice of any kind, that this work has been undertaken.

I have been asked, and shall be asked again, wherefore

I do not remit the question of the existence of Soul to the Theologians, and leave them to do battle with the Materialists.

I fear it is to this erroneous policy that the present prevalence of the doctrine of Materialism is mainly due. The question can never be fought out between the Divine and the Scientist, because they have no common ground upon which to combat. The Scientists unhappily for the most part dispute the Authority which is the basis of the Theologian's argument. It is consequently impossible that the Scientists can be convinced and converted by the Theologians. Materialism based on Science can be confronted only with its own weapons. *He who would do battle with it successfully must wield arguments scientifically deduced from facts scientifically ascertained.* The Divine cannot do this, for he may not abandon the high ground of Authority, whose part it is, not to prove but to *declare.* I hope, therefore, that I have not taken a useless path, however it may be deemed presumptuous, in thus endeavouring to support the contention for the existence of the Soul by arguments altogether apart from those which the Scientists reject, and based entirely upon that foundation of Fact alone which Science will consent to recognise.

It will be observed that, in the working out of this design, I have ventured to proffer some new suggestions that presented themselves to me as I wrote, the value of which I must leave to be estimated by others. But wherever this was done, I have been careful so to state, that the Reader may take them as suggestions merely, and not

as asserted truths. Such are the speculations as to the manner in which the body is builded by the nerve system; and the proposition that the body is constructed of *two* germs, and not of one only, as Physiologists have hitherto supposed, with some others. The application of these principles of structure to the practice of medicine is also merely a suggestion of my own, whose worth it is for others to estimate. Throughout I have endeavoured distinctly to indicate what is doubtful and what may be deemed to be established. Doubtless it will surprise many to find how much the former predominates, proving the verity of the remark made above, that Psychology lamentably lags in the rear of the other Sciences.

But let us hope that this reproach will cleave to her no longer. Wherefore should not Psychology be made the especial subject for an Association similar to those which have so greatly promoted the progress of other Sciences of far less interest and importance? The field of research is large enough to be the single business of a Psychological Society, and it needs but a little exertion to secure for it a numerous and influential body of Members.

In the course of the composition of this little book my attention has been often and forcibly directed to the extremely unsatisfactory character of scientific evidence. To a Lawyer, who has imbibed from his youth up the Principles of Evidence, and who has been trained, by experience in Courts of Justice, to the almost instinctive recognition of what does or does not

constitute *proof*, there is nothing so surprising, and at the same time so vexatious, as the almost entire disregard of the plainest principles of Evidence by the votaries of Science, who assert and deny facts, apparently without the slightest conception of the nature or degree of *proof* necessary to be produced before any asserted fact can be either accepted or rejected. One disputant appears to consider that the mere assertion of some stranger, of whose credibility or otherwise he is wholly ignorant, is of itself sufficient, without examination or cross-examination. Another will reject the testimony of twenty credible men because the fact they assert appears to him to be contrary to some assumed fact or theory which he has hitherto holden to be true. All produce *hearsay*, apparently without the most distant conception that it is wholly inadmissible as *proof*, and that it can be accepted only provisionally, for the purpose of directing investigation. Take almost any treatise on any Science and strike the pen through every fact asserted for which no sufficient proof is adduced—such proof as would suffice to convict an offender of the smallest offence before any legal tribunal—and what a skeleton would remain! This disregard of the most elementary rules of evidence is especially remarkable in works that treat of Physiology, Medicine, and Psychology. Cases are confidently narrated for which no proof whatever is or can be produced, and upon such flimsy materials whole theories will be found to be constructed or opposed. In the following pages I have endeavoured, with what success others must judge, to avoid this frequent error. I have sought to apply to

Science the same rules of Evidence that are recognised in Law. The principle which I adopted, and have striven to adhere to, has been to assert nothing as *proved*, except upon such evidence as a Judge would submit to a Jury, and upon which he would accept their verdict in a matter affecting life or liberty. Science should be content with nothing less than this, either for proof or disproof. Hence the continual repetitions of the warning that "this is not proved," "that is only conjecture," and such like, with which I have found it necessary so often to intimate to the Reader the boundaries between the known and the unknown, the actual and the merely probable, as they appear in the following pages. It is tedious, but it was unavoidable.

And in this connection I may, perhaps, be permitted to throw out a suggestion, which has occurred to me when painfully reminded of the disregard of the rules of evidence that prevails in scientific debate. Would it not be possible to apply to scientific inquiries the same system of trial which is found to be so efficient a means of ascertaining truth in disputes referred to the Law? Would it be altogether visionary to propose the establishment of a Society, to be formed for the express purpose of trying, by a *Tribunal of Science*, disputed *scientific facts*, pursuing precisely the same procedure as is so successfully employed in determining other disputed facts. A Judge, a Jury, Advocates on both sides, Witnesses *pro.* and *con.* examined and cross-examined, speeches to the Jury, a summing-up by the Judge, and a Verdict; the same rules of evidence to be observed as in a

Law Court. The uses of such a Tribunal would be manifest. It would not lack work. A new discovery in Science—a new and important *fact*—is asserted and contested. Either party to the controversy may challenge the other to investigation by this Tribunal of Science. If the subject should be deemed by the Council of the Society sufficiently important to deserve inquiry, a trial would be awarded. The hearing would be of itself an invaluable teaching to the whole scientific world; it would deeply interest the outside public, and the verdict would extinguish controversies upon which much thought, time, ink, and temper, might otherwise be wasted.

The scheme is not in itself impracticable. Its benefits, if it could be accomplished, are not doubtful. I submit it to the consideration of other Minds by whom, if this mere hint of it be approved, the scheme might possibly be matured hereafter.

Some novel suggestions, which will doubtless be denounced as heresies by the orthodox Professors of Physiology, will be found in the following pages. But I have been careful to note them as speculations merely, that the most careless Reader may not mistake for assertion as being positive truth of that which is intended to be advanced only as more or less probable conjecture of my own.

Indeed, I have been especially careful throughout to distinguish the unknown from the known, the doubtful from the positive, suggestion from assertion, and conjecture from knowledge. We have learned but half

of any Science if we have not learned also the limits at which our knowledge of it ends and our ignorance of it begins.

Great will be the surprise of the Reader, as he turns these pages, to find how small a portion of them informs him of facts that are *proved,* and how much is merely conjectural. If all the ascertained *facts* in Mental Physiology and Psychology could be tabulated on one leaf, and all the assumptions and guesses noted on another, the latter catalogue would totally eclipse the former.

If any proof were wanting of the need there is for a Society to promote the study and progress of Psychology, by doing for it what association has done for the other Sciences, it will be found in pages that tell us, not only what *is* known of it, but what there *is to be* known, and of which the world is at present ignorant.

As the work proceeded, new views opened to me continually, with the effect, as will doubtless be observed, of sometimes modifying conjectures previously advanced. Hence some apparent contradictions and inconsistencies, for which I ask by anticipation a lenient judgment from the friendly Reader, but for which I anticipate the reproofs of hostile critics. The novelty of the theme with which I was dealing must plead in excuse for what certainly has the aspect of carelessness.

The Second and Concluding Volume will be published as soon as the large mass of materials that have been gathered for it can be sifted. In the meanwhile, I ask from Readers, whom the subjects to be there treated of

may interest, to forward to me authenticated cases illustrative of any of the abnormal phenomena of Sleep, Dream, Delirium, Natural and Artificial Somnambulism and Trance, that may have come to their knowledge, to be used by me according to their worth.

1, Essex Court, Temple,
24th January, 1873.

CONTENTS.

WHAT AM I?

CHAPTER I.

INTRODUCTION.

CONCEIVE, if you can, of a man created perfect in structure of mind and body, with all capacities for thought and action, placed upon this earth and suddenly wakened into existence. He would look above, and below, and around, and the first reflection of his wondering mind would be that which we should express in the question, WHERE AM I?

Then he would survey himself—his form, so constructed for strength and beauty—and, contemplating the conscious intelligence by which that structure is controlled, himself would be the subject of his own thought, and he would exclaim in amazement, "WHAT AM I?"

When, wearied with contemplating the glories about him, and the mysteries within him, he turned to ponder upon the purpose of his own existence, coming he knows not whence, going he knows not whither, he would murmur doubtfully, "WHY AM I?"

WHERE AM I?
WHAT AM I?
WHY AM I?

A perfect answer to these three questions would comprise the entire circle of human knowledge, arranged in its natural order, convenient alike for classification and for acquisition.

The answer to the question WHERE AM I? embraces the structure of creation outside ourselves; "WHAT AM I?" comprises the structure, bodily and mental, of the human being; "WHY AM I?" includes all the objects of his existence—all moral and social science.

Where am I?

Placed upon a globe made of materials the collocation of which comprises the science of Geology. Chemistry and Mineralogy deal with the composition of this globe. Geography with its surface. Its inhabitants are the subjects of Natural History, animal and vegetable. The structure of these living things is the province of Physiology and Psychology. In relation to the highest of them, MAN, there is the record of History. This globe is wrapped in an atmosphere, the laws of whose motions comprise the sciences of Pneumatics, Optics, and Acoustics. The motions of the earth and the waters form the sciences of Mechanics, Hydraulics, and Hydrostatics.

This globe is permeated by forces of tremendous power and unceasing action, which may, in fact, be one or many, but which are at present investigated under different names, Magnetism, Electricity, Galvanism, Heat, Light—and each is the subject of a science.

Lastly, this globe is one of many floating in space. It is part of a system of worlds, that system probably but part of another system, and so onward beyond the reach of the human mind even to conceive, all of which knowledge is comprised in the science of Astronomy.

Of course I have here sketched merely an outline of

the scheme, with purpose only to show how comprehensive it is. Its development would be the proper subject of a large volume.

The answer to the question, WHAT AM I? will relate exclusively to MAN; not to the male or the female, the white or the black, the Teuton or the Celt, the civilized or the savage, the free or the slave, but to MAN, contemplated as a being of a peculiar structure and endowed with a certain degree of intelligence.

The answer to the question, WHY AM I? embraces the objects of existence: for what end man is; what are his duties to his God, to himself, to his fellow men. These latter are included in Moral Philosophy and in Social and Political Science; while his relationship and duties to God are comprised in the science of Theology.

The design of the present work is limited to one alone of these three great natural divisions of the vast territory of knowledge, namely, that which presents itself as an answer to the question, "*What am I?*" To treat of all would be the labour of a lifetime. To treat fully of this only would be a gigantic task.

CHAPTER II.

WHAT AM I?

In attempting to answer this question I do not propose to treat of it so fully as its profound interest and importance would properly require. Neither knowledge nor leisure qualifies me for a minute scientific description of the structure of the human frame, the functions of its various parts, how it is builded, how maintained, how dissolved. To investigate these is the province of the sciences of Anatomy and Physiology. To the former reference will be made but rarely. To the latter it must be more frequent, because the design of this essay is to describe, so far as research has yet proceeded, what are the laws of life, and what is the relationship between the mind and the body—using the term "mind" to represent that entity in us which, in despite of the evidence and arguments of the Materialists, I cannot help regarding as something other than the visible bodily structure, and which is recognised by various names, as soul, mind, spirit, according to the opinion held of its nature. It must be understood that I have used the term "mind" merely to indicate this something that is not body, without expressing the slightest opinion as to its proper title and attributes.

What am I?

Seen from without, a complex and highly organized structure, framed for adaptation to the conditions of the world in which it dwells; a mechanism set in motion and

maintained by some vital force within itself, and its actions directed by a self-contained intelligence.

Contemplated by the mind from within, this machine is possessed by a conscious self, having an individuality recognized, even by the philosopher who is proving its non-existence, as being distinct from the body, because it *can* contemplate the body as apart from itself and is conscious also that it is governed by and obeys other laws than those that control the body. It may be that such a distinction does not exist in fact—that we are all body and thought and feeling merely a secretion of the body. But it will not be denied that we have in us an irrepressible conviction that mind is not body. Of this universal conviction account must be taken in any treatise on Psychology. Therefore it will be recognized here, but with the distinct understanding, that, until its characteristics come to be examined in their proper place, I do not design to express an opinion as to *the nature* of that which we think of as "ourselves;" what I design to describe when I say "I," what I intend to address when I say "you."

It has been stated that this book purposes to treat almost entirely of so much of the answer to the question, "What am I?" as relates to the *Force*, be it mind, soul, or spirit, which, operating from within, controls the body in life and quits it on death. The subject is usually treated, as if it were composed of two distinct parts, under the appropriate titles of Biology and Psychology—the former dealing with the science of Life, the latter with the science of the Soul. But, in writing these pages, I have found it impossible to sever them entirely, so continually do they blend, and so difficult it is, in the present state of our knowledge of the nature and conditions of Life and Soul, to trace with perfect accuracy

their relationship and their points of contact and of junction, as well as their points of divergence.

The attention of the reader will, therefore, be more particularly directed in these pages to so much of the answer to the question, "What am I?" as relates to the *Forces*, (whatever, upon examination, they may appear to be), by which the organism thus marvellously constructed is put into intelligent action.

This subject has been claimed by two sciences; or, to speak more accurately, by one Science calling itself by two names—Biology and Psychology. The one professes only research into the laws by which life is regulated; the other by its title limits itself to the laws that govern the soul, or spirit, or mind, or intelligence, or by whatever name we prefer to call that entity, which, although invisible and intangible, we suppose to be within us, contemplated as distinct from the material structure that is palpable to the senses. These sciences are so intermingled that it is impossible to separate them in practice, or even to conceive of them apart. Yet does neither term fully express that which it is the design of this book to attempt so to describe as to be understood by the popular intelligence. Therefore it is that I shall avoid, so far as possibly I can, the use of either of the terms known to science, neither sufficiently expressing the object of the present inquiry, while both are associated inextricably with certain assumptions which I am most desirous to avoid.

Let it be once for all avowed that my purpose is to direct the attention of the reader to what is *not* known as well as to what *is* known. Few are conscious of the extent of ignorance on this subject existing, not in the popular mind alone, but in the world of science itself, and even among physiologists and philosophers.

It seems scarcely credible, but it is literally true, that the most learned physician in the world cannot tell us by what process any one medicine he administers performs its cures; all he can say is that experience has shown that certain effects are usually found to follow the exhibition of certain drugs; but how those drugs produce that result he certainly does not know. It is strange, and distressing too, to observe what irrational prejudices still prevail in all matters connected with the Physiology of the body, as well as of the mind, even among persons otherwise well informed and who are called well educated. It is still more strange that not the least prejudiced nor the least instructed in these subjects are to be found in the profession whose business it is to keep the human machine in working condition. May not the cause of this ignorance of the laws of life and of mental physiology be, that they are not studied as we study the structure which that life sets in motion? Has it never occurred to the Physician and the Mental Philosopher that possibly in the laws of life, more even than in the structure itself, are to be found the causes of the maladies to which that structure is subject; and, therefore, that in these laws the secret is to be sought of the operation of remedies, and not where for centuries the Doctors have been exclusively hunting for them in vain.

CHAPTER III.

THE MAN.

I MUST pray the reader to think for a few minutes of A MAN, neither as living nor dead, neither as white nor black, neither as good nor bad, but merely as an inert machine, complete in all its parts, but to which the motive force has not yet been applied. Contemplate him as perfect in form and faculties, wanting only the presence of the power that is to set the machinery in motion.

What do we see?

A head, a torso, and four limbs. Two of the limbs are constructed to carry him to objects external to himself, and two to bring external objects to him. The head appears as if constructed to direct and control the action of the four limbs. The business of the torso, or trunk, is to supply to the whole structure the material needful for its subsistence, and to carry off that which has been used up.

This structure is inclosed in a smooth fair fabric—the skin.

If we look beneath the outward covering of the skin, what do we find?

A framework of bones, supporting a mass of fibrous muscles, which are attached to the bones by tendons. By the opposing contractions and expansions of these muscular fibres the bones are set in motion, and the equilibrium of the machine is maintained. In cavities protected by the bony structure we find safely packed a complicated apparatus for grinding, receiving, and digesting food, for

eliminating from it the nourishing particles, and for expelling the useless residue and the used up material. Another apparatus receives and expels the air in the great ocean of which man lives; separates the particles of the gases that compose it; takes up one gas and casts off the other; mingles the gas with the blood as it passes one stage on its journey through the whole structure, and to which it is impelled by that never resting force-pump—the heart and the arteries.

And this structure of bone and muscle, fed by the blood sent to every part of it by the combined action of the heart and the arteries, is permeated by a network of threads running from certain centres. These delicate threads are constructed to receive impressions made upon their extremities, to carry those impressions to the centres whence they radiate, and to convey to the whole structure the orders of the will issued at the centre of the system.

Set upon this structure of trunk and limbs is the head, a ball almost wholly filled with a greyish mass of a peculiar fabric, fibrous, divided into two hemispheres and shewing also some other marked divisions. From this radiate two sets of nerve cords, which, crossing each other, proceed each to the side of the body opposite to that whence it springs. Divided and sub-divided into infinite ramifications, the nerve cords pierce every part of the structure, bringing the remotest regions of it directly under the cognizance and control of the nerve centres.

The head incloses the brain and the brain is the seat of intelligence. The head thus rules the structure above which it is set. The brain wills and the limbs obey. But the brain does not control the apparatus for nourishment and reparation contained in the trunk. A portion of

the machinery works independently of the will of the brain, by a nerve force sent probably from other centres, so that the operations necessary to existence, or which would not endure suspension, shall be independent of the caprices of the intelligence. But these functions are not altogether exempt from the influences of the brain, as will be seen hereafter.

Thus a man may be rudely contemplated as a nerve centre, having consciousness, and communicating with the external world by means of a complicated structure, composed mainly of bone and muscle, set in motion by a multitude of cords connected with that nerve centre, and maintained by a feeding apparatus within the body of the machine, which apparatus prepares the food for the various work it has to do, conveys it where growth is proceeding or repair is required and carries off whatever is useless or used up.

This rude sketch of what a man is has been purposely presented, because it is necessary to a clear understanding of the subject of this treatise that, at the present stage of it, the reader should have in his mind a distinct and definite conception of A MAN, viewed merely as a machine maintained and moved through the agency of a visible and tangible apparatus, which, for lack of some better name, will be termed throughout this book "The Nerve System,"—meaning by that name to designate the entire of the structure—brain, ganglion, spinal cord, and nerve threads, by which the body is moved and the functions of its various organs are performed.

The next conception which I must ask the reader to form clearly, and keep firmly in his mind, so that he may never think of the structure of the human frame without having it as an essential portion of his thought, is that this body is not a solid mass, but constructed of an

infinite multitude of atoms, each one of which has an individual existence, distinct and separate from the rest. Combined, but not in contact, these present themselves to the eye and the touch in various forms, to which we give various names, as flesh, bone, tendon, hair, and so forth. But all these diverse shapes are only changes in the combinations of the atoms. The atoms themselves remain unchanged. They separate from one combination and enter into another combination, and then they appear to our senses as a substance of another shape and quality. But the constituent particles of every portion of the structure are the same nevertheless.

It is also necessary, in addition to this clear conception that we are constructed of atoms, to comprehend as clearly the fact that these atoms do not touch one another even in the most compact and solid portions of the body. The enamel of the teeth is, perhaps, the most solid substance in the structure; but if this compact material be viewed through a very powerful microscope, it is seen to be a porous mass, and, if we possessed an instrument of sufficient magnifying power, every particle of which the enamel is composed would be seen to be lying apart from its neighbours, with ample space between them for the reception and the passage of atoms still smaller than themselves. That this is not merely a speculative suggestion is proved by the elasticity which that substance possesses, which elasticity is only the pressure of the particles more closely together by the force applied to the mass from without, and which particles rebound to their relative positions when that pressure is removed.

It will be seen hereafter how vastly important to the understanding of many physiological and psychical conditions is this atomic structure of the body. It is the foundation of physical science. There can be no accurate

conception of this world, or of anything appertaining to it, without the mind having the clearest comprehension that there is not such a condition as *solidity*, according to our common notion of it, and that what we are accustomed to call "*a solid*" is only a mass of minute particles held together by some controlling force, but still so far apart that between and around each one of them other smaller atoms can freely move, permeating the entire mass. Viewed with sufficient magnifying power, Mont Blanc itself would appear vaporous, and doubtless there are particles of matter so fine that they would filter through its seemingly solid bulk, with no greater impediment than blotting paper opposes to the passage of the particles of alcohol. A rude illustration of this atomic structure is afforded by a basin of shot. Between each of the shot and its neighbours are empty spaces, into which other smaller shot could be shaken without increasing the bulk of the whole mass; smaller shot could be intruded between these again, and so on as far as the divisibility of matter would admit; and how inconceivably minute this may be is shown by the particles of odoriferous substances, such as musk, which will pervade a room for months, the air momently changing, each atom perceptible to the sense, yet without any sensible diminution in weight. The infinitely little is as inconceivable to us, but equally real with, the infinitely great.

Having thus attained to a clear and firm conception of your body as being a structure built of atoms inconceivably small, no two of which touch each other, and having emancipated your thoughts from the popular notion of a solid, it will be necessary for you to keep this conception steadily in your mind while pursuing the subject here to be treated of.

For, indeed, this view of the human structure, as of "the great globe itself, and all that it inherits," is the only secure foundation for physical science. If it be true of any part it is true of the whole—true of the universe, so far, at least, as it is within the reach of human perception. Right comprehension of it removes countless difficulties from the paths of science and philosophy, and solves a multitude of problems utterly baffling to the most sagacious of us, so long as we hold to the notion of solidity as a fact in nature, or as being anything other than a name we give to that which affects in a peculiar manner our very limited perceptions. The notion that there is nothing solid—that the hardest substance is a fluid mass of atoms—is hard to grasp at first, because it runs counter to appearances and is in seeming opposition to the teachings of two at least of our senses. But once clearly conceived and accepted as a fundamental truth, not only will thought readily run in accord with it, but we shall afterwards find it difficult to examine any fact or phenomenon, with a view to learn its character, its uses, the laws it obeys, and the conditions under which it exists, without instant reference to this, the greatest fact of all, *that there is nothing absolutely solid—nothing so closely packed that smaller atoms than its own may not penetrate or permeate it.*

Remember, also, that in the most solid body all the atoms of which it is composed are capable of motion among themselves, even if they are not—as is probable, though not proved—ever in actual motion. When the magnetic force passes through a solid bar of steel, we know that every atom in the mass is moved from its position in relationship to the rest, and rebounds when the force has passed. This conception will not only help you to accurate conception of the operations of magnetism,

light, heat, and other natural forces (or modes of one force, if such they be) but it will vastly aid your inquiries into the Vital and Psychic Forces and their operations in relation to the human structure, which it is the purpose of this work to describe in as popular a form as the obscurity and intricacy of the subject will permit.

Proof that what we call matter is made up of particles having interspaces is found in the fact of its compressibility. By sufficient pressure matter can always be made to occupy a smaller space. This could only be by the particles of which it is composed being thrust nearer together; and that could not be if they were in actual contact. Like so many other things which we are accustomed to look upon as universally true because they are such to our perceptions, we hold solidity to be a fact in nature, forgetting that it is only a condition recognised by our senses. To beings with different perceptive powers that which we call solid might appear as a fluid mass of separated atoms.

CHAPTER IV.

HOW WE GROW.

THE first visible foundation of the human structure is an almost shapeless germ, differing in this but little, if at all, from the germs of other animals, or from those of the vegetable world. There is a controversy among physiologists upon the question, whence comes that germ? From the father or mother? Does the mother merely supply, as it were, by the ovum a cradle for the incipient man and afterwards feed and nurse it until birth; or is it that the germ is in the ovum of the mother, to which nothing more than vital action stimulating it to growth is imparted by the father? Here is the problem which physiologists have sought in vain to solve. Observation of animal and vegetable life might have thrown some light upon the subject. The pistil of the flower is a tube for reception of the pollen, which by some undiscovered force is conveyed through the tube into the cradle where afterwards are found the vivified germs. So much we *know*. But we do *not* know whether the germ is in the pollen or in the pistil. Some contend for the one and some for the other. Both theories are extremely difficult to reconcile with the facts, and equally fail to satisfy the judgment. To which sex the possession of the germ is assigned, it follows that the other sex is possessed of no germs. Now, inasmuch as the germs must be in us when we exist as germs, or are obtained from the food we eat, the consequence of the popular theory is, either

that each female germ contains all the germs of all future generations, and that sex is a character of the germ, or that if the germs are obtained from the food we eat, they are appropriated by females only and not by males; a conclusion too improbable to be seriously entertained, especially in the absence of any facts upon which to found it.

It must be understood by the reader that this question, interesting and important as it is, is one of the many belonging to Psychology and Physiology upon which we are as yet entirely ignorant, and therefore, all that is here advanced upon it is merely conjecture, more or less plausible. But conjecture may serve the good purpose of directing investigation into some new path, and hence it is not to be summarily thrown aside as worthless; only it must be distinctly recognised that it is *nothing more than conjecture.*

What the germ is we know not. Whence it comes we know not. We know nothing more than that the animal was first a germ shaped, in no manner perceptible to the eye even when aided by the most powerful instruments, like the creature it is to become.

But this process of growth; is it an expansion merely of a folded up form, or is it the construction of a new form? Is the germ a closely packed structure, growing by expansion and accretion, or is it a shapeless structure moulded by some formative force operating from without?

The problem has baffled the most sagacious physiologists. The argument for an external formative force is weak; the objections to it are strong. Animals, whether nursed in a womb or in an egg-shell, are not cast in a mould. There is no proof of the presence of any external force by which their growth is determined,

nor can any reason be assigned for the existence of such a force, beyond the fact that animals are constructed in a definite shape and according to a certain pattern. It is extremely difficult to conceive of any unintelligent force modelling a man or a mollusc, hour by hour, and even minute by minute, as it grows from a shapeless point into its perfect shape, compact of all the delicate organs necessary to its existence and reproduction. It is still more difficult to assign the act of construction to the immediate work of the Creator, who, if he is assumed to model every man, must be assumed also to model every mouse, every flea, every aphis. Such a theory must be dismissed as infinitely improbable, if not impossible. If there be not the direct intervention of the Creator, the construction of the animal frame must be the work of some unexplored law of nature. Does that law operate from without or from within; that is to say, does the formative force proceed from the germ itself, and take its direction from within, or is it supplied and directed by some intelligent or other power from without? Here again we can only conjecture; there is no *knowledge* of the subject; but such observation as Science has made of the process points to the conclusion that the force is within; that the growth of the germ is by expansion, and that the formation of the perfect structure is *not* by shaping from the outside, as a statue is moulded or wrought by the sculptor, but by accretion, in obedience to a definite law operating from within, as in crystallization.

And here I must again hazard a conjecture and offer a suggestion, which I do with all deference to those who have professionally devoted their thoughts and studies to physiology. I do not even know if it be original; but as I can adduce no authority for it, the reader must take it

for what it is worth. Having meditated much upon it since first it came into my mind, and made a partial application of the theory to facts as they presented themselves, I have found in it a solution of so many hitherto insoluble problems in physiology that I am induced to think there is at least some foundation of truth, upon which others, who have more leisure for the pursuit, may build a complete system of animal construction. If the suggestion does nothing more than provoke thought and discussion, it will be of good service.

But, according to the rule I have adopted, I must here again give notice that much of the following is merely conjecture.

Whether the monad was at the beginning a shapeless cell growing by germination or by division of cells, is yet a subject of controversy. But there is no dispute as to the result of this growth, howsoever caused. From being an almost imperceptible atom the machine has grown to be what we see it.

Whence has this addition come, and of what material is it composed?

The growth began in the womb of the mother. There the germ was fed; there it grew; there it assumed the shape of a man.

Every atom by which that growth was caused was abstracted by the child from the blood of the mother.

Whence came the atoms that, being in the mother's blood, went to build up the structure of the child?

From that which the mother had taken into her blood; from the food she ate and the air she breathed.

If from flesh or fish, those atoms were part of the structure of an ox, a salmon, or some other animal organization. If from vegetable food, those atoms were part of the structure of a cabbage or of some other vegetable.

But whence came the atoms that formed the ox? From the grass he had devoured.

So it comes back at last to this: However numerous the intermediate travels from vegetable to animal or from animal to animal, all the atoms of which a child in its mother's womb is composed were, not long before, material forming part of some vegetable structure.

And the inquiry may be carried yet a step further. Whence came the atoms to the vegetable the ox had eaten on whom the mother fed and whose atoms were thus conveyed through the mother into the body of the unborn child?

Mainly from mineral constituents of the soil and air, and from gases diffused in the air, the gases themselves being only expanded metals.

Thus the materials of which the body is built are, in fact, more truly taken from the dust than we are wont practically to admit. "The dust of Alexander stopping a beer barrel" is not so wild a conjecture as Hamlet thought it.

Hence, not fancifully, but as an actual and indisputable fact, by tracing backwards the construction of a newly-born child, we learn that it has attained its present bulk by the attraction and assimilation of atoms which it procured from the blood of its mother, who procured them from the ox, who obtained them from the grass, which stole them from the earth and the air.

And it is surprising how short a time is required for this process of conversion. The countless millions of atoms that form the child are supplied in nine months. The precise periods have not been measured, but it is probable that mineral or earth particles may to day be taken from the soil or air into a blade of grass, eaten by an ox tomorrow, swallowed in the shape of

beef by a mother on Sunday, and on Wednesday form a part of the body of her unborn child.

When an independent existence begins, the same process of accretion by atoms goes on. The infant and the boy and the youth continue to grow, and that growth is partly supplied by the particles that constituted the flesh of an animal who procured them from a vegetable which drew them from a mineral or a gas. The entire of the bodily structure of the full-grown man, beyond the invisible germ of his beginning, is borrowed from animals, vegetables, the air, and the earth. Thus, also, his whole life through, the material is supplied for the processes of waste and repair.

Inasmuch as the same atom, in its transmigrations from mineral to vegetable, from vegetable to animal, and from animal to man, by its combinations with other atoms changes merely its apparent form but preserves its identity, there is good reason to suppose (for we are ignorant what *the fact* is) that the ultimate atoms of which this world and all its inhabitants are constructed are atoms precisely alike, but by their infinite combinations producing the infinite varieties of form and quality that present themselves on every side.

If this be so, we can understand how it is that a structure composed of such various material as the body could be built from a supply of material so limited as is that apparently contained in the food of the poor. Physiology has not satisfactorily explained how muscle, fibre, bone, nerve, tendon, hair, and the many other substances that constitute the complete organisation, could be extracted from the boiled rice on which the Indian feeds, or the potatoes that were formerly the principal nourishment of the Irish labourer. Certainly, neither bone substance nor flesh substance are found in these provisions. But the

problem is readily solved if it be, indeed, that the atoms which in certain combinations formed rice and potatoes are, by the process of digestion, released from that combination, and, being seized upon by the vital forces are thrown into other combinations, in which they present themselves to our senses in the form of flesh and bone.

But as to this also we have as yet no positive knowledge. It is nothing more than a probable conjecture. To the disgrace of science, we are at present wholly ignorant of the process by which the atoms that come to us in our beef and bread are dissolved and recombined in the form of bone and brain. This is a mystery which physiologists have failed to penetrate and, indeed, have scarcely attempted to explore. *But it is something gained to know that we do not know.*

What, then, is the process of growth?

What is the force that attracts the particles to the place where they are wanted?

What is the force that moulds to the required shape the atoms thus attracted?

The force must be either from within or from without. It must be inherent in the germ, or it must be supplied from some external power.

It is almost impossible to conceive the existence of an external formative force operating upon a germ in a womb or in an egg; neither womb nor egg partakes in the least the character of a mould in which the body can be cast and so take shape by combined pressure and resistance. The only possible *external* power is that of the mother. The forces that have wrought upon her and which are still at their work with her, are working also upon her embryo offspring. The structure is supplied with the material for its growth by her blood, and is

constructed by the identical building force that is hourly repairing her own frame.

This we *know*. But we do *not* know, and as yet we have scarcely begun to question nature, what this *Force* is, whence it comes, how it works. We have been so accustomed to think of it as a formative force operating from without, that the other question, if it may not be supplied from within, appears not to have presented itself to the physiologists. Yet that view of it may be worth considering. Having given some thought to it, I think there is evidence sufficient, at least, as we lawyers say, "to go to the jury," *that the body is built up by the vital forces within*, and not by any plastic force from without; in other words, that *we are self-constructed.*

Again be it understood that I advance this solution as *conjectural* only. The arguments I suggest, as strongly leading to such a conclusion, do not attempt to go further than to show its probability, and the claim it has upon the consideration of Psychologists and Physiologists. It must not be rejected merely because it is novel. We know so little of the laws of life and being, they have been so unaccountably neglected by exact science, as if there was something in their very nature that excluded them from scientific investigation by patient collation of facts, by the application of tests, and the careful study of conditions, that our positive knowledge is removed by scarcely a step from positive ignorance. I advance this suggestion in the hope that, if there be anything in it, others having more leisure and capacity than I enjoy may be induced to pursue it to a conclusion. If it be a truth, it would be impossible to exaggerate its importance.

The suggestion I venture to make and which I submit with all deference to the scientific world, is, *that the body is constructed by the nerve system;* that the nerves

attract to themselves those particles contained in the blood that are fitted for the particular structure to which each nerve belongs; that this formative influence extends to a certain distance from the nerve by varying lines of force, and thus it is that all the various shapes of limb and organ are modelled. Analogous instances occur even in inanimate nature. A crystal grows, by attraction of particles of matter, into a definite shape and always in that shape and no other; and this, not by any plastic force from without moulding it to that shape, but by *some unknown force within itself* operating always in lines of the same degree and direction. If the crystal were permeated by nerve fibres, we should not hesitate to refer the source of the crystallization to them. If a force can thus operate from within the crystal to shape the crystal and cause it to assume a definite and invariable form, may we not reasonably look for a like force operating through the nerve system to produce the shapes of organized bodies, so that, in fact, the flesh, bones, and other parts of the bodily structure are moulded by a process similar to that of crystallization, the material being attracted by the nerves as the centre of the lines of the nerve force, and condensed and held together by them within the sphere of their several influences.

We are ignorant what is the form of the germ, and of the process of its growth; but we know that it must be either a mere shapeless point, to which head, legs, arms, nerves and arteries are added by an unknown constructive force, or it is an embryo (by which I mean an unexpanded type of an animal, like the butterfly in the grub), and grows *by expansion*. May it not be that the germ is a miniature nerve system, so infinitely small as to be beyond the penetration of our most powerful microscopes; that in the conditions favourable to its

expansion it *unfolds*, and that, when unfolded, it proceeds to build up about itself the visible and palpable structure we call "the body," each separate nerve fibre attracting to itself from the blood of the mother the material required for forming the portion of the body to which that nerve fibre belongs, precisely as the attractive Force of the crystal centre causes the crystals to assume one shape, and the attractive Forces of other centres cause them to take other shapes. And as one Force will attract only one crystal substance, and other Forces other substances, so each nerve attracts and moulds its own material only. Thus the nerves of the finger would form a finger by crystallizing (I use the word only for lack of a better) about themselves, within the ranges of their vital and formative influence, flesh, bone, tendon, and other structures that constitute a finger.

If it be so, it follows that the body is shaped in precise accordance with the shape of the nerve system and the lines of force flowing from it, and that a man is really a nerve system clothed in flesh, and not, as we are accustomed to think of him, a structure of bones and flesh permeated by nerves and shaped by some external formative force whose source and action are equally unknown to us.

If the reader has sufficient imagination to picture a man stripped of his flesh and bones, and nothing left of his body but his nerve system, what would he see? A form shaped in all respects like the body, but composed entirely of a maze of strings of different sizes, branching into infinite subdivisions defying the sight to follow them. If he brings a microscope to his aid, he will discover still finer fibres shooting out in all directions, insomuch that he would wonder where sufficient space could have been found among the mass for the bones and

flesh and other structures that had made the body what it was.

The contemplation of such a nerve skeleton would at once suggest a probable explanation of the process by which the body is built. It is not a structure of bone and muscle, into which the nerves have penetrated in the progress of growth; but the nerve system is the being that *clothes itself* with flesh, bone, and the other materials requisite for its own life and support in the conditions to which it is to be subjected in this world. If this be so, "THE MAN" is not *the body*, as we see it, but the true MAN is the nerve structure that by the vital force it possesses attracts to itself the materials supplied to that body, ejects them when they are used up and deposits others in their places. The manner of our growth, according to this suggestion, is partly by expansion, partly by accretion. The growth of the nerve system is probably by expansion, or the unfolding of the compacted fibres, and the growth of the body is caused by the accretion of new particles attracted by the nerves which by some unknown attractive Force, select and set them in their proper places within the lines of that Force. If this be true, the shape of the completed structure is secured by the Formative Nerve Force operating in lines that extend to varying lengths, which if they could be made visible, would present the precise form of the completed structure. It is difficult to convey the notion of this Formative Force in general terms, and I will endeavour to make it intelligible by an illustration, derived from a more familiar, but not the less unexplained and inexplicable, process.

You desire to make a basket of crystals. You do not attempt the impossible task of constructing crystals by your own plastic skill and the formative force of your fingers. You dissolve a quantity of alum in water and

thus supply the particles of which the crystals you require are built. Then you place in this solution the framework of a basket, for a nucleus round which the crystals may cluster. There your work ends. Nature does the rest. But how? A *Force* is manifested. Of this Force you know nothing beyond the fact that there it is; for though it comes into active operation, you know not what it is nor how it works; you can neither see, hear, nor feel it; it is not perceptible to any of your senses; it cannot be measured by the most delicate of your metric instruments; it comes you know not whence and it goes you know not whither; its presence is only proved by its results; but by those results you are certainly informed that it permeates the solution you have prepared, makes prisoners of the infinitely small particles you have caused to float in it, drags them to the nucleus you have provided and sets them one after another in countless millions in the positions necessary for the construction of a crystal. Thus there arises, almost before your eyes—grows, as you would term it—a solid form, transparent, beautiful, and what is still more wonderful, of perfect shape, as if cast in a delicate mould, carved by most exquisite skill, and every crystal that encrusts the basket having precisely the same shape. Whence and what is this Formative Force? Is it a plastic force operating from without, moulding the crystal as the potter moulds his vessels? Or is it a Formative Force proceeding from a centre within and drawing the particles to itself? Can there be a reasonable doubt that the Force is an attractive Force from within. But why are those particles arranged by that Force in the definite form of the crystal and in that form only? Manifestly *because the Formative Force itself is*, if I may be allowed so incorrect a term, *in the form of the crystal;* that is to say, it operates

in lines of force radiating from a centre. Rays of the Force (again an incorrect term, but most nearly expressing my meaning) of different lengths and different attractive powers are projected from that centre, which rays of Force, if they could be drawn by a pencil upon paper, would exhibit the precise form of the perfect crystal. What that centre is in the crystal we do not know, nor how the Force so radiates from it; but it is not unreasonable to conclude that from these centres the Force is always flowing in those specific lines, although it is apparent to our senses only when it comes in contact with the material which it is its function to attract. Then comes growth into a shape palpable to the senses, and we see in substance the work of that Force which, though ever present, our imperfect senses had not perceived before.

This process of crystal-making, which the reader can witness at any time, will help him to understand the similar, if not identical, process of body-making, which I am here suggesting (not asserting) as being *probably* that pursued by Nature. The nerve cords that branch to the finger are the nucleus of your finger, answering to the framework of your alum basket. The blood is the solution in which, as in your infusion of dissolved alum, the particles are floating. A Force proceeds in lines from each of the nerve threads, as from the centre of each of the crystals, and seizes upon such of the particles in the blood as are fitted for the purpose of flesh-building, bone-building, tendon-building, as the case may be, which it is the proper function of each nerve-cord to attract. The particles so seized are deposited each in its proper place, precisely as are the particles that in their combination constitute the alum, and thus in the result a finger is formed, exactly as in the experiment with the alum a

crystal is formed; the one having, like the other, a definite shape, the only difference between the inorganic and the organic product being that the latter is complicated instead of being simple in substance and shape by the operation of some influences peculiar to Vital Force of which we are as yet wholly ignorant, because we have hitherto wholly neglected the scientific study of them. But the important conclusion which I am desirous to impress upon the reader by this illustration is, that the shape of the finger, like that of the crystal, is probably determined (to use the same incorrect form of expression) by the figure described by the lines of the Formative Force which radiate from the nerve threads in the various degrees of power and the various lengths of the lines of the Force that are represented ultimately by the shape of the organism to be constructed.

Thus, then, we arrive at the conclusion that it is probable (not proved) that the nerve structure is the individual being; that this nerve structure *clothes itself* with the other materials of the body—flesh, bone, sinew, &c.,—as with a garment, and that it does this by a process very like the familiar process of crystallization.

If there be truth in the conjecture I have hazarded, it certainly solves many perplexing problems in Physiology and Medicine, and throws entirely new light upon the relationship of mind and body, matter and spirit. The subject is very large, and to consider it fully would be a fit theme for a volume. In this place I can only present it in the barest outline, as a hint for which I ask the consideration of others. I add a few of the suggestions which must occur to all who will give to it a moment's thought.

The first and most interesting result is that, if it be as I have ventured to suggest, the shape of the body is

determined by that of the nerve organization, whose structure enables it to attract, deposit, and supply and maintain with Vital Force, only a definite quantity of material within the definite distance to which its formative force extends. The office of the nerve is to repair as well as to build. Not only does it remove the particles composing the body that are unfitted for their office, or have been "used up" in it, but it attracts other new particles and deposits them in the precise position of the particles removed. Hence the fact, at first sight so perplexing, that although the entire substance of the body is continually being changed, insomuch that some Physiologists have asserted that its whole substance is renewed in the course of seven years, the material structure continues to present the same aspect of identity. A birth mark remains unaltered through a life of seventy years, although there have been ten replacings of the whole structure. Many scars are indelible even if caused accidentally. A tattoo mark cannot be erased without excising the skin. Why? Every particle of the body has been removed and replaced, but the particles of the colouring matter remain as they were deposited. To our consciousness the body we now possess is the same body we had twenty years ago. It may grow fat or lean; the roundness of youth may give place to the wrinkles of age; there may be failing functions and lessened powers; but the consciousness of identity remains unchanged, nor could the most conclusive demonstration of science that no particle of the frame is the same as it was twenty years ago, disturb for a moment our conviction that the hand, the foot, the teeth, are what they were. The reason of this is to be found in the suggestion I have been considering. Our consciousness *is in the nerves* and not in the flesh that clothes

them. We speak of "our arm." The arm we see is the material that is crystallized about the nerves that permeate the entire structure; the arm we feel is the clothing in which the nerves have invested themselves, and which is needful for their existence in a world constructed as is our world. But *the true arm*, that which feels and acts in obedience to the command of the will, is the nerve structure within, which alone preserves the sense of continuous identity, and assures us that, although the entire of the clothing of the nerves be changed, the process is, in health, carried on so slowly and insensibly as to be invisible to us, our identity in fact being preserved by the nerve system, or, I should rather say, by *the something* of which that system is the organ.

The change in the material of the body without a difference in its aspect is thus accounted for. When a particle, infinitely small, is removed by the action of the nerve force, in the normal condition of the organism another particle is deposited in its place, and thus the entire structure presents no indication of the change, nor is there any consciousness of it in our own sensations. It is as if a brick-built house were to be renewed brick by brick, each one as it is taken out being immediately replaced by another exactly resembling it in shape and colour; the entire of the house might thus be slowly changed, without any perceptible difference in its aspect. In the condition of health, when the nerves perform their functions regularly and are supplied with the requisite building material, the process is conducted unconsciously to ourselves. But if the condition is not that of health, the processes of growth and repair, not being performed with ease and precision, are attended with inconvenience and pain. The particles not removed, and the particles attracted but not deposited in their proper places

accumulate and form sores and ulcers (which are only imperfectly made or insufficiently removed flesh), and this is in fact the cause of struma and all its attendant maladies.

Hence it is that certain scars are indelible. The injury had destroyed, not merely the material enwrapping the nerves, but so much of the nerves themselves whose business it would have been to restore the perfect skin in the wounded parts. With the destroyed nerve, the power of reproduction, that is to say, of healing, is lost and that defect in the structure is presented which we call a scar; and that defect is lifelong, because the destroyed nerve cannot be replaced. The same explanation applies to birthmarks, which, although apparent on the surface of the body, are really the result of a deformity in the nerve structure that lies below the site of the defect, thus causing irregular action in the process of building and repairing the body.

These illustrations of the practical application of my suggestion as to the manner in which the body is constructed are but a few out of a multitude that will present themselves to the Physiologist on very brief reflection. I must pass now to other topics.

The purpose of the material structure of the body is manifestly to enable the nerve organization, which alone is sensitive, to exist in the external conditions to which it is subjected in this world. Unprotected by a clothing of flesh and unsupported by a framework of bone, the naked nerve system, exquisitively sensitive as it is, though guided by the intelligence that governs it, could not support existence against the material forces by which it is surrounded.

Think, then, of a MAN as a being composed of an intricate network of nerves radiating from a centre or

centres, and constituting his real, living, conscious self. By a Formative Force in these nerves flesh and bones have been crystalled about themselves, moulding him to the shape in which we see him now. This body is not solid, as it appears to our coarse senses. It is only an aggregate of atoms, held in near neighbourhood by an unexplained power of attraction called the *Vital Force*, which differs greatly from Chemical Force and must be carefully severed from it in our contemplations. These atoms do not touch each other, and probably they are ever in motion among themselves, combining, separating, and recombining, as incessantly through them are passing the mighty Forces of nature. Besides the Vital Force from the nerve centres, the Forces of magnetism, electricity, light, heat (if all these are not, as I believe, mere modes of motion of one Force) are incessantly passing, and as they pass they keep these atoms in perpetual movement with a rapidity of which we can form no conception. But the fact of their ever present action compels the conclusion, so necessary to a right understanding of every question in Physiology and Psychology, that *we are not solid bodies*, according to our notions of solidity, but aggregates of atoms not in actual contact, therefore compressible and expansible, and therefore capable of being permeated by other matter more rare than that of which they are composed; that these atoms, in various combinations, forming the substances we call by various names as flesh, bone, fat, tendon, &c., are first attracted, then kept in their places so long as they are serviceable to the organism, and then removed when their duty is done, by the Vital Force, operating through the medium of the nerves, which are the builders and the repairers of the tenement we call the body.

Nor does this conception of the human structure in

any manner conflict with the theory of cell growth, or indeed with any other modern discovery asserted by the Materialists, who contend that they have traced back to their sources the operations by which organic structure is produced. Granted that we grow by cell expansion and division; still the question remains, "What supplies the material with which this cell growth is effected?" A cell is composed of particles of some kind and they must be supplied somehow. The air does not wholly feed them, though it may contribute much. Nor does the cell create for itself the Force necessary for its dilatation and division into new cells. That Force must be sent to it from without; and if any proof of this be wanting, it is found in the fact that, when the animal dies and the Vital Force ceases to flow, cells cease to be formed. Professor Huxley and his coadjutor Physiologists may be, and probably are, right up to the point to which they have traced the formation of organized bodies. At this point *their* labours end, for nothing beyond this point is obvious to the senses. But the investigations of Psychology, *beginning where Physiology ends*, pursue a path beyond the proper province of Physiology, and are directed to discover *what* are the Forces that cause the protoplasm to grow into shape; *how* the cells are supplied with the material of which they are constructed, and what are the conditions under which that growth and moulding into shape are accomplished.

I repeat, (and it cannot be too often impressed upon the mind of the student of Psychology) that through this aggregation of atoms compacted into the shape of a man, so long as life continues, amid and about each one of them, with a speed we cannot even imagine and a power we are unable to measure, pass the pulses of ether, the waves of

light, and the streams of that magnetism which is *possibly* the one Vital Force of the universe.

Why, with so many Forces passing continually among the atoms that make the body, do not those atoms fly apart and dissolve the structure?

Because the Vital Force that first attracted and assimilated them, and now holds them together, is more powerful than the disintegrating Forces. So long as that Vital Force continues to be supplied by the nerve centres, and to be conveyed freely and fully by the nerve cords, the other forces operate upon us harmlessly. But if that Vital Force be weakened, or its flow impeded, forthwith the other Forces resume their ascendancy, and that imperfect action of the organism results which we call disease, and then in due time comes death. When the Vital Force ceases to be radiated from the nerve centres, the atoms that have been by it holden together separate and submit to the forces that produce the chemical combinations; the machine works imperfectly; it then ceases to move: finally the bone and muscle that were constructed of the atoms brought by the blood from the beef or the cabbage we had eaten or the milk we had drunk, released from the firm bonds of the Vital Force, fly asunder and the liberated atoms are scattered abroad to form new combinations according to the Force within whose influence they may chance next to come.

In this slight sketch of what a MAN is, contemplated, as at this stage of our inquiry it is necessary he should be viewed, merely as a machine of wonderful structure, I have not attempted an anatomical description of his form. Neither was I competent to write it nor was it necessary to the subject of this treatise. What *the Force* is that sets and keeps the machine in motion, and what are

the conditions of its action, will be subjects for subsequent examination.

We must next take a similar general view of the manner in which the machine works when it is set in motion.

CHAPTER V.

HOW WE LIVE.

By the process described in the last chapter the corporeal man is constructed. There is a firm framework of bones; there are muscles by which the bones are moved; there is an apparatus to supply the waste of material in the bones and muscles, and a complex system of nerves running to every part of this structure from a nerve centre, which, by means of the communicants, called *the senses*, is enabled to receive intelligence of the external world, and by a power, as yet wholly undefined, which we term "the Will," can direct the action of the machine according to the dictates of its intelligence or the impulses of its emotions.

Such, in rude outline (for a minute and detailed description of the machine would occupy many volumes), is the being which I invited you to contemplate in your imagination as perfected in structure but not yet summoned to life. This is what such a being would desire to learn, when suddenly wakened to life and thought, himself should have become the subject of his own contemplation, and the reflection "*What am I?*" passes doubtfully through his mind.

Imagine such a perfected machine summoned to life and action. What would be the process of awakened consciousness?

Life would first stir in the nerve centre, and I include in this common name all the sections of the centres,

whether brain or ganglia, that are united by the spinal cord.

The thrill of life stirs in the nerve centres. By some process, of which we are wholly ignorant, life is attended by the presence of a Force of which we know nothing more than its effects. This force — *Vital Force*— so called for lack of a better name derived from better knowledge—is carried by the nerve cords to every part of the machine, which thus it sets in motion. Stimulated by this Vital Force carried thus to every part of the structure, the organs forthwith commence the performance of their several functions. The heart beats and pumps the blood into the arteries and by them it is conveyed to all parts of the structure, supplying the material with which the nerves are to perform their work of repair and renovation. The lungs expand and contract with each act of breathing, absorbing the gases of the atmosphere, which are not the less food for the body because their particles are invisible and impalpable. Thoughts stir in the brain. Sensations come to it, brought by the nerves whose function it is to maintain communication with the external world, and whose operations are conveniently arranged under the title of "The Senses." The brain not only receives these impressions from without, but experiences others generated in itself, and which have been termed the *emotions;* and it further exercises a power of *intelligence.* The WILL sends its commands through as much of the structure as is designed for voluntary motion and is instantly obeyed. The nerve receives the message at its source, and carries it with a speed which though great is not incapable of measurement, for it has been proved to be at the rate of about ninety-two feet in a second of time. In obedience to that impulse the muscle contracts, the limb moves, and by a series of commands, messages, contractions and

expansions, the desire of the Will is done, and the body executes the orders of the power within, whose servant it is.

The next inquiry, in due order, would be this: what is *the Force* that sets the machine in action and keeps it moving?

It is necessary to give a name to this Force, and it is desirable to adopt one that will carry with it no appearance of a foregone conclusion. I select the term "VITAL FORCE," because it appears to begin and end with the life of the body—if, indeed, it be not the life itself. Its source is probably in the nerve centres, for a shock given to them will often extinguish it instantly. From these centres it is carried by the nerve cords through the whole frame, giving to every part the power to perform its proper functions. If the Vital Force halts at any of the branches of the conducting apparatus, the powers of life fail in all parts of the frame lying beyond that branch, the functions of organic life are imperfectly performed for want of sufficient vital power and local disease is established. If the Vital Force declines at the centre, there is general debility and general incapacity of the organs to do their duty. What that Vital Force is; if it be identical with or allied to electricity, or magnetism, or to any other of the known forces, merely being modified by its connection with organic structure, we are, as yet, ignorant; but there can be no doubt of the existence of that which I propose to term the Vital Force—and that it appears when the germ begins its development and departs when life departs.

Whence the Vital Force comes and what it is—if it enters the form from without or within, or if it is the product of a certain collocation of the particles of matter, as galvanism is evolved from the contact of metals, we

are as ignorant now as if Physiology had never been raised to the dignity of a science; the probable cause of this failure being that the solution is only to be sought in Psychology, which Physiology has hitherto treated with such unwise and unphilosophical contempt.

Without dissenting from the correlation of the Physical Forces taught by Mr. Justice Grove, and to a considerable extent proved experimentally by Professor Tyndall, it must be admitted to be as yet unproved, and indeed to be very doubtful, if Vital Force is identical with or even allied to the other Physical Forces. It operates in direct opposition to some developments of those other Forces. In the presence of Vital Force, the operations of the Force called chemical action are suspended wholly or in part. From the moment the Vital Force begins to act, the Chemical Force, which is sovereign over the mineral kingdom, yields up its supremacy; but only for so long a time as the Vital Force maintains itself in vigour. On the instant that the Vital Force fails or flags, the Chemical Force asserts its power, the atoms which the Vital Force had held together in the various combinations necessary for the organism are seized upon by the Chemical Force and compelled to new combinations in accordance with the laws of Chemical Force, and the organized being becomes mineral again, and obeys thenceforth the laws of Chemical affinity, until its particles are once more taken up by some organized being, and pass through the same round of service under their new master.

And so through the ages.

The machine thus set in motion wears daily, hourly, momently. Power implies waste, for no Force is created —it is only transferred. There is no action of matter, however slight, that does not consume something of the material of which the machine is constructed. In a

period that would vary immensely according to conditions too numerous to be detailed, the machine unrepaired would be worn out and fall to pieces.

For the purpose of repair, the body is provided with an apparatus by which all the material requisite for such repair as is contained in the food it swallows and the air it breathes are resolved into a fluid that circulates through the entire frame. From this fluid the Vital Force, operating by the agency of the nerves, selects the particles required by each nerve for its own special service; by that Force they are wrought into the substance requiring repair, and by the same agency the used-up particles are removed and carried out of the machine by an excretory apparatus provided for the purpose. The stomach and the lungs are the feeders, the liver and the kidneys the scavengers, of the body.

The nerve system is the instrument by which the Vital Force is distributed through the machine. Whether that Force is generated in the nerve centres, the brain, the ganglia, or the spinal cord, is an unsolved problem. But, however that may be, it is generally agreed that this Vital Force flows from the centre to the extremities. By the nerve system it is that all the wheels of the machine are kept in healthy action.

The nerve system has another important office. It is the telegraph by which the centre and the extremities maintain mutual intercommunication. The nerve threads carry messages from the nerve centres to the extremities of the body and convey intelligence of the world without to the nerve centres. The Senses, as they are termed, are only nerves that telegraph to the brain impressions made upon them. The resemblance to the action of the telegraph wire is otherwise remarkable. There is a something that is called "the reflex action of the nerves,"

which bears a strange resemblance to the effect of induction in the telegraph wires. Armed with a small instrument, an expert can discover in a moment if a message is passing through the wire at any part of it, and also if that message is travelling up or down the wire. The explanation is simple and intelligible. Wheresoever and whensoever an electric current is established, a contrary current is excited in bodies near to it. When the current that conveys the message passes from London to Leeds, a delicate instrument in contact with the wire indicates by the contrary current in itself the direction of the current in the wire. This, which may be termed the reflex action of the telegraph, curiously resembles the reflex action of the nerves, the current passing through one nerve cord instantly exciting the inductive current in the other nerve cord with which it is bound in the sheath!

Or, if the Force in its passage deflects the molecules of the nerve cord or telegraph wire, may not the reflex action of the nerve be nothing more than the rebound to their original position, from the tension caused by the current, of the molecules of which each nerve is constructed?

Physiologists recognize nerves of motion and nerves of sensation. Both offices are not performed by the same nerve thread. Each has been separately severed with the anticipated result; motion ceased when one was cut, sensation when the other was severed.

For economy of space the two classes of nerves are bound together in the same sheath, so that to the unskilled eye they appear as one cord. But apart from protection and economy of space this arrangement is wonderfully advantageous. A nerve cord carries to the brain a sensation which reports to it the existence

of something at the extremity of one or more of the branches of that nerve, and instantly the cord that is bound with it in the same sheath carries back the commands of the brain in relation to it, and which commands are so instantly obeyed, when the machine is in healthy action, that to our perceptions there is no appreciable interval of time between the dispatch of the message and the receipt of the answer. For instance, a particle of dust alights upon the eyeball. In a moment the eyelid descends and removes it. By what process? The nerve whose branches permeate the eyeball carries to the nerve centre the report of the intruder's presence, and the adjacent nerve cord bears to the muscles that move the eyebrow the command to contract, and drop the curtain whose office it is to keep the eyeball clean.(*a*)

Some of the nerve cords are under the control of the Will and of the Intelligence (I purposely distinguish them for reasons that will be shown hereafter). These usually act in the manner above described. But others of the nerve cords that proceed to portions of the structure whose operations are not only not dependant upon the will or the intelligence, but would be endangered if they were so dependant, perform their functions involuntarily. These nerve cords do not proceed from the same part of the nerve centre as those that are governed by the Intelligence, thus plainly indicating the difference of function in the different parts of the nerve centres. So long as life lasts, they carry the Vital Force and maintain the organic functions in a more or less active condition, without

(*a*) This is the received hypothesis of muscular action. But I have sometimes suspected that it might be produced more simply by the process of "induction," the passage of the sensation through the one cord exciting the contrary action of the cord that is bound up with it.

pause or rest, for a short cessation of their influence would extinguish life. By no power of the Will can we control those nerves in the slightest degree. We cannot bid the stomach to digest, or the heart to beat or to stop. We can influence the action of both directly by mechanical obstruction, and indirectly by weakening the Vital Force; but we cannot, merely by taking thought, increase or diminish the activity of the function, as we control the motion of a muscle whose nerve cords proceed from the nerve centre that is the seat of the Intelligence and the Will.

As this is not a treatise upon Physiology and Anatomy, but only so much of both are introduced as appear to be necessary to the understanding of the principles of Psychology, I here conclude the outline sketch of the manner in which the human machine is moved, which was the single purpose of this chapter.

The summary of the review may be presented thus:

The human machine is set in motion and kept in action by a Force (not yet sufficiently investigated) to which the name of the *Vital Force* may be fitly given. This Force has its seat in the nerve centres, and flows from them, permeating the whole body and conveyed by the nerve system.

The action of the human machine is directed by Intelligence, controlled by a Will that sends its instructions from the nerve centres through the nerve system to the nerve extremities.

The Intelligence at the centre receives its information of impressions made by the world without through special faculties called the Senses.

What is called by Physiologists the reflex action of the nerves is probably the well-known magnetic phenomenon of Induction.

So long as the Vital Force is sufficiently thrown off by the nerve centres, and properly distributed through the entire machine by the nerve cords, the processes of organic life are sustained and there is the condition of health.

But if the nerve-centres, from any cause, fail to supply a sufficiency of Vital Force, or the nerve cords to carry it, the processes necessary to the sustainment of vitality are imperfectly performed and the condition of disease supervenes.

When the Nerve Centres cease to produce Vital Force, or the nerve cords, from any cause, as in paralysis, fail to transmit it, there is the condition of decay and death.

And this is How we Live.

CHAPTER VI.

WHAT LIFE IS.

WHAT is LIFE?

Rare are the readers who would not answer on the instant: "Of course I know what life is; I live; a plant lives; a stone does not live."

But in truth the wisest of us does not know what life is. Ignorance only *knows*. The ignorant always imagine they know vastly more than the wisest knows that he knows.

The knowledge of our ignorance is at least as needful to progress as is any other knowledge. The first step to wisdom is to learn and keep steadily before us what it is we do *not* know.

Here is an instance of that necessity. In very truth we are entirely ignorant what life is, where it begins and where it ends.

Trace it upwards from the things which are supposed *not* to possess what we call life to the most complicated form of life, as existing in Man. Let us assume, (what is, however, by no means certain), that there is no life in the mineral kingdom, in the earth we tread upon, in the rock we cleave. For a more striking comparison, let us take a man and the marble statue of a man. We say "this lives;" "that does *not* live."

What do we mean when we so say?

Saying that the one lives, we intend to express the conception of a being constructed of a vast variety of materials, each of which performs a special function in the

economy of his existence. We intend by the term "he lives," that the man feels, thinks, wills, and moves in obedience to his Will; that he grows, wastes, sickens, dies.

But when we say that the marble image of the man does *not* live, though the same in outward shape, we intend to say that the marble remains for long ages unchanged, that it has nothing of the structure of a man but the external form, possesses no self-consciousness, has no power of self-direction,—in short, is not organised.

If, however, we cut off one of the marble fingers, we see that the particles of which the marble is made are not brought together by chance. They are arranged in certain definite forms, as definite as are the forms of muscle, bone, and nerve in the living man. Inquiring further, we find that these particles of the marble have come together in strict accordance with some controlling *Force* acting in obedience to definite laws. But this Force, which we can neither feel nor see, whose source we do not know, and whose very existence is recognised only by the reason, although it is ever acting with tremendous energy on all sides, would be quite unknown to us but for the palpable results of its operations. By this invisible, intangible, imperceptible agent, the particles that formed the marble were selected from the other materials with which they were mingled, were borne somehow through things seemingly as solid as the marble itself to the place where their like were lying and deposited there in positions having certain definite relationships to the rest. Thus were formed the beautiful crystals of which the marble man is built.

There is nothing more wonderful than this in the structure of the living man. He, too, is built of particles, selected by an unknown *Force* from a mass of

materials within the range of its influence, carried to their proper places and united in definite arrangement for the production of definite forms. So far as our senses can trace, there is no difference in the process by which the particles are combined to make marble, or to make bone, muscle or nerve. They are probably collected by a different agent, but there is no perceptible difference in the manner in which like combines with like in certain proportions and in certain directions.

In terms, we recognise these Forces as two distinct Forces; but we do not know that they are two. They may be, and probably they are, one Force operating differently under different conditions. But it is convenient, for the purpose of scientific investigation, to treat of them as two distinct Forces and I shall do so here.

We will call the Force that selects, carries, deposits, and shapes the particles of the marble the *Chemical Force,* and the Force that selects, carries, deposits and shapes the particles of which flesh and bone are constructed the *Vital Force.* The ultimate particles which each seizes upon for its special work are probably the same; but in combination they form an infinite variety of substances, and probably it is in some of these combinations that they are selected by the Chemical and Vital Forces. We are quite ignorant if these Forces combine in the production of organic being, or if each is limited to its own sphere. This we *know,* however, that the Vital Force can and does control the Chemical Force; but only where matter is already organised. Over purely inorganic matter the Vital Force appears to have no influence. No applied power of Vital Force could change the chemical combinations of a pebble. But the converse does not hold good. The power of Vital Force over the Chemical Force is merely suspensive and limited.

There is a point at which the Chemical Force overcomes the Vital Force, and the chemical combinations take the place of the organic combinations. As the Vital Force declines, the Chemical Force grows stronger, and even before death the Chemical Force often subdues the Vital Force and decay begins. Always and instantly upon the Vital Force departing with the passing away of life, the Chemical Force comes into operation, and chemical combinations are substituted for the organic structures.

It is by no means to be deemed certain, in our present discreditable ignorance of Psychology, that the Chemical and Vital Forces, though antagonistic in certain conditions, do not work together in the maintenance of organic structures. May it not be that the Vital Force selects, carries, and deposits the materials for organic structure, but that the Chemical Force then comes in aid, and combines the particles so brought into the substances with which the organic structure is builded. The probability of this is strengthened by the undoubted fact of the instantaneous action of the Chemical Force when the Vital Force has ceased to operate. Taking full possession of the frame, it severs the chain that linked the particles together, and having dissolved their temporary alliance, disperses them, compelling them to new combinations.

We have already seen that the presence of Plastic Force is no test of the presence of Life. A Plastic Force moulds the crystal as well as the muscle. It was shown in a previous chapter that this Plastic Force, so long supposed to be acting upon organic bodies from without, and so moulding them to shape, is probably the Vital Force working from within by the process of attraction, and not a Force acting like a modeller or sculptor in the formation of organic beings. I must repeat that this is a suggestion merely and not an assertion.

Referring again to the illustration of the marble man. The Chemical Force constructs the crystals of the marble upon some imperceptible and undiscovered nucleus for each. Here, as in organized beings, the Chemical Plastic Force is a Force acting within a certain range from an unknown centre, with various degrees of intensity, attracting more powerfully at the base, with gradual diminution to the point which is the most distant from the centre, and which is a point because it is there that the power ceases. Suppose the Chemical Force that forms a crystal to exert an attractive power of twenty at the base, and evenly to become weaker as it recedes from the base, until it exercises only a power of one. The result would be a crystal pointed at the apex. If I am right in this conjecture—and I offer it as nothing more—the process of crystallization is explained, although the causes of it are unknown: that is to say, we are ignorant what *the Force* is, and what is the centre whence it proceeds, but we see how it works.

If the Chemical Force constructs muscle and bone much after the same fashion that it constructs a crystal, it is certainly *not* the Force by which the functions of organic being are performed. The bones and the muscle would be nothing better than crystals if they were not controlled by some Force that stimulates them to action, and that action directed to some end. The Force that thus operates is the *Vital Force,* and its functions begin precisely where the work of the Chemical Force ends—if indeed it is by the Chemical Force, as Professor Huxley and other physiologists contend, and not by Vital Force, that the body is builded. If their theory be right, the Chemical Force may be likened to the labourer who brings the bricks and mortar, and the Vital Force to the builder who controls and moulds the shape of the structure.

In this I must be understood as expressing no assent to the doctrines of the Materialists. My purpose is only to declare that their doctrine in no way conflicts with the views asserted by Psychology. Granted that the corporeal structure is formed as the Materialists assert, such a process by no means excludes the possibility, or even the probability, of the existence of another Force governing the Intelligence that undoubtedly directs the actions of the body.

I must repeat that when I refer to Chemical Force and Vital Force as being *two* forces, it is not designed to express an opinion upon the question if they may not be the same Force performing two functions. Personally I am inclined to the conclusion of Grove and Tyndall, that all the Forces of nature are *one Force* manifesting itself to our senses in various forms according to the medium through which it passes.

However this may be—and here is another blank in our knowledge to be noted by the reader—for the purposes of this treatise it will be necessary to contemplate the Chemical and Vital Forces as *two* Forces.

In what part of an organized being does life lie? Is life something distinct from the substance of the being, or is it the result of certain combinations of particles, or does it exist in each separate particle, or is it attached to some particles only, and not to others?

Look at the lowest forms of life. Minute and seemingly insignificant, they are organized, they live, they grow, they reproduce, they die. Does the life of such a being reside in all the particles of which it is composed, or only in some centre—the original germ—from which it radiates throughout the entire structure? Pass to a more advanced form of vegetable existence, the cabbage, or the oak. The cabbage lives, but what is its

life, and where is that life to be found? Certainly not in one part only of the structure, for if we cut off its head the stump will sprout again and send forth several new cabbages. The oak has in every bud a life separate from itself. A tree is a vegetable polypus. It is not one life, but a swarm of lives. A cow eats the cabbage. The particles that composed the vegetable go now to compose the flesh of the animal; that flesh is eaten by a woman who is nursing her child; some of the particles that composed the flesh of the cow pass into the milk of the mother, and thence into the infant whose growing limbs it helps to form.

Thus that which not long before was part of the organized structure of a cabbage becomes a part of the organized structure of a man. The self-same particles are there, but changed by recombinations into other forms, and exhibiting other qualities. If the life be in the particles themselves, the conclusion is unavoidable —the life of the cabbage constitutes the life of the man. If the life of the cabbage was *not* in the particles of which the cabbage was composed, where was it?

Are you satisfied that the life of the cabbage does not lie in any single particle of it? Do you hold that life is the result of a certain combination of those particles? Mark the consequence. The cabbage grew from a single germ hidden in the centre of a very small seed. All of its substance besides that little speck of matter is gathered from the earth and the air. The particles of which it is now composed have multiplied by millions. If its life is not limited to the germ, or the particles that surrounded it in the seed, the added organized substance must be supplied by the soil and the atmosphere; and in such case the particles so abstracted from the earth and the air must have life in them. The particles taken from

the soil are in greater part mineral, and it follows from this that the particles of minerals have life; the particles taken from the air are gaseous, and therefore the partilces of the gases have life. But what are the gases? Expanded minerals.

Although I have confined the illustration to the cabbage, it is equally applicable to all animal life and to man. If the Life in us is not limited to the germ from which we have grown, and our entire growth is composed of particles abstracted from animals and vegetables, and if our life exists in these abstracted particles as well as in the germ about which they have crystallized, this Life of ours is the identical life which was first in the cabbage and then in the ox.

These are some of the difficulties in popular Physiology that have led so many thoughtful men to the conclusion that life, or the germ of life, is in every particle of the matter of which the universe is composed, and that it expands and takes its specific form by radiation or diffusion of the vital force from the central germ, in some manner strictly subjected to the conditions under which the development occurs.

Without hazarding an opinion on a speculation so profound and as yet so obscure, I may observe that it is the only theory of life that yields a rational explanation of the phenomena and removes the difficulties, otherwise insuperable, which on all other hypotheses meet us at every step.

Say that the life is in the germ, and that the mature individual is only that life permeating all the particles of which the frame is built, an expansion, in fact, of the life that was in the germ coincident with its material growth. It is not in itself an improbable conception; but then we are confronted with this difficulty. The individual life—

say, for instance, that of the cabbage—produces and throws off many thousands of germs, each one of which has a life in it that, if placed in the necessary conditions, would become a cabbage and the parent of hundreds of thousands of other cabbages. It is the same with animals. Probably not one in a million of the germs produced by an individual becomes a cabbage, a sheep, or a man. But each one of the multitude must have been in the being whence they proceeded; consequently, each individual being must have had in its structure thousands of lives besides its own life. Whence came this multitude of germs? Certainly from the food whose particles build the body in which they are formed. Was the life in those particles before they were united with the body or after they had passed into it? Does a single cabbage life create a hundred thousand new lives, of which nine hundred and ninety-nine thousand never expand into cabbages, but perish and pass away? Yet again, what becomes of the lives that are in the germs that never extend into cognizable being?

What a mystery is here!

I do not pretend even to suggest a solution of it. I am only desirous that it should be distinctly recognised as a mystery yet unsolved, and that we should frankly acknowledge our total ignorance of it and refuse to base opinions upon any speculative dreams of possible explanations which can be nothing more than fanciful conjectures.

CHAPTER VII.

THE BEGINNING OF LIFE.

We have traced Life backward to the germ which grows into a living structure. But is the germ the beginning of life? Is it the nucleus of vitality? Is its life self-produced, or inherited from ancestors? It is no shame to say that we are ignorant; that possibly the beginning of Life is one of the many mysteries lying beyond the range of the Intelligence; that it is too great, or too little, or too deeply hidden, to be perceived by the senses or comprehended by the mind.

But it *is* a shame to us that such weak endeavours should have been made to explore, by experiment and observation and facts carefully collected and collated, a subject of such immediate and vast moment to every living man. We have searched the heavens with unabated ardour to learn the laws that govern the far off worlds that have for us so remote and unreal an interest. We have questioned the composition of the earth on which we tread and inquired curiously into the laws that bind and unbind the atoms of which every form of mineral is constructed. The pursuers of these and other branches of science are legion. But we may almost count upon the fingers the names of those who have sought to explore the mysteries and marvels of Life, what it is, wherein it dwells, its beginning and its ending. This strange neglect is exhibited, although life is everywhere in us and about us, displayed in multitudinous forms,

the most fruitful subject for study, having for every living man the profoundest interest. Such a subject Science would have been expected most eagerly to bring into her domain, Scientists most active to explore, and the world most anxious to be enlightened upon it.

Science may well be ashamed of her neglect of this and kindred subjects of scarcely less importance. And the negligence has extended to other cognate questions second only in interest. Anthropology—the great science of Man—has only recently, and after a severe struggle and against fierce opposition, obtained admission into the programme of the British Association for the Advancement of Science. It is even now treated there with something like contempt by the Physicists. Mental Physiology and Psychology are not recognised at all. Biology is tolerated; not, however, in its proper and large sense, as the Science of Life, but in restricted reference rather to the things that have life than to the Life that is in the living things. Honour is awarded—most justly—to the men who spend their lives in exploring the atmosphere of the sun, the materials of a pebble, the flint works of prehistoric man, the bones of a megatherium, or even the structure of a mollusc, and all find an audience. But that which concerns every human being infinitely more than the pebble, or the stone age, or antediluvian animals, or the make of a mollusc—*Ourselves*—the Life that is in us, the Intelligence that directs us,—are neglected altogether or treated with a courteous contempt more humiliating than neglect. Hence the ignorance of the source and seat of Life that is the shame of Science.

The cause of that neglect is doubtless to be traced to a time when Theologians, being the only learned class, extended Theology into regions not properly belonging to

it, and sought to dictate as matters of faith subjects that were only matters of fact, and with which Theology had properly no concern. To ask what Life is and where it is, would then have been looked upon as a religious heresy, Life being by the Theologists identified with Soul, and therefore not a subject for any science other than Theology. It was forgotten that there is life in animals and vegetables, and therefore that Life *is* something other than Soul and consequently properly within the province of outside Science. We know better now. Theology has long since abandoned its claims to the domains of Biology and Psychology, as well as to those of Chemistry and Astronomy. But the prejudice formerly surrounding them lingers still, and to look into the sources and laws of life is to many minds a presumptuous prying into things sacred, which it is a species of sacrilege to approach and inspect too curiously.

Hence it is that to the question, "What is Life?" so brief and insufficient an answer has been given in the last chapter, and briefer still, in this, must be the review of the Beginning of Life. As yet we *know* very little indeed about it. As with so much besides belonging to the science of Psychology, we can only put forth plausible conjectures, the uses of which will be rather to indicate the path of inquiry to those who may desire to explore than to satisfy the craving for positive information by those who desire to learn.

Some repetition is necessary. We must start with this clearly before us. Life is not the Soul (if there be a Soul —of which hereafter); Life is not the Intelligence; Life is not in the body structure; Life is not in the nerve cords.

Life is not the Soul (if a Soul there be, which the Scientists deny)—for vegetables have life and have not Souls.

Life is not the Intelligence; for the Intelligence often departs, even to the loss of consciousness, and Life remains. Vegetables have not intelligence and yet have Life.

Life is not in the structure of flesh and bone, for that may be mutilated without diminishing Life. A man who has lost his leg has not lost with it a part of his Life. A little man has as much Life in him as a big man.

Life is not in the nerve cords; for these may be severed without danger to life, save through indirect mischiefs.

Where, then, dwells the Life? We arrive at this answer by the process of exhaustion;

In the *nerve centres*—the brain and the ganglions.

But it is doubtful if the whole brain is the seat of life. The part of the brain that performs the functions of intelligence may be stricken with paralysis, even to loss of consciousness, and life may yet remain. But there is a portion of the brain, lying between the hemispheres that perform the various functions of intelligence, differing from the brain in structure, and whose uses are not yet satisfactorily explained. This peculiar body is reasonably conjectured to be in close relationship with the ganglionic system. May it not be the ganglion that supplies the Vital Force to the convolutions of the true brain, with both of whose hemispheres, by its position in the centre and at the base, it is in direct connection. If this be so, the brain system may be likened to the nerve system. As the nerve threads proceed from the ganglia which are the centres of vitality and convey that vitality to the entire body, so the fibres of the brain are the nerve-threads by which the Vital Force is carried from the central ganglion lying at the base of the brain, into the hemispheres of the brain, stimulating the fibres to that molecular motion which imparts to the individual the sensations he calls Emotion and

Ideas. If this conjecture be correct, it explains how it is that the action of the brain is so often seen to be extinguished without the cessation of life, which would be the necessary consequence if the brain were the centre and seat of life.

That Life dwells in the nerve centres, that the Vital Force flows from them and is not, as commonly believed, the result merely of collocation of organised material, is shown by the action of certain poisons, which kill, not by destruction of the tissues, nor by paralysing the functions of vital organs, but by some undiscovered action operating directly upon the nerve centres, and extinguishing the life in them almost instantaneously. Other poisons appear to operate upon the nerve cords, and, by paralysing them, to bring about a slower extinction of life; while others again act by Chemical Force overcoming the Vital Force and so causing the dissolution of the union of some or all of the organic substances of which the body is built.

But even if we arrive at the conclusion that the nerve centres are the source and seat of the individual life, whence it is diffused through the entire structure by the nerve system, we have not advanced much nearer to a knowledge of the beginning of Life. It is, however, more easy to contemplate the problem when thus simplified. Say that life lies in the nerve centres; still the question arises, *What is it* that thus animates this handful of greyish matter of a peculiar texture and goes out of it on death? What is the difference between this substance living and dead? Does the Life lie in the whole mass as the result of its structure, or is it in every particle of which the mass is composed, so that the whole is in fact an aggregation of lives united to form an individual being, and not one life growing out of the combination of

lifeless particles? Whence did it come? When and how did it enter the body? Where does it go when the body dies?

The most probable conjecture (for it is nothing more than conjecture) is that vitality is communicated to the attracted particles by the process of assimilising them. The ganglionic mass has grown to be what it is from a point so small as to be invisible. It has been constructed by the expansion of a germ attracting the material for its structure from external substances. If those substances have not life in them, it follows that the life diffused throughout the entire mass really resides in the infinitesimally small point of the original germ. But some of the substances thus attracted and assimilated become, as we *know*, germs which, in their turn, become nerve centres and expand into living beings like the parent. Moreover, hundreds of thousands of these germs are produced by the parent, all of which must have proceeded, not from the germ which the parent was, but from the substances which the Vital Force flowing from the nerve centres has attracted from the surrounding world—in fact, from the food it ate and the air it breathed.

When, therefore, the nerve centre ceases to live—if, as the probability is, the life exists in every particle the nerve centre has attracted to itself—the departure of life from the nerve centre is only the dissolution of the combination of living forces that constituted the living being. The substance of the nerve centres being dissolved, each particle of which they were composed carries with it its own life, to await other combinations to which it may be compelled according to the Force to which it may chance to be subjected and the conditions with which it may be surrounded: to be part of the life of a plant,

possibly of a mineral, preparatory to its being again contributory to the life of an animal feeding upon that plant.

For Life manifestly moves in a great circle.

Dr BASTIAN, in his great book on "The Beginnings of Life," has done much towards the solution of this problem. Carefully and laboriously investigating the lowest forms of life, he has discovered that vegetable corpuscles are in fact interchangeable, the same corpuscles becoming different plants. Those thrown off from a single lichen have been seen by Dr. Hicks to assume the forms and modes of growth characteristic of no less than twenty-three supposed species of *Algæ;* while powders from an *Algæ* or from a moss, were developed into lichens, *Algæ,* or mosses, according to the conditions under which they were placed, while they sometimes gave birth even to active Monads.

I cite now from a very able review of Dr Bastian's book, by Mr. Alfred Wallace, contributed to *Nature,* Vol. VI. p. 300.

"Dr. Bastian further proves that Bacterea and other low organisms, which form a pellicle on the surface of infusions and other liquids, are produced *de novo* in such infusions. . . . . One of the most simple series of changes—the transformation of motionless corpuscles into ordinary *Amœbæ* —was closely watched by Dr. Bastian, and seen with the most perfect distinctness in thousands of instances. The first step was an increase of the amount of gelatinous matter between the corpuscles or *Bacteria,* which gradually became less defined, and at last scarcely visible in the protoplasmic mass, in which segmentation then began to take place, and continued till it separated into active monads. After a time, however, these began to change into *Amœbæ,* and these latter, passing through a motionless and encysted stage, became resolved into *Bacteria.*

The whole series of these changes occupied about ten days. In other cases similar corpuscles developed into fungi; while in some instances in the same pellicle the change into *Amœbæ* on the one hand, and into Fungus germs on the other, went on simultaneously." . . . . "Dr. B. Hicks has observed the production of *Amœbæ* by the transformation of the chlorophyll and protoplasmic contents of the cells of moss radicles. Mr. H. J. Carter has closely followed the changes occurring in the cells of the *Nitella*, one of the *Characeæ*, resulting in the formation of monads and *Amœbæ*. . . . The cell contents of *Confervæ* give rise to *Euglenæ* and *Astasiæ*, beautiful green organisms, which abound in stagnant water, and these undergo transformation into a variety of higher or lower organisms. Ciliated *Infusoria* themselves undergo transformation into various forms of lower animals, among others into Rotifers. . . . Still more extraordinary, if possible, is the transformation of the minute algoid *Chlorococcus* into the large, complex, and well-known rotifer *Hydatina senita*. Concerning the reality of these transformations, astounding as they are, Dr. Bastian assures us he entertains not the slightest doubt, having traced them through all their stages. He adds:

"The fact that animals with such distinct and specific organs should arise in this definite manner from the reproductive products of a plant will, doubtless, seem to many to savour more of fable than of fact. After the observations which have been detailed, however, we must accept the occurrence of such phenomena as established facts, just as we are compelled, and are now quite accustomed, unhesitatingly to believe in the reality of other equally inexplicable phenomena. When we are able really to explain the reason of the processes by which one minute vesicular mass of fatty and albuminised particles developes into a man, another into a fish, and another into an insect, we may then, with a little more show of reason, think of rejecting other more or less similar facts because they are incomprehensible."

What, then, is the practical result of these investigations into the lower forms of life?

In few words this:

"Life is not something perpetually resident in, or belonging to, certain particles or germs. It is the property of certain kinds of matter which we call organized; the presence of life producing the organization."

The process appears to be something in the nature of evolution. The particle passes through successive stages before it is fitted for the highest form of organization. It is first found forming a substance we call inorganic, and which we conclude, perhaps too hastily, to have no life in it. The particle that was mineral is taken into the organism of a vegetable. The vegetable is eaten by a man, and its particles, which were mineral, are assimilated by the operation of Vital Force to the organic structure of the man. Or the vegetable may be eaten by a sheep, and the particles will become organised by the Vital Force of the sheep, and so form part of the organic structure of the sheep. Then, eaten in the form of mutton, the particle becomes a part of the organic structure of a man. In either case it *was* inorganic mineral; it *is* organised, and it combines with other particles to form organised material and a living being.

But Life is the product of some Force, of the source, nature, extent, and action of which we are wholly ignorant, which Force, operating under certain unknown conditions, imparts vitality to matter and causes it to combine in certain definite forms, the direction of which is determined by the conditions under which the vitality works. "Among the lower organisms," says Mr. WALLACE, "unknown laws of polarity, akin to those which influence the production of crystals, but of infinitely greater complexity, directly cause the develop-

ment of a great variety of forms; while conditions of existence to a great extent determine the variety of forms that shall arise in each individual case.

"These Forms of Animal Life are not fixed, not hereditary, not necessarily the product of like parents; they are continually being created by conversion of vegetable into animal life; and as the probable conclusion from this that the higher forms of animal life are produced by combinations of those lower forms of life developed under conditions. If Dr. Bastian's observations are correct, and the conclusions he deduces from them reasonable, we have before us a grand view of the Genesis of Life which must materially modify the present opinion, and give a new direction to the future researches, of the Theologist, the Physiologist, and the Mental Philosopher."

I repeat that these are only advanced here as speculations having a certain basis of fact. I adduce them because they must be gravely considered in all future Psychological researches, my purpose in this treatise being to present a kind of outline map of the domain of Psychology, and to point out what may be deemed to be known, and what yet remains to be explored. I have found it necessary to direct the attention of the reader to the profoundly interesting questions, "What Life is!" and "What are the beginnings of Life?" not with any hope to solve them, but to show him what a vast field for investigation is spread before the student of Psychology even in this one alone of its many provinces.

If I have been unable to give any satisfactory answer to the question, "What Life is?" I hope at least to have pointed out some pathways to its solution that may be deemed well worth pursuing.

CHAPTER VIII.

THE GERM.

THERE is another question intimately connected with this of the whereabouts of life. Whether it be or be not elsewhere also, it cannot be disputed that life is in the germ. But we are yet wholly ignorant if the germ be in the male or in the female, and this ignorance extends to vegetable life. Take the case of the vegetable—the hazel nut, for instance. The male is a distinct and separate flower from the female. The catkin (so the former is called) produces millions of particles of a fine dust, so minute and so multitudinous that if, when it is mature, a light wind passes over the nut grove, the pollen shaken from the catkins presents an appearance like that of a cloud of smoke filling the air far above the bushes. Countless millions are here produced to fertilize a few hundred tiny crimson flowers; yet either is each one of these the living germ of a hazel-nut, or it possesses in itself a vital force that stimulates into expansion and growth the germ that is in the ovary of the female flower. If one of these millions of germs descends upon the point of a tube in a tiny crimson flower that peeps out at the summit of an unopened bud, it is driven by some unknown Force into the cradle that lies at the base of that little flower; there it expands, starts into growth, and in due time becomes a hazel-nut, in its turn to be the parent of future hazel bushes.

We know that this is the process by which the pollen

is conveyed to the pistil, but there our knowledge ends. How the tiny particle makes its way into the cradle we do not know, nor what occurs when it arrives there. We know only that one or more of the germs begins to grow; that when it first becomes visible to us it is composed of two distinct parts instead of being one whole. That germ remains inclosed in the seed, packed in a bed of materials for its nourishment, answering precisely to the yelk in the egg of a bird. Should not the conditions favourable to the development of the germ occur before its edible cradle perishes, the germ itself disappears; but what becomes of it we know not, nor even if it dies also. But if the conditions requisite for expansion take place, it starts into active life, it makes its first meals out of its own cradle, and presently escaping from that pent up prison, it sends its roots into the earth and its branches into the air, and becomes a plant, the potential parent of thousands of other plants like itself. From that single germ has proceeded millions of other germs. But where were they? Were they contained within the one germ that has grown to be the parent plant, or were they extracted by the plant from the earth, air, and water which it absorbed and assimilated in its progress from germhood to plant-hood? There is no alternative to this. The first solution is confronted by overwhelming difficulty; the other is sufficiently intelligible, but then it involves the further consideration—that if the plant extracts its germs from its food, the elements that clip us round about must be full of germs; and, inasmuch as it is impossible to conceive of a sufficient number of germs of its own kind to be accessible to each plant that produces many millions, we are compelled to come to the conclusion that the germs of life are without individual

character, that their development as vegetable or animal, or as a particular vegetable or a particular animal, depends upon the conditions under which that development occurs; that is to say, that the same germ becomes a cabbage, a caterpillar, a chaffinch, or an ox, accordingly as it is exposed to the conditions necessary to the development of the one or of the other.

The Materialists avoid all the difficulties that encompass the inquiry into the origin of organic life by denying that life is other than a function of a certain collocation of matter, not a thing distinct from it, imported into it, and going out of it as a separate entity. The protoplasm, they say, when the conditions are favourable to action, goes to work, and cells are produced which increase by division and finally form the various organic substances. What we call life results from this process and does not cause it, as the popular belief is. Just as when certain atoms combining under certain influences form gold, so when those atoms combine under certain other conditions they form organized matter, the characteristic of which is *life*.

This is, I believe, a brief but fair statement of the theory of Materialism.

The answer to be given to it is, that life produces a complicated structure adapted to action that is not automatic; that while life lingers it acts in many ways in direct opposition to other natural forces. Where life is, the laws of chemistry are suspended, resuming their power instantly upon the cessation of life. The departure of life is not coincident with a change in the collocation of the atoms, which would be the result if life be the product of that collocation. When the nerve centre dies the whole body dies. But if, as asserted by Materialists, life proceeds from a certain arrangement

of the particles of organized matter,—as in the finger, for instance,—the finger, if uninjured, might live, though the nerve centre be dead. Many more arguments and illustrations may be suggested to support the contention that life is an entity, that there are germs of life, and that the mature organized being is an expanded germ.

I have already described some of the many perplexities that encompass the second great question in Psychology. Assuming that every individual life has its origin in a germ, and that two parents are necessary to the vivification and expansion of that germ, by which parent is the germ itself produced? I stated the popular theory to be, that the germ is in the mother and only vivified by the father. I stated also that the modern and now more highly approved opinion is that the germ is supplied by the father and that the mother provides only its cradle and its nourishment.

With great diffidence, because I believe the notion to be wholly my own, and I am not sufficiently an anatomist to be enabled to arrive at a satisfactory conclusion upon it and may therefore be deemed by some as scarcely privileged even to hazard a conjecture, I venture to submit to more competent Scientists than myself a view that has presented itself to my mind, to which I have given much consideration, and which is the more strengthened the more I make application of the theory to the facts. If Physiologists think well of it, I hope they will give to it some examination, to ascertain if the conception is consistent with experience. Its importance, if it be true, they will certainly not dispute.

The suggestion which I venture thus to throw out for the consideration of Physiologists is, that instead of being constructed of one germ, proceeding from one

parent only and either nursed or vivified by the other parent, (as hitherto has been universally assumed), we are really constituted by *the union of two germs*, a germ being provided by each parent. I further suggest that this duplex origin is the cause of that duplex character of the structure which surprises the Anatomist and puzzles the Physiologist. This hypothesis completely removes the difficulty that has attended either solution of the vexed question whether the parentage of the germ is due to the male or to the female. My suggestion perfectly reconciles all the arguments on both sides of this much debated problem.

The evidence points strongly to such a conclusion. The human structure is not one whole, but two parts joined together. One of the parts rarely, if ever, precisely resembles the other part, and often there is a marked unlikeness. Seldom are both sides of the face alike, as a very slight observation of the reader's friends will assure him. One side of the body rarely if ever resembles in shape the other side of it; one side is usually weaker than the other, or more liable to injury, or habitually less healthy. The external organs are all obviously duplex. We have two arms, legs, eyes, ears, nostrils. We have also two brains, and duplicate ganglia. Throughout the structure there is the manifest junction of two distinct formations, and the point of junction is for the most part plainly visible. Even the internal organs that occupy the trunk, although not separate, like the legs and the arms, are shaped as if constructed of two separately moulded halves, and in most of them there is a marked line at the point of junction. Such a structure seems to be inexplicable on any theory of the development of a single germ. What useful purpose could be attained by it? We should predicate of a single germ that it would be developed as

a single form. Is it not reasonable, when we see the development of a double form composed of two unequal and dissimilar forms welded together, instead of one perfect form, to ask if there be not some cause for this and to suspect that it is not a mere freak of nature, but the necessary consequence of something special in the original plan of the structure itself?

This suggestion also explains another hitherto inexplicable problem—why the nerve cords are made to cross from the nerve centres on one side of the body to the other side of the body, instead of each one occupying, vivifying, influencing, and directing that half of the body to which it belongs. That such is the fact is proved by this, that an injury to the right nerve centre paralyses the left side of the body, and *vice versâ*. If the whole body be the development of a single germ, no useful purpose appears to be served by this exchange of the nerve system. But, if my suggestion be true, that the human being is constructed of *two* united germs, the object and uses of this interchange of the nerves between the two allied germs become at once apparent. It is thus that their union is accomplished; it is thus that the characteristics of each germ are imparted to its partner. Thus it is, also, that the general unity of form, of vital force, and of muscular action is brought about.

This hypothesis—for I repeat that as yet it is a suggestion only—supplies a complete explanation of other facts in Physiology that have much perplexed investigators and which are as yet entirely unsolved.

It accounts for the resemblances as well as the differences between the parents and the offspring. If the germ be the product of the mother, to which the father merely imparts vitality (which was the accepted doctrine), no rational answer has been, or can be, given to the

question, by what conceivable process a mere aura, or influence, could produce such a modification in the offspring, which is nourished and moulded wholly by the mother? If, on the other hand, it be contended that the germ is the product of the father, for which the mother provides only a nest and nourishment, the problem is no less perplexing, how the offspring comes to receive the impress of the mother's mental character. Still more perplexing is the frequent combination in almost equal proportions of the characteristics of both parents. But these difficulties and perplexities vanish, if the suggestion I have made be the true one. If each parent contributes a germ, and thus the offspring is composed of two germs united, each germ having a resemblance more or less perfect to its parent, the consequence would necessarily be that the offspring, which is the product of the united germs, would partake of the bodily and mental character of both parents, the characteristics prevailing of that parent whose germ possessed the most perfect structure, or the best health, or the greatest amount of Vital Force.

This is precisely what we see in others and feel in ourselves. Some members of the same family resemble the mother, others are more like the father, and this extends to intellect and feeling as well as to feature and form. Hence *family likeness* inherited not by the offspring only, but cropping out at intervals through many generations. If there be any truth in this suggestion, the course of inherited characteristics would be somewhat thus. If B.'s germ could expand and exist alone under identical conditions, it would probably be in itself a facsimile of B., and any modifications would be accidental. So it would be with C.'s germ. But if the two germs unite and grow together side by side, interchanging their nerve systems so that B.'s nerve influence

helps to mould C. and C.'s nerve influence helps to mould B., the product will be a creature constructed of two separate halves united together, each of which halves will be more or less modified, by means of the nerve cords crossing from the other half, to the influences of that other half, and the product will have the mixed character resulting from a combination of its own with that of another, and thus by mutual exchange they become similar though not identical.

If this suggestion should prove to be a fact, it will open a new and vast field of research to Physiology and Psychology. It will throw a flood of light on the intricate questions relating to race, to the transmission of bodily and mental characteristics, to hereditary features and genius. The Darwinian theory of the Origin of Species by the survival of the fittest, and the suggestions of "the Descent of Man" will find a new argument in such an explanation of the original construction of a MAN. Although Mr Darwin carefully guards himself against admission of the theory that every germ is a facsimile of its parent, and that all diversities are due to the circumstances to which the germ is subjected during the process of development, he manifestly inclines to that opinion. By this I understand his meaning to be that, whether the germ proceeds from the father or the mother, if all extraneous influences could be averted, it would, in every particular, precisely resemble the producing parent. In practice such a facsimile has never been produced, for there are always the modifying influences of the other parent (whichsoever that may be) and of the ever varying conditions attendant upon the maternal life. These accidental circumstances, however, whether taken separately or together, appear wholly inadequate to account for the curiously varying combinations of parental character,

bodily as well as mental, which are found in the offspring. They are, however, readily and reasonably explicable by the hypothesis I have adventured, namely, the junction of two germs, each parent contributing a distinct and perfect germ. If each germ were a facsimile of its parent, and both merely united side by side, and in this condition the united germs were to expand, each according to its own nerve organization, the product would be a double body made of two halves altogether unlike, with a double mind, causing duplex sensations, intelligence and will. We should all, in fact, very much resemble the double girls who have been exhibited in our cities. But this difficulty has been perfectly avoided by the simple contrivance of combining the two germs, not merely by tying them together, but by sending the nerve cords that proceed from the nerve centre of each to traverse the entire frame of the other, or, to be more accurate, by *joining them at the nerve centres and then exchanging the entire system of nerve cords*, so that the Vital Force of germ A. influences the body of germ B., and that of germ B. influences the body of germ A.

Now, assuming the growth of the germ to be by expansion, the result of such a process would be somewhat as follows:

Call the paternal germ A. and the maternal germ B. If either were to expand alone, it would possess only the qualities of the parent whence it was derived. But if the two germs be joined, by the exchange of their nerve systems for the composition of the one man the original character of each of the germs thus united will be influenced by the character of its companion. The Nerve Force proceeding from the nerve centre of germ A. gives life and action and formative force to germ B., and the vitality and formative force of germ B. has for its source

the nerve centre of germ A. The necessary effect of this interchange of Forces is, that while each of the united germs preserves some of its own characteristics, each is modified by the influence of the other, while that germ which possesses the most of vital energy predominates and stamps more of itself upon the completed structure. The effect of this superior energy of Force in one of the two germs is seen in the state of things which we recognize when we say "This child is like his father," "That child is like his mother;" "This one has his father's form and his mother's mind," and such like phrases descriptive of observed phenonema for which no reasonable cause has yet been assigned. The effect of such an union of two germs as I suggest would necessarily be, by the exchange of their several influences, to cause them in their development to be very like each other and yet not to produce an exact resemblance, the germ that has the predominance of Vital Force causing its own characteristics to dominate in the offspring. And this is precisely what we find in fact. The two halves of which our bodies are composed are never precisely alike; but the difference is always limited to a dissimilarity that is not inconsistent with the uses of the organs. So likewise there is always a predominance of the characteristics of one of the parents or of the ancestors of one of the parents.

It would follow from this that, to produce a healthy offspring, there must be an union of two germs having a general similarity—or, perhaps, it would be more accurate to say that unless the two germs have a certain degree of resemblance no union of germs can be perfected, and consequently no offspring will be produced. May not this account for unfruitful marriages? May it not be that the germs of the two parents have some essential differences of shape or constitution that prevent their junction in such

manner as is required to form a human structure competent to the support of animal life? May not this account for the fact, well known to all breeders of stock, that highly-bred animals are singularly liable to barrenness and always with difficulty impregnated? May it not be that by a course of breeding and training for specialties the germs become at length so modified in form that sufficient resemblance for the purpose of constructing the living being does not exist among them? May not this be the source of the often noticed irregularity in the hereditary transmission of disease, one child inheriting the disease of the father, another that of the mother? Wherefore? Because in the original structure of the child the germ of the father or of the mother possessed the most vitality and modified the structure according to its own character, which thus became the prevailing character of the offspring.

Again, does not this suggestion of two germs explain the whole mystery of hybridism? The necessary condition of an animated structure composed of two halves, each of which has a distinct form and entity, but which when united are to constitute one individual being having at least a certain degree of symmetry in shape, is that there shall be a certain amount of resemblance between the forms that are to be united in the one structure. What is the precise degree of similarity necessary for this purpose and what the precise limit of practicable variation we do not know; that will be a subject for much anxious future investigation, if the fact of an union of germs in the fœtus should be established. But it may be affirmed, as an assured condition of such a structural scheme, if it be the true one, that there must be a considerable resemblance in shape and character in the combining germs in order to produce such an union as would be necessary to the performance of the functions

of life. This limit, whatever it be, of divergence in form and character is the limit of hybridization. It is as difficult to understand why a mere influence, operating upon a single germ, should vivify it in one instance and not in another, as it is to discern how a mere aura could stamp upon a mere germ the face, the form, and even the mental characteristics of the parent. But the fact is obviously explicable on the assumption that the undoubtedly double body is the consequence of the junction of two germs, for, in such case, if the germs of the male and the female are not sufficiently alike to permit of symmetry of shape and unity of action, no junction takes place and production is impossible. It is just at this point that hybridising would cease to be practicable.

So likewise my suggestion explains perfectly the results of hybridism. The mule partakes of the characters of both of the germs of which he is constructed. The germ of the sire is developed, by means of the crossing nerve cords, under the influence of the Vital Force of the germ of the dam. The germ of the dam is vivified by the Vital Force of the germ of the sire. Those Vital Forces are again more or less mutually affected by their junction at the nerve centres whence they emanate. Thus, during the process of development there is a mingling of the characters and a modifying of the forms of both the germs, resulting in a structure whose characteristics are intermediate between those of the sire and the dam. Such is *the mule*. As the Vital Force of the one germ or of the other is the most powerful, so the character of that germ prevails in the formation of the conjoint structure, and the mule exhibits the more or the less of resemblance to either parent according to the amount of Vital Force contributed by germ derived from that parent.

Thus, also, we can discern why it is that mules are not fruitful. A mule is itself the product of two germs, differing in shape and character to the limit at which union is possible consistently with the exercise of vital functions. The union of two hybrid germs is impracticable because both are so far removed in unlikeness from the original type that they cannot form together a structure whose parts would be sufficiently alike to permit of the functions of life being performed by the exchange of nerve systems, which is the mechanism by which the unity of being is brought about. For, manifestly, the forms to be united must be such as would enable the entire nerve system of the one to maintain itself in perfect action in the other. The limit of modification of the nerve system is obviously very restricted.

This suggestion serves also to explain *variation* in form of the same species, and how it is to be distinguished from *hybridism*. The germ, say of the male, derives from him a special characteristic, bodily or mental. If that germ possesses more Vital Force than the germ contributed by the mother, it controls the united structure, which consequently bears more resemblance to him than to her, and is marked by the characteristics of the father. Suppose that in the next generation the germ of the mother prevails; the influence of the superior Vital Force of the mother stamps upon the offspring in that second generation some characteristics of the mother and more or less represses those of the father. Suppose that in the third generation there is again a change; that the Vital Force of the father predominates; then the characteristics of the grandfather, repressed in the father by the superior Vital Force of the grandmother, again crops out.

This is the precise state of things we witness in ourselves, by whom marriages are not contracted with the slightest reference to physiological results. But when we regulate the production of animals, over whom we have control, with sole view to the cultivation of special characteristics, how do we proceed? We select parents in whom the desired qualities of form or of disposition predominate, knowing that, as a rule, these will be reproduced in the offspring. We also know that by continuing a like course of careful selection we can cultivate those qualities to an extent, not unlimited, of course, but of which the limits have not been as yet ascertained. How may we explain this cultivation of character and form by selection of parentage? Surely it is not sufficiently accounted for by an imaginary aura or an unproved influence proceeding from the sire, nor by the theory of a modification in the shape of a mould supposed to be provided by the mother. Does not the suggestion I have made present a more reasonable and probable explication? The law seems to be that the character of the parent, *cæteris paribus*, is impressed upon the germ produced by that parent. We select two parents, one or both of whom possesses a certain desirable characteristic. If we can find that characteristic in both parents, so much the more certain will be the result. But if we cannot procure it in both, we are content to have it in one. Each parent produces a germ resembling itself. The two germs unite by some attractive Force, or some law of selection of which we are as yet entirely ignorant, exchanging their nerve systems. The characteristic, so strongly marked in the one parent and existing therefore in the germ of that parent, by the interchanging of the nerves modifies the structure of the whole. If both possess the same character, the double influence of both

parents operating upon the double germ will exhibit that character in a greater degree than it existed in either of the parents. But if the characteristic existed in one parent only, it will probably be exhibited in a lesser degree in the offspring than in the parent, by reason of the modifying influence of the other germ. When two or more animals are thus produced having the desired character, those so distinguished are selected to become parents in their turn. The character being now strongly impressed upon the germs of both the parents, the offspring is doubly impressed with that character, and manifests it in a still greater degree of development than either of its parents. Thus by regular stages are all the modifications of form and character brought about which we witness in domesticated animals whose production we control.

Thus it is, also, that, when man's regulating care is withdrawn, there is so speedy a return to the original type. Animals follow no such selection of their own accord. As with ourselves, their choice of mates is not determined by physiological considerations. Their natural preference appears to be for the natural type of their kind. It is familiar to all observers of dogs, for instance, that the highly bred will frequently refuse to associate with their fellows; they are often infertile and generally show a decided preference for the coarsest and vulgarest, that is to say, for the mate that most nearly resembles the natural type.

Very similar facts may be found in the vegetable world. The forms may be varied with ease by culture; but in two or three generations even the plants most changed in aspect and character will, if left to themselves, return to their original type. Into this part of the subject I cannot enter here, the present treatise having reference

to MAN alone. But I suspect that this suggestion of a double germ by the union of two distinct germs, each parent producing one, will be found on examination to be equally applicable to vegetable life, and equally capable for solution of the problems of Vegetable as of Animal Physiology.

Its application to Mr Darwin's theories of the Origin of Species and the Descent of Man is a question too large to be treated here. So far as I have been enabled to consider it, I can find nothing that conflicts with the conclusions of the great Naturalist, but much that goes to their support. I trust that any reader who may see in my suggestion something worthy of scientific thought will take it with him and pursue it through one or more of the many paths of Physiological and Psychological Science to which it will be applicable, if it be true. I ask, also, that such objections as may occur to the reader may be frankly stated, to the end that they may be fully considered and debated; removed, if worthless, or my suggestion summarily dismissed, if the objections should prove to be fatal to it.

For I do not close my eyes to certain difficulties that undoubtedly attend the theory of a double germ and which I am not prepared at once to meet by a sufficient answer. But this position is common to all new views of nature's operations. Cases can always be suggested apparently antagonistic to the theory propounded, and which are triumphantly wielded by opponents as overwhelming refutations. But when many minds are devoted to their consideration, solutions often present themselves by degrees, the difficulties disappear and the apparent divergencies, upon further acquaintance with the facts, prove to be evidence in confirmation of the theory which at first sight they seemed to destroy. A striking

instance of this gradual reconciliation of the facts of Nature with the principles of Science has been exhibited in our own time in the case of the Darwinian theory. Although opponents have advanced innumerable cases in which the facts seemed to be in disagreement with the theory, the cases that support the theory are so vastly more numerous that almost the whole scientific world has accepted the theory, satisfied that further examination of the apparent antagonisms will show them also to be subject to the same law and in perfect harmony with the other facts. For this reason I ask that my humble suggestion may not be summarily dismissed, because some cases may be adduced which it fails to explain, or which may even appear to be in opposition to it. I hope that a dispassionate consideration may be given to the theory, however strange and startling it may appear at first, because of the multitude of problems in Physiology which it solves and the reasonable and probable explanation it offers of so much that is doubtful and obscure. If these commend themselves to the judgment of the reader, I pray that he will at least suspend his decision until time has been given for a full consideration of the objections that may be started.

One of them will be that, although the frame-work of the animal structure is duplex, the internal organs are single; that we have but one heart, one stomach, one spleen, and so forth. But all the organs which we call single will, upon close inspection, be found to be constructed of two halves united. We have two brains distinctly divided on their surface, although the fibres below the surface, which are only nerve threads, pass from one brain into the other, thus effecting, not a junction merely, but an union. The tongue is obviously made of two halves. The heart is double. The stomach and the intestines are con-

structed of two parts of similar shape joined together. And so with the other organs, in all of which the same scheme of construction is to be traced. Even if it were otherwise, it would be no sufficient objection to the theory of a duplex germ, for the nerves of the two germs crossing and thus permeating and influencing each its partner germ, even to the extremities of the frame, meet at the point of junction of the two germs. At this point each of the nerve systems contributes its own share of Formative Force to the production of the central organs and hence the apparent singleness, but actual duplicity, of some of those organs. But I must not further pursue this tempting theme. The subject opens out a vast vista of profoundly interesting problems to which the theory is applicable, but the exploration of which I must leave to investigators more competent than myself to conduct it.

I repeat that I do not advance this theory of a double germ with any dogmatic assertion of its truth, for it is and pretends to be nothing more than a suggestion, which I offer as it has presented itself to my own mind, because I have found in it an explanation of very much of which no reasonable solution has yet been given. It seems at least to be supported by very strong external evidence in the undoubted fact that our bodily structure is made up of two halves that are not alike and that we are moved by two nerve systems that exchange offices, each vivifying, not the part to which it belongs, but the part to which it is united. The single germ theory does not account for this. A double germ explains it perfectly.

CHAPTER IX.

HOW WE DIE.

So long as the nerve system preserves its vigour and the organs it maintains and moves are unimpaired, there is no apparent cause why life should cease. If the machine could be kept in perfect repair, there is nothing in the visible structure to lead to the conclusion that there is any assignable limit to the bodily life of Man.

But, in fact, a man rarely, if ever, lives for a hundred years. The stories of a life protracted far into a second century are myths; at all events, positive *proof* of the asserted facts has been challenged and in no one instance has it been forthcoming.

Accident, disease, gradual decline and decay of the body—these are the three causes of death. A stricter definition might reduce them to two, for if accident does not destroy at once, it usually kills by impairing some part of the structure and producing disease. But here I use the term "disease" in its popular sense, as meaning a malady existing in the structure, not being the direct result of external violence.

We die when the nerve centre loses its power to produce Vital Force, or so fails to distribute it throughout the whole body that the organs whose business it is to repair the structure are disabled from performance of their functions. Whether we die through accident or disease, the process of death is the same—the nerve centre ceases to send forth Vital Force. This result may

be induced either by direct injury to the nerve centre, paralysing its action, or by cutting off the communication of the nerve centre with important parts of the body, or by degeneracy in the structure of the nerve centre itself progressing until it is unable to generate Vital Force of sufficient quantity or vigour for maintenance of the healthy condition of the frame which the nerves have constructed.

Rarely it is that the action of the nerve centre ceases from mere exhaustion. The far more frequent cause of its paralysis is the action of some poison either generated in the body or conveyed to a nerve centre by the blood into which a poison or the germ of a poison has been introduced. Expressed in another form of words, it may be stated thus: disease usually causes death by some poison that paralyses the nerve centre.

What is disease?

The question must have occurred a thousand times to every person who has ever reflected upon the great problems, Whence come we? What are we? How are we constructed? How do we live? How do we die? It is still a profound mystery. Physiologists and physicians really know very little about it, as proved by this, that they are ignorant of the manner in which medicine produces its effects. This ignorance is shewn in the strange fact that there is a fashion in medicine almost as fickle as the fashion in dress, which could not be if the practice of it were based upon settled principles and assured knowledge. The use of the microscope has revealed the changes in structure that accompany divers diseases; but Physiologists are as ignorant as the unlearned what it is that causes those changes of structure. I do not pretend to an accurate definition of that which has baffled the skilled investigator; I purpose nothing more than

merely to suggest an explanation, which I should be glad to see submitted to discussion.

To form any conception of what Disease is, it is necessary to consider what Health is.

In a state of perfect health, the nerve centre (or centres, if they be deemed to be more than one) produces an ample supply of nerve (or vital) force, which is distributed to every part of the body by means of the nerve cords acting as conductors. So supplied, each part of the body performs its functions perfectly, and without consciousness of its own action. The stomach dissolves the food and converts it into a fluid in which all the varieties of material contained in it are presented to the absorbents in a form that enables them to suck up such particles as are fitted for the growth or repair of the complex structure. Thence these particles are carried into the veins, where they become a part of that curious substance, the blood. In this form they are conveyed to every part of the body, and wherever repair is needed the nerves there placed take up from the blood the atoms required for the reparation of the injured parts of which they are in charge, deposit those particles in the very spot where they are wanted, and where they are converted into flesh, or bone, or other structure, as the case may be, by a process of combination or assimilation of which we have as yet but very imperfect knowledge.

The instrument by which this wonderful work of distribution is accomplished is the arterial and venous system. The blood is carried rapidly round the body and to every part of it by a complicated apparatus of tubes branching from greater to less until they are no bigger than hairs; thus pervading and feeding the whole frame, so that no part of it is unsupplied with portions of the stream of blood. Particles of this blood stream, attracted

by the action of the nerve force, filter through the walls of the minutest of the tubes (the capillary), and the particles thus abstracted and detained are the materials by which the growth and repair of the entire structure are accomplished.

But *how* is this done? Granted that the particles are caught and retained for use; *how* are they used? There they are; but how do they become flesh, bone, tendon, hair and so forth?

The *Vital Force* brought by the nerve threads does it all. There they are, thickly branching and clustering among and about those blood tubes, and embracing the very smallest of them. As the particles of the digested food pass along in the tubes, the nerve attracts and arrests them and by the power of the Vital Force assimilates them to the substance for which they are wanted.

We are wholly ignorant (and it is right that we should acknowledge our ignorance) of the process by which this assimilation is performed. Science has failed to discover, —indeed has not yet cared to inquire by patient and extensive observation and experiment—whether it is that the blood tube deposits upon bone only the particles that form bone, upon flesh only the particles that form flesh, and so forth; or if it be that the particles deposited are everywhere the same, but that, by the nerve force operating variously in each particular part, the particles there deposited are combined in the proportions necessary for the formation of the material there required. Or is it that they combine in obedience to some law of chemical affinity, like attracting like, precisely as when a solution is made of various salts? The particles of each salt, by some mysterious power of attraction, find out their fellows among the mingled mass, make their way through the throng and rushing together recombine and reform into

definite crystals distinct from the crowd with which they had been for a time commixed?

Or may it not be that the Nerve Force selects from the blood in the capillaries such particles as it needs for its own use in that part of the structure, attracting them through the walls of the capillary tubes, and *transmuting* them by the special Force we call Vital (to distinguish it from the Force that governs Chemical affinity) into organised matter, subjecting them to laws that differ always from, and often are in direct hostility to, the laws that govern inorganic bodies?

But, whatever the means by which the effect is produced, there is no question as to the result. When the nerve system is working in a condition of perfect health, growth is carried forward steadily. When maturity is attained, the waste of the machine is continually supplied by new particles deposited in the places of such as are used up, those new particles precisely resembling their worn out predecessors.

But what becomes of these superseded particles?

By a process almost more wonderful, they are carried back into the veins. By the stream of blood that is rushing through the veins they are rapidly borne to the great glands whose function it is to clear the body of its exhausted materials—notably, the liver and the kidneys—and, by the nerve force working in these organs they are again seized, combined, and converted into bile and urine and in these forms expelled from the body.

When the functions of repair with new material and expulsion of the old material are properly performed, the body is in the condition of perfect health.

What, then, is *Disease?* How do we sicken?

An immense amount of misconception prevails in the

popular mind, and is not altogether banished from the medical mind, as to the nature of Disease.

The common belief is that Disease is something distinct from the body itself, something intruded into the body from without, or generated within, but occupying the body or some portion of it as an invader, having a separate existence of its own, to be combated and driven out of the body by other foreign substances called medicines, or by the force of a treatment which is usually based upon the notion of *expulsion*. Put into this plain shape there will, perhaps, be some reluctance to acknowledge so grave a fallacy. But, although few doctors would admit that this is their conception of the nature of disease, it cannot be denied that the greater portion of the actual practice of Medicine is based upon such an assumption, and that the strange uncertainty and ever-changing fashions in that practice are due to some such fundamental error about the nature of disease as undoubtedly pervaded the whole science and practice of Medicine in days not very distant, an error which is as yet but imperfectly eradicated.

Before it is possible to form a clear and minute conception of Disease, before a foundation can be laid for a science of healing, before a judgment can be formed of any practice in Medicine, it is necessary to banish entirely the time-honoured notion of Disease as being an intruding stranger, at war with Health, whom it is the business of drugs to drive out of us, and we must learn to think of it as being no other than the nonperformance of its duty by one or more of the structures of which the body is constructed.

This failure may be the result of

1. Injury to the structure itself by some violence.
2. Failure of the nerve centre to produce a sufficiency

of nerve (or vital) force for keeping every part of the structure in complete repair.

3. Failure of some one or more of the nerve cords to convey the nerve force to its destination.

4. Failure of the organs of nutrition to discharge their duties of feeding the blood whence the materials for repair are extracted.

5. Failure of the organs of excretion to perform their functions of extracting the used-up materials and expelling them from the body.

All diseases may be arranged in these five groups. But it will be found on careful examination that many disorders supposed even by the Physicians to be those of the nutrient or excretory organs, or of the muscular tissues or bone structure, are really disorders that have their seat in the nerve centres or in the nerve branches.

1. Injury by violence is not in itself disease, but it is usually the cause of one or more of the diseases that come within the succeeding classes.

2. Failure of Nerve or Vital Force. This is what is known as general debility. The nerve centres failing to produce the requisite quantity of Vital Force, the functions of all the organs are of necessity feebly performed. If this failure be long continued, specific disease attacks one or more of the organs and death is thus the result. It happens rarely that death is caused immediately by general failure of Vital Force, except in old age. The process of death in this manner is very slow, and other more rapid maladies usually intervene to anticipate the natural course of the decline.

3. Failure of some or all of the nerve cords to perform properly their part of conveying the nerve force. This comprises an extensive class of diseases. The action of the nerve centres may be perfectly healthy and abun-

dance of Nerve Force may be produced; but if the nerve cords fail to carry it to every part of the structure, the part so deprived must languish, alike from want of repair and from the deleterious effects of imperfect excretion. The used-up particles linger long after their services are completed. They lose their vitality. They become dead matter inclosed in the living structure. The Chemical Force seizes upon and decomposes them. They impede the action of all the surrounding parts. They press upon the blood tubes and the nerve threads, and irritation, ulcers, and neuralgic pains are the result. This occurs when the lesser nerve threads are damaged. If the greater ones are injured, we have paralysis—which is the failure of the nerve cord to convey the Will from the brain to the muscles—and epilepsy—which is an irregular flow of the nerve force—and all the formidable maladies of that class. If the obstruction be of the nerve cords that convey vitality to the organs of digestion, secretion, or excretion, we have the long list of diseases arising from the functional disorder of these organs; and if the cords that perform the telegraphic work of the senses are enfeebled in their action, the consequence is the failure of the senses to send their impressions truly to the brain.

Obviously the remedies for all diseases having this as their primary cause must be directed to the removal of the cause, and the care of the doctor will be given, first to ascertain as nearly as he can where the obstruction occurs, and then to inquire into its nature;—if it results from pressure producing an imperfect paralysis, or from lesion, or from degeneration of the nerve cord itself. By far the most frequent cause of this disorder of a part only of a nerve system that is healthy at the centres, is pressure produced by swelling of the muscular structure

through which the nerve passes. The remedy is the removal of the obstruction by reduction of the swelling, so as to relieve the nerve from the pressure that had partially impeded its operations. But the evil effects of that impediment to the full and regular flow of the Vital Force is not limited to the immediate seat of the obstruction; it extends to all the branches of the weakened nerve that spread beyond the seat of injury. They are enfeebled also and to that extent rendered incapable of performing their functions, whether they be those of secretion, or excretion, or of keeping in proper action some important organ. The precise seat of the mischief is often difficult to be discovered, and, frequently being deeply lodged, the remedies are difficult to be applied. But in medical science it is important to know where and what disease is, even although it be out of reach. Where the obstruction is the result of organic lesion or degeneracy, medical skill can do nothing but alleviate suffering and soothe the inevitable journey to the grave.

4. Failure of the organs of nutrition to perform their functions and supply to the blood the necessary material for the repair of the structure.

The causes of this class of diseases are usually to be sought in the nerve centres. These organs require for the perfect performance of their functions a much greater quantity of the Vital Force generated at the nerve centres than is demanded by other parts of the structure. Hence a comparatively slight depression of the central power is speedily and severely felt by the digestive organs. Exhausting exertions and passions show their effects in the pain of indigestion, if food be thrust upon the languid stomach in despite of the intimation given by the absence of appetite that it is not welcome.

The remedy for this class of diseases also must be

directed to their source. The stomach, feeble for want of a due supply of vital force, is only made irritable and less fitted to perform its functions, by drugs addressed solely to the stomach. The only possible cure is by treatment directed to the restoration of the flow of Vital Force. Until this is accomplished all other supposed remedies only increase the mischief they were designed to arrest.

5. The same causes and the same direction of the remedies apply to all the diseases that are connected with the organs of excretion. Their action also is not mechanical, as many persons otherwise well-informed appear to believe; it is dependant wholly upon the power imparted to them by the Vital Force. Their diseases are perhaps more often accidental than are those of the other organs, meaning by this that they are the result of local lesion, and not of nervous depression. But the skilful doctor always looks to the source of action for a cause, and if local injury be not apparent, he inquires carefully into the condition of the nerve centres and then into that of the nerve cords; and if they or either of them should be found working feebly or irregularly, he directs his remedies to them, satisfied that, if he can restore them to healthy action, they in their turn will speedily restore healthy action to the functions of the organs.

Science is entirely ignorant of the process by which the Vital Force is generated in the nerve centres, or transmitted by the nerve cords. It knows only that these are the instruments by which the machine is maintained in that automatic action which we call LIFE. But whatever may be the nature of the Vital Force, or the process by which it is distributed, there is no doubt of the fact that, so long as the flow of the Vital Force continues unimpeded, the result is *Health;* if it be obstructed, *Disease;* if it be suspended, *Death.*

And why? The Vital Force is necessary to the arrest and assimilation of the nutrient particles supplied by the organs of digestion, and equally to the removal of the used-up particles from the structure with which they have ceased to be organically compounded. If the supply of new particles is cut off, the body perishes from inanition; it is starved to death. If the Vital Force is, from any cause, too feeble, the nerves are unable to convert the deposited new particles into flesh, or to remove the used-up particles, and in either case there is a consequent accumulation of foreign matter which, by the irritation it causes, produces the great majority of the diseases that show themselves in the shape of sores. In the flesh it becomes ulcer; in bone, necrosis; in a gland, tubercle—all of these being either unconverted food or unremoved excreta.

The source of all diseases of this class should be sought, therefore, not in the locality where the symptoms show themselves, but in the more distant first cause—the failure of the nerve centre to produce, or of the nerve cords to convey, to the whole frame a sufficient supply of Vital Force for the performance of the vital functions, foremost of which is that of assimilating foreign materials to its own structure by the conversion of the particles attracted from the blood into flesh and bone, and throwing out and carrying off the used-up materials.

The cure of this class of diseases is to be sought in stimulating the nerve centres to an increase of Vital Force, or the removal of obstructions to its flow, as the case may be. Remedies applied to the diseased organ do not cure, though they may relieve pain. Yet how much of medical practice proceeds upon the erroneous assumption that the diseased organ is alone or principally to be treated, and omits to trace the disease to its origin

in the centre where Vital Force is generated and whence it is radiated by the nerve cords.

From this brief outline it will be seen that the vast majority of diseases have their source in the failure of the nerve system to supply a sufficiency of Vital Force or properly to distribute it. A skilful Physician, recognising this fact, directs his first inquiries to this point; and if he here finds the defect, he applies his remedies to the true seat of the disorder, instead of wasting time and effort in the treatment of results.

But the maladies produced in parts of the frame by insufficient supply of Vital Force react upon the nerve centres. The imperfectly assimilated material for the structure of flesh or bone being deposited in the unvitalized and therefore perishable form of pus, decomposes, is absorbed, re-enters the blood and poisons it. The poisoned blood permeates the brain and clogs its action; the liver is congested, and incapacitated for its proper service; the nerve centres are partially paralyzed, and further incapacitated for the production of Vital Force. What is the rigor that always attends the formation of pus but the poisoning of the blood by its absorption, thus irritating the nerve centres and through them all the vital organs. The presence of the poison causes an instant effort for its expulsion, and hence the fever that follows the rigor. But these efforts are limited. If the mischief be not speedily removed, the blood that should convey the food of life conveys only a cause of death, and the end is certain and soon.

So it is if function only is affected. The performance of function by an organ is due to the stimulus of the Vital Force. Lessen or withdraw the stimulus and function flags or ceases. If the function is performed imperfectly, the result is a further diminution of the

nerve force through the depression of the nerve centre. Take the process of digestion for an instance. It is the function of the stomach to dissolve the food and prepare it for submission to the glands, by which the nourishing particles are sucked into the blood. If Vital Force fails through imperfect action of the nerve centres or nerve cords, the process of digestion is imperfectly performed; this reacting on the nerve system, the Vital Force is further enfeebled, and so from bad to worse, until death comes to us in *this* form.

Disease and debility of body are for the most part followed by a decline in the mental powers. It is probable that disease, as distinguished from accident, never exists without disturbing the action of the nerve centres and diminishing the production of Vital Force. But, although the mind is so far yoked with the body that it cannot escape entirely from the influence of the body, and is more or less affected by its ailments, there is abundant evidence that the mind has immense power over the body, and not only can to a great extent control disease, but can even arrest decay. It is a familiar fact, that a firm belief in an alleged curative agent will in many cases effect the desired cure, especially in the instance of diseases resulting from irregular action of the nerve system. The process by which this apparent miracle is performed will be fully described in a later chapter. In this place it is sufficient to note the fact, in proof of the assertion now before us, that the mind can and does influence the condition of the body. The sustaining power of Hope has rescued many a patient from impending death, and the depression of Despair has extinguished many a life that the disease itself would have spared. There was profound philosophy in the living statesman who said that he had not time to be ill. His

mind had no leisure to dwell on small ailments and magnify them by thinking. But this was not all the good he gained by his busy brain. The exercise of the mind was in itself a positive benefit. The stimulus to the brain was communicated to the nerve centres with which it is in such close communion, and the consequence was an increased production of Vital Force, which, conveyed by the nerves to all parts of the structure, caused every function of every organ to be more perfectly performed, and this is the condition of—Health.

So it is with the decline of the body in old age. The power of the mind can successfully combat that decline and defer, though it cannot prevent, the decay of the structure. Longevity is promoted by mental activity. Mental indolence shortens the term of life. It has been remarked of men who retire from business to enjoy rest and leisure, as they had thought, that they do not live long to taste of this anticipated enjoyment. In truth, they die of indolence. The brain rusts for want of use. The nerve centres lack the stimulus to which they have been accustomed. They fail to produce enough of Vital Force to keep in healthy action the various vital functions. Disease establishes itself in the weakest organ and the Life itself is easily and rapidly extinguished.

Where the activity of the brain is preserved by regular, but not excessive use, by distributing the exercise over the various mental faculties and avoiding, so far as possible, the exclusive employment of a few of them only, the natural progress of decline and decay may be impeded, though it cannot be altogether arrested. Long after the body begins to fail the mind will not merely preserve its power, but will grow in power, and the intellect is often seen in its vigor when age has dimmed the senses and enfeebled the frame. It has

happened not unfrequently that the mind has continued clear and vigorous to the last hour of a life protracted through a long old age of slow decline, until the machine it moved and directed had become entirely worn out: a fact from which we shall presently see that something may be concluded of vastly more importance than even the lengthening and strengthening of the life of the body, which is the theme to which this chapter is devoted.

Accidental injury to the body may extinguish life; but even in such case death is for the most part caused either by the shock paralysing the nerve centre, as in the case of concussion, or by exhaustion consequent upon the loss of the material for repair, or, as is the most frequent process, by blood poisoning consequent upon the absorption of decaying matter.

We die, therefore, when the nerve centre ceases to produce sufficient of Vital Force to keep the vital organs in vigour for the performance of their functions, or for repair of the waste of the body that is ever going on, or for carrying off the wasted material. The act of death is the ceasing of the nerve centre to produce Vital Force. If the flow of that Force to any part of the body is partially obstructed, that part fails in function and in substance. If the Vital Force is in any part of the body wholly obstructed, that part dies. Part after part of the structure may perish thus before the nerve centre ceases to live. We are, indeed, entirely ignorant of the precise process by which the death of the nerve centre is brought about, nor can the most skilful discover the very moment of that death. The body may be dead in appearance and in fact, by reason of the failure of the supply of Vital Force, and that supply may be cut off by reason of some obstruction in the nerve cords, but the nerve centre may continue for a time to live and to

produce Vital Force. Again, the Vital Force may be so feebly produced by the nerve centre as to be insufficient for the supply of the frame, which would in such case die, while the nerve centre may continue to live after the rest of the structure is dead.

But such life is very limited. The process of death is also a process of decay. Some parts of the structure die before others. The blood is rapidly laden with particles from the dead parts, and in the vast majority of cases the poison of putridity operates, in some manner as yet unknown, to extinguish life by paralysing the nerve centre and altogether preventing the production of Vital Force.

Then, the Vital Force ceasing, the structure which it sustained by its own power, under the control of the Organic Law, forthwith falls again under the dominion of the Inorganic Laws. The chemical combinations, suspended by the Vital Force, instantly upon that Force being withdrawn resume their sway, seize upon the atoms of which the body was builded and recombine them according to their affinities as governed by the Inorganic Laws. That which was flesh, and blood, and bone, and tendon, becomes again a gas, an earth, a mineral, bearing no resemblance whatever to the substances into which the Vital Force had converted it. What it was before it formed a part of organic matter into that it is once more resolved.

The transformed particles of the lifeless frame scattered about in various new combinations in due time are again absorbed by vegetable life, in this shape are eaten and absorbed by animals, who are eaten and absorbed by men, or the man may directly absorb and assimilate the vegetable.

Thus the great circle of change moves on majestically

through the ages; but it is a change of form, not a change of being; a change of individual, not of collective, identity. Matter passes from subjection to the Inorganic Laws into the kingdom that is under the reign of the Organic Laws. There it is brought again under the sway of the mightier Force of the Laws that govern the development of Life. The self-same particles of matter are mineral to-day, vegetable to-morrow, animal the next day. That which is our living fibre now may be dead earth a few hours hence. There is a germ of scientific truth in the fable of Pygmalion. The marble statue *may* become human flesh. The matter of which the Man is sculptured *may* become marble.

But the material MAN has in him something that commands and controls the material structure, something that seems to hold over it a "sovereign sway and masterdom"—THE INTELLIGENCE.

Can it be that this Intelligence is nothing but the mineral, the earth, the gas, that were a man once and will be a man again? *Is* there not something that builds the structure with these materials, and *is* not that something of a higher nature, having a nobler destiny than the material itself?

We will consider this great question presently. In this chapter I have endeavoured only to describe briefly, but I hope intelligibly, *how we die*.

CHAPTER X.

HOW WE ARE MOVED.

I HOPE the reader has now in his mind a tolerably clear conception of the human machine; how it lives, how it grows and how it dies, so far, at least, as science has yet advanced in the exploration of this neglected region of human knowledge.

I ask him now to contemplate this complete structure precisely as he would survey any machine of human contrivance in a state of rest before the motive force is applied to it. Let him picture to his mind's eye such a being as I have suggested at the beginning of this book, perfectly formed, complete in all its parts, but as yet untouched by the motive power—as is the machine before the steam engine is at work. Let him imagine this structure to be suddenly set in motion by some Force applied to it from without or from within.

The motive Force that thus operates upon the structure of organized beings is certainly not any one of the Forces by which motion is produced in inorganic matter. It is not an external mechanical Force. It is not the Chemical Force. It is not the Magnetic Force. It is not the Force of Gravitation. It acts in opposition to all of these Forces, and in a manner peculiar to itself.

It may be that this Force is only one form of the one Force by which the Universe is constructed and supported, presenting itself to our perceptions in changed shapes according to the conditions under which it is

exhibited. Therefore, when I say that the Force that moves and governs organic structure is not identical with either of the other known Forces of nature, I intend only that in its action, which is the sole perception we can have of any force, it differs distinctly from the actions of the other Forces, and that for all practical purposes it is necessary to recognise it and treat of it as if it were a distinct Force—although, in fact, it may be only a different form of Force.

To this Force has been given the appropriate name of the VITAL FORCE.

So long as this Vital Force is operating upon the structure, it lives; when the Vital Force ceases, the structure dies.

The proofs of the presence of Vital Force are self-motion and self-construction.

The Vital Force appears to flow from a nerve centre, and to be distributed to all parts of the structure by the nerve system.

It may, therefore, be taken to be identical with what is sometimes called Nerve Force. This, however, must be understood as only a probable conjecture; it is not proved. But it will be convenient to prevent confusion by treating them as one Force, and for the purpose of psychological investigation their identity may be assumed.

Suppose, then, the nerve centre to be the fountain of the Vital Force. Suppose the nerve centre to be suddenly summoned to life—that is to say—called into action. What would be the course of its action, and how would it operate upon the organic structure, whose independant existence it is its mission to maintain?

The Vital Force, carried by the nerve cords to every part of the structure, calls into instant action every

function of the frame. Stirred by that Force the heart beats: the stagnant blood is driven, by the powerful pumping of the muscular heart, through the blood tubes which are the feeding pipes of the frame. The lungs expand and contract, aerating the blood as it flows through them. The stomach dissolves the food conveyed to it. The glands absorb many of the nutrient particles of that food, as in their state of solution they pass over them. Every act of life being attended with some waste of the structure, the blood in its flow carries to every portion of the structure particles of the absorbed food, where the Vital Force borne by the nerve threads seizes upon them, and by new and unknown combinations converts them into the material required in the various localities, flesh here, bone there, tendon elsewhere, and so forth. The particles that have performed their office, removed by the same Force, are again carried into the blood, whence they are extracted by the liver and the kidneys, and perhaps by the spleen, to be expelled from the living frame by the conduits provided for the excreta.

All of these are involuntary actions, proceeding without rest or pause, night and day, from the first access of life to the moment of dissolution. The perfect performance of these functions is HEALTH. Their imperfect action is DISEASE. The ceasing of them is DEATH.

But in addition to these involuntary actions, the being we have thus conceived as suddenly called into life, with the machinery of his structure mature and perfect, exhibits motions that appear to be under the control of some INTELLIGENCE.

These are not uniform. They commence and cease irregularly. Sometimes they are wholly suspended. It is manifest, also, that they are not effected by any force operating from without. The power is within. It is

influenced by external circumstances, but it is not derived from them nor controlled by them. On the contrary, it controls them.

What is this internal Force that thus directs the actions of all that portion of the structure not devoted to the functions necessary for the support of life?

It is called THE WILL.

What is the Will? Again we must confess the ignorance that makes Psychology the shame of Science. We are conscious of the presence of the Will; we know when we use it; we can almost measure its power. But what it is, where it resides, how it works, we are wholly uninformed. In certain conditions, to be fully reviewed hereafter, the body can act without the Will, and even in opposition to its commands; but in its normal state the body is the servant of the Will, obedient to its dictates borne to the muscles by the nerves.

The Will appears to be formed in the brain, and its commands appear to proceed from that organ. But the brain is the seat of Intelligence, and therefore it has been contended that the Will is not a distinct entity or Force, but only the action of the Intelligence itself. This may, I presume, be taken as meaning that when the Intelligence forms a wish the muscles contract in accordance with it by the direct action of the brain upon the nerves that move the muscles, without the intervention of any other power possessing a general control over the entire frame and by which its action can be directed. In popular phrase, this theory substitutes *a wish* for *a will*. But THE WILL, as here contemplated, is much more than mere *wishing*. It is a *command*.

Of this there are many proofs, which will come to be more fully considered in a subsequent part of our treatise. That the Will and the Intelligence are not identical is

shown by the fact that their action is often severed. The organ of the Intelligence, the brain, frequently acts without the assistance or even the knowledge of the Will—as in sleep, in natural and artificial somnambulism, in the state of insanity, and in many conditions of disease.

By what process then is the work of the Will performed?

We desire something to be done by the machinery of the body. Forthwith the WILL, whose seat seems to be in the brain, possibly in the ganglion at the base of the brain, issues its command, which is carried by the nerve cords to the part of the structure whose action we had desired to direct. By the stimulus of the nerve force thus set in motion, the proper muscles for producing the wished-for action are made to contract or expand and instantly the limb moves as it was bidden to move. We know that this is the course by which, at the command of the WILL, an instantaneous action follows the formation of a wish. We know also that a multitude of actions necessary to life are performed without the control or consciousness of the Will. But what the power is we call the WILL; by what process it governs the machinery, and what relation it bears to the machine it partially controls, we have as yet no knowledge and, truth to say, have made very weak endeavours to learn by that patient collection of facts and trial of experiments by which alone science can be successfully pursued. Of ingenious speculation, conjecture, and *à priori* reasoning, there has been too much.

We know that so long as we are in sound health the Will is obeyed. But when disease assails the brain where the wish is formed, or the nerve centre where the nerve force is generated, or the nerve cord that carries

the command—the limb fails to answer the dictate of the Will. This is the condition so painfully familiar to us by the name of Paralysis—which is the more or less perfect severance of the connection between the Will and the machinery of the body which it controls in health.

But it is not sufficient that the Will should command, the nerves convey the command, and the muscles obey, the Intelligence must also be informed if the order has been obeyed. Accordingly, on the instant that the muscle has obeyed the Will a message comes back to inform the Intelligence that the work has been done. How this message is returned Physiologists are not agreed, and they are entirely ignorant how the fact is communicated to the Intelligence. Some Physiologists have arrived at the conclusion that a distinct nerve cord is incased in the nerve cord that carries the message from the brain to the body; but this suggestion does not go far towards solution of the problem. May it not be that the process is somewhat analogous to the action of induction in electricity? If, as the latest researches appear to establish, more than one nerve cord is inclosed in the same sheath, is it not possible that when one nerve cord conveys a message (by impulse of its molecules, for it is nothing more) from the brain to the body, a contrary current of nerve force is set up in the adjacent cord, and thus the brain is informed that the operation is complete? Is not this the true meaning of that reflex action of the nerves the discovery of which explained so much, but which was itself inexplicable. If this theory be rejected by Physiologists, there is another that may be deemed not unworthy of their regard. It is certain that two distinct nerve operations are necessary to the completeness of every act commanded by the brain to the

muscles: first, there is the conveyance of the impulse; second, there is the information carried back from the muscle to the brain that it has obeyed the direction so given. We are conscious of the command, and we are conscious of the obedience to it, although ignorant of the process by which either is performed. We are certain of this only, that the nerve cord is the medium of communication between the brain and the body. The nerve cord is composed of particles, as is the rest of the structure, and these particles do not touch each other. When the message passes from the brain, may it not be that the molecules of the nerve are by the Force thrown out of their places in the direction of the Force, and that the reflex action is merely the rebound of the separated molecules to their places when the Force has passed.

All this, however, must be distinctly understood by the reader to be merely speculation. It is not knowledge, for we do *not* know.

CHAPTER XI.

THE SENSES.

Besides these communications, by help of the nerve cords, between the brain and the structure whose motions it directs, and which have relation to the world within the structure, some special contrivance was required for communication with the external world. The Will might command the hand to be raised to the head; the nerve cords might convey that command to the muscles; their necessary contraction follows and a message is carried back to the Intelligence that the command has been obeyed and that the arm has moved accordingly. We are conscious that we have moved the arm in obedience to a *wish* and a Will. But by this process alone we should attain to no knowledge of the world about us; nothing of the forms, colours, sounds, motions, that are taking place on all sides of us during every moment of our lives would be revealed to us. If we had an intellectual notion of the outer world, we should have no sensible perception of it, nor could we communicate with it in any manner, were it not for certain special perceptive faculties that have been bestowed upon us purposely to enable us to hold communication with the world around us. These special faculties are called "the Senses."

The recognised senses are in number five. The purpose of all is the same—to enable us to learn something of the world that is without us, to receive communications from it, and make communications to it.

The five senses are called the senses of Sight, Hearing,

TOUCH, SMELL, and TASTE. Each of these senses communicates to the brain a distinct and peculiar sensation, notifying the presence of the object, and which sensation is indicated by the expression, "I see it," "I feel it," and so forth.

Each of these senses has an apparatus of its own for receiving and conveying the impressions made upon it. This apparatus is employed exclusively in carrying the impressions from the place where they are made by the external object to the Intelligence within. They are not much, if at all, under the command of the Will which, in a healthy condition of the body, can neither prevent nor control the conveyance of an impression made upon the senses.

All that we really know of the connection between the impression made upon the senses and the acceptance of it by the brain is, that the result follows in immediate sequence; but how the impression is received, or how transferred to the brain, we are wholly ignorant. For an instance. A complicated picture is actually painted upon the retina: the nerve in contact with it receives the impression of that picture; the other extremity of that nerve is in the brain; the impression made at the end that touches the eye is transmitted to the brain end. So far this process is not difficult to understand. But now comes the mystery. How does the brain receive by transmission through a string the transcript of a varied picture, so that the whole is vividly seen by the mind's eye—that is to say, is pictured to our contemplation as it was actually painted upon the retina. Here is a problem whose perplexity only grows the more we think of it. The philosophical explanation is, that what we call colour is merely a mental impression produced by the beating against the optic nerve of a vast number

of small waves of light, the various colours being caused by more or less rapid vibrations. These vibrations are communicated to the molecules of which the nerve is composed, and by them they are conveyed to the brain, producing there a similar action of which we are conscious and on feeling which we say, "I see a blue, or a yellow, or a red object," as the case may be. But there is still a link wanting to the completion of the explanation. The brain receives the vibration from the molecules of the nerve; but how do I, the conscious individual, receive from the brain the communication thus made? Physiology explains the former process; but it is the province of Psychology to ascertain the latter. As yet it has failed to do so.

Each of the Senses is designed to bring to us an impression of a special kind made upon us by certain portions of the external world. As the sense of Sight conveys the colours and shapes of objects not in actual contact with it, so the Touch carries to us a sense of the shape and substance of things with which it is in actual contact. Sound is a peculiar sensation produced by different waves of the air impinging upon the tympanum and causing it to vibrate, the vibrations thus communicated to the molecules of the nerve being carried to the brain, in like manner as with the waves of light. Smell and Taste are sensations excited by the impinging of extremely minute particles of matter upon the appropriate nerves.

But these five Senses can carry to us perceptions of a very small portion indeed of the creation that is external to ourselves. We know how large an amount of intelligence is lost to us by the deprivation of any one of the Senses, and we may, to some extent, measure by this the amount of intelligence that would be added by the

addition of another sense. There is no reason whatever to suppose that no other sense exists in creation or in the animal world about us, or even in ourselves, than the five with which man is admitted to be endowed. It may well be, and hereafter I shall endeavour to shew it to be probable, that the animal world possesses one or more senses that man has not, or which are latent in him, reduced to mere rudiments, save in certain exceptional cases where they seem to crop out under abnormal conditions. It is equally impossible to assign a limit to the number of senses that may be gradually expanded in man, if there be truth in the Darwinian theory of perpetual development and progress.

On the other hand, it must in candour be admitted that we have no positive assurance of a direct relationship between our Senses and the external creation as it is in reality. Our knowledge of the outward world is conditional only, and the conditions are in ourselves. Impair one of the nerves that carry the impressions of the Senses, and quite a wrongful idea of the object would be imparted to us. We cannot even be sure that any two human beings receive precisely the same impression of the same object. Noting this, some philosophers have gravely argued that each individual man is his own world, for, his conceptions being such only as he derives from his senses, which are admitted to be very fallible, he receives an idea only and not a fact. The argument cannot be answered for lack of positive proof. But the doubt is of no practical importance to us. All of us agree in thinking and acting towards ourselves as well as others in the confident assurance that our Senses tell us truly, and that there are other things than ideas. No philosopher maintaining the doctrine in argument would dare to act on his own theory.

At all events, for the purposes of the present inquiry I shall assume that there is in nature a world external to ourselves, of which when in health our Senses give us tolerably correct impressions, but with an admitted liability to error which should teach us to be cautious in receiving, and extremely careful in testing, the evidence of the Senses.

Besides these five Senses by which we are informed of some portion of the world without us, there are two Senses that give information to the man through the brain of what is going on in the machine of which the brain is the director.

These are the senses of "PLEASURE" and "PAIN."

When all goes well with the machinery there is a sense of calm and continuous satisfaction very different from that vivid enjoyment to which the name of *Pleasure* is given by the unreflecting. This sense of satisfaction results not alone from the healthy performance of all the vital functions, but from the exercise of all the faculties of the mind as well as of the body. The active use of the limbs is pleasure; so is the moderate indulgence of every mental emotion, of every intellectual faculty. Mere existence, if unattended with pain, is a positive pleasure. Death is never desired, save as an escape from pain, mental or bodily.

The Sense of PAIN is the consciousness of something going wrong in the machinery of the body. The obvious purpose of this Sense is to give warning to the Intelligence of the presence of the mischief, that it may direct its attention to the removal of the cause. But for the notice so given, and the check imposed by Pain upon heedlessness, the human machine would speedily fall out of gear and dissolution would occur before it could be known that any part of it was damaged. True, that the

amount of Pain is not always proportioned to the amount of injury it notifies, and of the reason for this irregularity we are at present wholly ignorant; but it may be affirmed that Pain is never present without the presence also of some mischief in the structure. If we took more heed to these warnings of Pain, and were better instructed as to what they indicated, and how we should proceed to remove the offending cause, the health, and consequently the happiness, of mankind might be vastly improved. It is neither needful nor possible that every person should master the science of Physiology; but all might learn enough of their own construction, of the functions of its various parts, and of the general laws of health to which they are subjected, to know how best to keep them healthy, and to restore them to health when injury has been inflicted.

Pain (I am treating now of bodily pain only) has three marked distinctions, known to every reader as the *ache*, the *smart*, and the *spasm*. The character of each cannot be described in words, but it will be at once recognised by the Intelligence. The *Ache* appears to be produced by *pressure* upon a nerve; the *Smart* by *severance* of a nerve; the *Spasm* by abnormal *irritation* of a nerve producing involuntary contraction of the muscles with which it is connected. Of these the hardest to bear is the Ache, because it is continuous, and there is no relief but removal of the pressure that is its cause. Smart and spasm are more severe during the paroxysm, but usually there are intervals of cessation which, if but momentary, make them more tolerable than the wearying agony of a continuous ache.

But it will be necessary to look somewhat more closely into the office and action of the Senses, and therefore we will proceed now to examine each one of them separately.

CHAPTER XII.

OF THE SENSE OF SIGHT.

THE Sense by which we obtain the most extensive knowledge of the world without us is SIGHT. Our perceptions of sound are limited to vastly lesser distances than our perceptions of the objects of vision. The Sense of Hearing is more restricted in its range, receiving and distinguishing a less number of impressions at the same instant of time. The senses of Smell and Taste are still more limited than that of Hearing, and the sense of Touch is very nearly, if not quite, confined to that which is in contact with us.

The function of each Sense is distinct, with the possible exception of Taste and Smell, which have something in common and are very closely associated. Each Sense conveys to the brain a different class of impressions. No sound will carry to the mind an accurate conception of an object of sight. Neither Taste nor Smell gives to us any notion of the form or colour of the thing that causes the sensation. Touch cannot tell the hue, the scent, the taste, nor the relationship of the thing touched to other things not in contact with the nerve. It is impossible that a person wanting either of the senses can enjoy as accurate an intelligence of the existences external to himself as he who possesses all his senses. No cultivation of the other senses can altogether compensate for the absence of any one sense; the patient must ever be an imperfectly

developed human being. Education of the remaining senses may do much to improve his condition, but

"Wisdom at one entrance quite shut out,"

the mind remains in partial darkness, the conceptions of the external world are defective and the Intelligence is restricted accordingly.

If one could conceive of a man coming into the world deprived of all the five senses, what sort of a creature would he be?

Without raising the vexed question of innate ideas, it may be affirmed that his Intelligence would be a perfect blank. No communication could come to him from any person or thing external to himself, and he would be unable to impart his thoughts and sensations, if he had any, to others. He would move merely as a machine, urged by impulses from within to a limited series of actions, but wholly wanting in the materials requisite for reflection or for fancy.

Give to such a being but one Sense and instantly subject matter is supplied for the Intelligence to employ itself withal. Restricted though the range of his knowledge must be, still it is an immeasurable advance from the previous blank. If this gift be Touch, he receives ideas of form with which to exercise memory, reason and imagination. If it be Sight, what a world of wonders has opened to him! If two Senses be bestowed upon him, how will his knowledge expand! If three, if all, be imparted successively, what words could adequately describe the increase of his enjoyments, the growth of his intelligence, the store of material for infinite combinations of thoughts thus supplied from so many sources with the knowledge necessary to the expansion of the Mind within and the extension of its acquaintance with the world without.

The Eye is the external organ by whose aid the sensation is produced to which the name of Sight has been given. All we *know* of this organ is, that when it is exposed to the rays of light they pass through a hole in its centre where lies a lens, behind which is spread a small screen upon whose surface the objects from which those rays of light proceeded are depicted in miniature. From this screen a nerve cord runs to the brain and unites the screen at one end with the Intelligence at the other. By this nerve the impressions made upon the screen are carried to the brain, probably by motion communicated to the molecules of the nerve, each colour and shade of colour (as is surmised, for we do not positively *know*) producing a different rate of motion of the molecules and consequently a different series of impressions upon the brain. It is to the sensations caused by these various motions that we give the names of the various colours and forms. Hence it is that we do not really perceive the object itself. All that the mind perceives is a variety of sensations caused by the impression of the picture on the retina, and only experience informs us that the picture so painted is an image of objects actually existing without us.

This, briefly stated, is the outline of the process by which we obtain our knowledge of so much of the world outside ourselves as comes within the radius of the eye and is cast upon its screen.

Whatever impedes the action of any part of this apparatus limits to that extent the power of the Sense of Sight. If the lens is dimmed, the objects are imperfectly painted on the screen. If the screen is faulty, no picture at all, or but a partial one, or a distorted one, is painted upon it. If the nerve is impaired, it will cease to carry the impressions from the screen to the brain;

and if the brain is disordered, it will fail to receive the impressions from the conducting nerve or to communicate them to the Intelligence.

When we say that "we see" an object what do we intend by the expression?

We thereby affirm, not only that there is existing without us something that is capable of being perceived, but our belief that the object is in fact that which it appears to us to be. We know it to be because we see it.

But, although there is the very strongest presumption that the impression upon our Intelligence is a reflex of the actual, it is yet necessary to correct conceptions of Psychology that we should keep clearly in our minds the truth, that this correspondence between the images within us and the world without us is only conjectural and neither proved nor capable of proof. We suppose we see the stars. In truth we do nothing of the kind. All we can positively assert is that a certain impression is made upon the Intelligence by a series of motions of the molecules of the nerves and the brain, which motions produce the sensations of roundness, light and colour, to which group of sensations we have given the name of "star." We are compelled to believe that the impression upon the mind thus made corresponds with some external object, and our own innate belief in the reality of that which causes the sensation is confirmed when we find that other persons, turning their eyes towards the same spot, receive impressions which they describe as precisely resembling our own.

The brain procures the greater portion of its knowledge of the external world through the eye. But if that organ or the nerve that links it with the brain be disordered, faulty or even wholly false impressions may be made

upon the nerve, or right impressions on the eye may be wrongly carried to the brain, which may thus receive impressions never painted on the retina, and give to the Intelligence information that has no corresponding reality in the external world. The same result would follow from a disordered brain, which might receive right impressions from the optic nerve, but convey those impressions distorted and disguised to the Intelligence.

Although it is right and necessary to recognise the fact that the sense of Sight does not of itself prove the existence of an external world, nevertheless, the information it conveys raises the strongest presumption of the reality of a creation other than ourselves, and of its correspondence, so far as Sight extends, with the impressions brought by that sense. At all events we are constrained to accept the conclusion and to act upon it, and it suffices for every practical purpose of our existence to act and think in the implicit belief and confidence that there are things without us answering to the impressions made within us.

To some extent this conclusion is confirmed by the other senses. For instance, the eye pictures a gun; the ear receives the impression of a sound when the image on the retina exhibits this gun as held in a certain position and handled in a certain manner. If the hand be touching it at the time when the image is seen and sound heard, it feels a blow, and the nose speedily receives the sensation of a powerful odour. Thus all these various impressions upon different senses, being imparted by one object, add to the conviction that it is a real object, which is further confirmed by the fact that every other person as near as ourselves has received similar impressions upon all of his senses.

But here again arises a curious problem, which I

briefly notice that the reader may be conscious of the magnitude of the questions involved in the science of Psychology rather than with any hope to solve it. Is it certain that, although we all agree in calling the thing that makes a certain impress upon the sense of sight "a gun," and the noise made on its discharge "an explosion," that the impression conveyed to the mind of each of the spectators is precisely the same? May it not be that my conception of the gun may differ much from your conception of it? Again, if our conceptions of the gun be the same, have we assurance that these conceptions of it resemble the external object? This difficulty lies at the foundation of the famous philosophy, so wrongly attributed to Berkeley, which disputes the proof, although probably not intending to deny the fact, of the existence of an external world. Berkeley did not go so far as to assert that in fact there was no existence outside ourselves, nothing actual but the contemplating Mind. He contended only that we have no positive proof of the being of external existences, inasmuch as all the intelligence we have of them is *an idea*, which may or may not resemble something external to us. When we say we see a star we are not speaking accurately. All the mind perceives is an impression brought to it by the nerves of vision causing a sensation to which the name of light has been given, and presented in certain conditions as to shape, size, colour, and such like, which combination we call "a star." There can be no reasonable doubt that in truth the object resembles the impression of it; but it is necessary to keep the distinction clearly in view, because the mind continually has sensations without corresponding external objects to produce them, and we should fall into serious scientific and practical errors if we were to assume an invariable correspondence

between the mental impression and an external object. It is very questionable indeed if ever we obtain perfectly accurate impressions of external objects through any of our senses; not merely because of their imperfection, but by reason of the modification they receive through the operation of the mind in the very act of receiving them. But this has more of speculative than of practical interest. Our knowledge of things as our senses present them to us is sufficient for all the uses of life and it would be a needless perplexity to concern ourselves about the actuality of the objects of which the mind receives the impression. The correspondence is accurate enough to be the foundation of action and of thought, and although we sometimes find ourselves misled by the senses, in the vast majority of cases they report truly.

But while we generally accept the evidence of the senses as proof of the facts they report, it is necessary to recognise fully and frankly the limitation of the trust we are entitled to place in them. For scientific purposes especially, we must ever keep clearly before us the truth, not only that our perceptions of the external world are limited to that which the senses convey to us, but that the senses themselves are subject to deception from many causes. Therefore, we have no right to say of anything that it does not exist merely because our senses do not perceive it, or to assert of anything that it is as it appears to us to be, merely because the senses so present it to us. In the business of life we continually discover that we have been deceived by our senses, and Science can take scarcely a step in any direction without learning that what our senses do or can perceive by any cultivation of their powers, even with all the aids of mechanical art, is but an infinitely small fraction of the existence that encompasses us; and that what we can know

through them is as a grain of sand to the sun himself in comparison with what the senses *cannot* bring to us. "Our knowledge is but a molehill compared with the mountain of our ignorance." Since that saying was sent forth our knowledge has extended a thousandfold; but only to teach us more and more how little we know. And the more we *learn* the less we shall *know*.

The foundation of all accurate conception of Psychological as well as of Physiological science is a clear understanding of the fact that our perceptions, in the normal condition of existence, are confined to the operations of the senses, and that those operations are extremely limited in direction and extent, and subject to many aberrations in the course of the conveyance of the impression from the object to the brain.

These remarks apply to all the Senses equally with the sense of Sight; and, having stated them here, it will not be necessary to repeat them hereafter.

Whether all see the same forms, or if there is the same incapacity to perceive certain shapes as undoubtedly is found in many persons with regard to colours, is not ascertained. It is remarkable that colour blindness, as it has been termed, has been but lately discovered, although it must have been coeval with the human eye. A defect existing for ages in a considerable percentage of civilized men has escaped detection either by the patients or by others. The reason of this is obvious, and it forcibly illustrates the preceding remarks on the liability of the senses to error. A person having colour blindness sees red as yellow, or *vice versâ*. Red and yellow are only names given to certain mental impressions caused by the striking of a certain number of rays of reflected light upon the eye curtain and thence carried by the nerve of vision to the brain. So many of these waves striking

upon the retina in a second of time causes a *sensation* which we call yellow. Colour is not a thing, but a sensation. If there were no eye there would be no colour. To an eye or a brain constructed to feel the same sensations by a different series of waves of reflected light the colours would be different from that they now are. That which is now yellow would be then green, or red, as the case might be, and colours now unknown to us would be recognized by an organ framed to perceive a different series of waves from those the human eye perceives. It is readily conceivable that beings might exist who could perceive sound by the eye and colour by the ear. To other beings differently constructed, with only an imperceptible change in the formation of a nerve cord, there may be no such thing as colour, or colours may be altogether different from that they appear to us. The reflected waves of light might cause to them sensations quite unlike those that are conveyed to our brains. Colour does not exist in the object of vision; it is merely a sensation of the brain caused by the beating of the waves of light upon the nerve that passes from the brain to the eye. All that is actually possessed by an object we call coloured is a surface whose particles are so arranged that they reflect the rays of light with more or less rapidity. As these reflected rays enter the eye, we have sensations varying with the number of their waves, to these sensations we have given the name of colours and to each variety of sensation the name of a particular colour. Therefore it is that not only can we not be assured that all human beings have the same sensations produced by the same rays, and so see the same colours, but it is possible and even probable that animals have perceptions of colour quite other than ourselves, and that what appears to be green

or yellow to us may appear to a bird or a butterfly to be of a hue entirely different, or may excite quite a different sensation, or even be the subject of a different sense. Colour blindness, which changes certain colours to the perceptions of the patient, or wholly extinguishes the sense of certain hues, teaches us practically how very slight an alteration in the structure or in the function of the eye, the nerves, or the brain, would suffice to change the entire aspect of so much of the external world as is presented to the sense of Sight.

Bearing this in your mind, you will form a clear conception of the capacity and limit of the sense of Sight. It receives and conveys to the brain certain impressions made upon the optic nerve by the waves of light coming from objects within the circle of space presented to the eye. If the rays of light are intercepted, or if none are reflected from the object, there is what we call darkness. If the object reflects waves of light and is surrounded by darkness, we perceive the *shape* of the object. If the surface of the object reflects a uniform series of similar waves, the nerve imparts to the brain a certain sensation which we call a colour. If different parts of the surface of the object reflect waves of light having a diversity of size and speed, each variety of wave, striking upon the optic nerve, causes a difference of impression to be carried to the brain, and that difference in the sensation occasioned by the impact of the waves of light produces what we call different colours. The sense does not perceive the object itself, as we suppose, but only the picture of the object as painted on the retina. There is the very strongest presumption that the picture upon the retina is a representation of a real object, and that the intelligence of its form and hue so carried to the brain by the optic nerve corresponds with the actual condition of

the object. But it must also be remembered that the impressions made upon the brain by the sense of Sight cannot be relied upon at all times. Forms and colours are frequently there impressed without any corresponding external object. No sense is more subject to be thus imposed upon than the sense of Sight. In certain well-known conditions the brain creates shapes which it is unable to distinguish from external objects, and, as will be seen hereafter, it has a tendency to project without itself the ideal forms that exist only within itself, and to look upon "the air drawn dagger," which is in fact but "a vision of the mind," as an object having a real external existence.

It is by no means certain, however, that the brain is incapable of receiving the forms and hues of external objects through some other medium than the organ of Sight—a question that will come to be considered hereafter.

CHAPTER XIII.

OF THE SENSE OF HEARING.

As the Sense of Sight perceives the waves of light (or that condition of the ether which we call light), so the Sense of Hearing perceives the waves of the atmosphere when set in motion at certain rates of speed. To the sensation thus excited in the brain the name of SOUND is given.

The apparatus by which this Sense operates somewhat resembles that employed for conveying the perceptions of the Sense of Sight. A special organ is devoted to it. There is a hole through which the atmospheric waves pass to a membrane stretched so as to be sensitive to the slightest impact. Behind this membrane is a nerve that conveys to the brain the impressions thus made upon it by the waves of the atmosphere, and those impressions create in the brain the sensation we call "Sound."

As with colour, Sound is not something existing out of ourselves; it is merely a *sensation*. If there was no ear, or no nerve constructed for the purpose of communicating the motions of the air to the brain, the disturbance we term Sound would be nothing more that a motion of the air. Our ears perceive only certain waves and certain combinations of waves. There may be other ears framed to receive other waves of sound that are imperceptible to us. As the size and intervals of the waves of the ever restless atmosphere are countless, it is not merely possible

but probable that different animals may have different perceptions of sound, may hear sounds that are inaudible to us and be deaf to sounds we hear. We know that with ourselves, in certain abnormal conditions of the brain, sounds are painfully audible which in health are imperceptible and distant sounds are often heard by persons so affected when they are far out of the normal range of the sense of Hearing.

This sense excites in us the pleasure of *harmony*, which is the combination of waves of atmosphere that roll together; the pleasure of *melody*, which is the succession at measured distances of waves moving in regular succession; and the pain of *discords*, which are the clashing of waves that do not follow in regular succession. To this sense we owe the existence of music, whose various notes are only various waves of the atmosphere set in motion by the instrument; these beat upon the ear drum and are conveyed thence by the auric nerve to the brain centre.

There is no reason to suppose that music, at least as we know it, exists out of ourselves. It is not in the atmosphere. It is not in the flute. It is not in every ear; but in those ears only that are constructed with a certain delicate mechanism for perception of the motions of the waves of the atmosphere. If the ear cannot, the mind does not, perceive them. A deaf mute, so born, has no sense of music. He can perceive and feel a sense of pleasure in the regular motions of the vibrations caused in the woodwork of the pianoforte when the strings are played upon, and which are felt by the touch; notions of *time* are thus conveyed to him, but not of *tune*. An ear that could not perceive these waves of sound could have no conception of music. An ear constructed to perceive other waves or combinations of waves would have quite other notions of music; that

which is music to us would be discord to that ear, and *vice versâ*.

There is much less assurance of the existence of an external object as its cause in the case of Sound than in the case of Sight. It is a sense far more subject to delusion, although its range is vastly more restricted. Nevertheless, we are dependent upon it for a considerable portion of our pleasure. Without it the intercourse of mind with mind would be grievously restricted, as is painfully witnessed in the case of the deaf mute. Moreover, it contributes greatly to our safety by giving us warning of the approach of things that might be hurtful to us.

CHAPTER XIV.

OF THE SENSES OF TASTE AND SMELL.

I TREAT of these senses together because, if they are not identical, as some physiologists have held, they are very nearly allied. The connection between them is such that if the Sense of Smell is from any cause suspended the Sense of Taste is always more or less affected; and if the nostrils are mechanically closed the Sense of Taste is almost completely paralysed, a condition of which advantage is often taken for the administration of a nauseous medicine. In catarrh, when the power of smelling is extinguished, the capacity to taste is commonly extinguished also, although the membrane strained over the nerve that receives the sapid particles may be wholly unaffected by the inflammation. But whether they be two separate Senses, or one Sense, the manner of their operation resembles that of Sight and Hearing. There is a membrane that receives the impression made by the subject matter to be perceived. Behind this membrane is a branching nerve which conveys that impression to the brain. That impression excites in the brain a peculiar sensation, and to this sensation we have given the name of Taste.

And so it is with the Sense of Smell.

But there is between them an important difference. The Senses of Sight and Hearing do not directly receive the impression of the object itself, but only that of the waves of ether and of air that flow from the object. The

Senses of Taste and Smell receive the impression of the object of their perception immediately by actual contact. This may appear inconsistent with the fact that we can perceive both the odour and savour of objects without actual contact. But, in truth, what these Senses perceive are particles emanating from the object; whereas the Senses of Sight and Hearing perceive nothing more than motions of the atmosphere by which they are enveloped. For instance, a pineapple is placed upon the table: waves of light are reflected from its surface and beat upon the eye, and through the nerve the brain receives certain impressions which are called forms and colours. Particles infinitely small and infinitely numerous escape from the fruit and permeate the atmosphere of the room. As we breathe, some of these particles pass with the air into the nostril and fall upon the mucous membrane. Their presence is at once perceived by the nerve. The atoms that compose the nerve are set in motion and carry the impression to the brain. A sensation is there thus excited which we call Smell, and we say, "I smell a pineapple." If then the fruit be cut and a slice of it placed in the mouth, particles of the juice pass over the membrane behind which is the nerve that carries the impression of them to the brain and we say, "I taste a pineapple."

With these as with the other senses we have no certain knowledge if the scent or flavour is in the existing objects or only in ourselves. It may well be that different sensations are produced in ourselves and in other animals. That which gives pleasure to us may be disagreeable to them, or the reverse. Indeed there is some evidence that so it is. Many animals, and especially dogs, manifestly luxuriate in odours that are nauseous to us and are as eager to besmear their coats with matter

most offensive to our nostrils as we are to use the most delicate perfumes.

In contemplating the senses and their operations, as in all study of the facts of nature and the laws that rule them, we must keep steadily before us the remembrance already inculcated, but which cannot be too often repeated, that nothing in the universe within the circle of our observation, not even our own bodies, is *solid*, in the commonly received understanding of that term. We must never for a moment forget that all things about us as well as ourselves are only agglomerations of atoms that do not touch one another, and between every one of which atoms there is a space, about and through which the Forces of the Universe are for ever passing and upon which they are for ever vigorously operating. When I say that the particles of the pineapple touch the membrane above the nerve that gives us the pleasurable sense of Taste, it must be carefully noted that these particles do not actually touch, but only nearly approach. *Nothing touches.*

The Senses of Taste and Smell are strictly limited to impressions of flavour and scent. They give to us no perception whatever of form, colour, or texture. They have special functions to convey to us intelligence of a special kind. They inform us of certain qualities of objects of which the other senses can make known to us only the form and hue; and the qualities they so make known are those requisite to enable us to select our food, which is obviously the primary purpose of these senses.

CHAPTER XV.

OF THE SENSE OF TOUCH.

Touch is the sense most limited in its range. The senses of Sight and Hearing perceive distant objects. The senses of Taste and Smell perceive particles passing from the object even if far off. The Touch takes cognizance of that only which is in actual contact with the body.

Here, again, I must caution the reader against misconception of the meaning of the term "contact." He must not forget that this word is only a conventional phrase, implying nothing more than *very near*. In fact, there is *no* actual contact between the human form and any material of the world in which it dwells, as there is none between the atoms of which that form is constructed. All that occurs when we touch something, or something touches us, is that this something is brought so near to us that a nerve is excited to action; that is to say, the molecules of the nerve are set in motion, the motion is communicated from one molecule to another, and ultimately striking upon the brain, there is imparted to it that which our consciousness recognises as a *sensation*. But in what manner, or through what medium, the near presence of the object of touch sets the nerve in motion we have as yet no knowledge. It is highly probable that Nerve Force is the operator. But that is only conjecture; it has not yet been *proved*. The fact, however, which alone I am desirous to convey distinctly to the mind of the reader, inasmuch as it is essential to a clear concep-

tion of every other psychological and physiological fact, is this—that there is no actual contact, even where the Sense of Touch is operating.

The apparatus by which we exercise the Sense of Touch is very similar to that employed by the other Senses. There is a membrane that first receives the impression of the near object. Behind the membrane lies a nerve, or plexus of nerves, that carries to the brain, through the nerve system, the impression made upon the membrane. The motion brought by the nerve excites an action in the recipient brain. That action of the brain causes the conscious Ego—the Individual Being—to feel the sensation which we call the Sense of Touch.

The Sense of Touch perceives only shape and substance. All that it really recognises is a certain amount of resistance operating within the surface of contact. This informs us of the outline of shapes, while different degrees of pressure within that space inform us of the nature of the substance, as whether it is hard or soft. By the degrees of resistance in the body touched we measure its solidity or fluidity, while the limits of that resistance inform us imperfectly of its shape. If the object is larger than the extent of the surface of the nerve threads in contact with it, no intelligence as to external shape is conveyed, but only if it be round or flat, smooth or rough, soft or hard, at the point of contact. These qualities of the bodies we touch are presented to us by the various degrees of pressure produced by every sensible variation of the surface touched, each of which excites in us a distinct sensation. To each of these sensations we have given a name, or rather, we have transferred the sensation to the object and instead of saying, as the fact is, "I feel a sensation here which I call hardness," and so forth, we say "This stone is

hard." "This pillow is soft." As in scientifically viewing the other senses, so in contemplating this one, we must bear in mind that our knowledge is in truth of the sensation merely. There is no positive *proof* that an external object actually exists, such as the Sense has impressed it upon our brain. But, although positive proof is wanting, there is no substantial reason to doubt that an object exists corresponding with our sensation of it. It is necessary for scientific accuracy that the absence of actual proof should be recognised, because, to overlook it is to open the door to many errors. But for all practical purposes we may—indeed we must—treat as an existing fact an external world similar to that which is impressed upon our individual consciousness through the agency of the senses.

CHAPTER XVI.

OF THE EVIDENCE OF THE SENSES.

THE caution inculcated in the preceding chapters is necessary, if only to make us vigilant over the extent of reliance we place upon the intelligence brought by the Senses, and that we may understand clearly the relative value of mental and sensual testimony. The brief sketches given of the manner of the operation and the range of the functions of the Senses, will show what is their liability to be deceived and how carefully we should examine and test the evidence they bring to us. It is not enough to say "I saw it," "I heard it," "I felt it." Eye, ear and touch may be deceived. The nerve may convey a wrong impression, as when a marble is rolled between two crossed fingers. The connection between the nerve and the brain may be imperfect and then the message will be wrongly delivered. The brain may be disordered and receive the message wrongly, or the communication between the brain and the conscious EGO may be more or less interrupted, and only partial will be the information given. The Intelligence, in short, may disguise or mis-report the information brought by the Senses. On the other hand, their evidence is not therefore to be rejected. It is required only that the reports of the Senses should be tried by sufficient tests before they are accepted, in a matter of importance, as *probably* true or, in any case, as *indisputably* true.

And here may be appropriately introduced a few remarks

in reference to this hotly contested question of the assumed fallibility of the Senses, of which so much irrational use has been made alike by the assertors and the opponents of new or strange facts. Let us endeavour to ascertain what reliance we may reasonably place upon the intelligence conveyed to us by our Senses. May we put *any* trust in them? May we trust them implicitly? What is the value of their evidence? May Science wisely reject their testimony when seemingly opposed to its own theories? Is Science bound to accept a Sense as a witness? Is a Scientist entitled, upon argument alone, to pronounce judgment against the evidence of the Senses as to the existence of a fact, or may he reasonably contest a fact, asserted by credible witnesses, by any other than the proofs of actual trial and test?

The answers to these important and interesting questions mainly depend upon the view we adopt of the relative value of sensual and mental impressions. Beyond doubt, both are extensively liable to be deceived. The Senses suffer from insufficient power, from imperfect conditions, from defects in their own mechanism. They may not receive the impression rightly. They may not convey it rightly to the brain. The brain itself may wrongly receive a right impression, or wrongly conceive what it rightly receives. But the Mind is subject to at least equal sources of error. The Senses, however, have this great advantage over the Mind, *that their evidence is capable of confirmation*, which that of the Mind is *not*. The Senses of any one person are so liable to err that it would be impossible to accept as proved anything that one person only asserts that he has seen, heard, or felt. He can truly assert of himself no more than this, that on his Mind there was an impression which seemed to him to have been conveyed by the eye, the ear, or the finger.

He knows not, and he cannot know by his Intelligence alone, however great, that those impressions were not the creations of his own Mind, which has a natural tendency to project, as it were, its ideas out of itself, and to contemplate as an external and independent object that which was but a mental vision conjured by itself within itself; as may be recognised in the act of dreaming, where the pictures wrought in the brain present themselves to, and are accepted by, the Mind as external objects the impressions of which were brought to it by the Senses.

But, fortunately for the progress of human knowledge, there is a test of truth applicable to the messages conveyed by the Senses which, although not absolutely perfect, is so nearly perfect that for every practical purpose we are justified in accepting and acting upon the messages so brought as true. The Senses of any one man may be deceived as to the existence of some external object. It may be only a mental image, or a false impression upon the Sense, or an impression wrongly conveyed by the Sense to the Mind. But if *two persons* receive a like mental impression of the same object as existing without them at the same time and in the same place, the probability that such an object existed becomes as cogent as is the improbability that two persons should have precisely the same defect in brain, nerve, or sense, shewing itself in the same manner at the same moment. This improbability is multiplied enormously if *three* persons have the same perception simultaneously, and so the value of the evidence increases in geometrical ratio with every added witness. If, for instance, B. declared that he saw the spirit of a dead friend at such a time in such a place, this would be no proof whatever that B. did see such a spirit. Let him be ever so trustworthy a man, his

evidence would be almost worthless, because of the impossibility of proof that it was not a vision of the mind, or a deceit of the senses. But if two persons, not communicating their thoughts at the instant, saw precisely the same form, in precisely the same place, at precisely the same moment, it would be very potent evidence indeed that they had seen *some form*, though it would not be evidence that the form so seen was a spirit. And if four or six had also seen the like under the like conditions, without anything that could be deemed to have been mutual suggestion, the evidence would be conclusive of the fact so far, at least, as any human testimony can be accepted.

The Senses, therefore, although very untrustworthy witnesses individually, are the most trustworthy, indeed the only reliable, witnesses collectively. And not only are they reliable when we have the accumulated testimony of the Senses of many persons, but they have considerable value in giving verity to each other. One Sense may be brought in aid of another, and that which was dubious on the testimony of one Sense may become reliable on the information of two or more of the other Senses, almost to the degree of a claim to acceptance as truth. The eye may deceive as to the existence of some form seen in a dim light; but if the hand comes to the aid of the eye, and a form is felt as well as seen, the proof of the presence of a form is greatly increased; and if to this be added the testimony of the ear, that it heard the form speak, while the eye had seen and the hand felt it, the proof becomes very powerful. It is overwhelming if two or three persons had experienced the same impressions at the same time.

It is otherwise with impressions on the Mind, not presently conveyed to it by the Senses. The most in-

telligent man has no proof whatever that his Mind is representing to him truly the world without himself, other than as his senses give him information of it, confirmed and corrected by the senses of other persons. It is the favourite but most fallacious assertion of some Scientists that the evidence of the Senses is of little worth, and not to be accepted if it appears to be in opposition to some previously pronounced verdict of the Mind, But the very reverse of this is the truth. *The conclusions of the Mind as to the existence or non-existence of a substantive fact are of little worth unless confirmed by the Senses.* The ultimate appeal must always be from the MIND to the FACT, and the Fact can be ascertained only by the Senses. The ingenuity of the Intelligence may exercise itself for ever in arguing that this thing or that thing can or *cannot* be. The question must come back at last to this—IS IT? To the inversion of the relative worth of abstract argument (based upon inner consciousness or assumption that certain cherished principles are absolutely true) and of the testimony of the senses, must be ascribed the slow growth in the ages past of knowledge that never advanced beyond the narrow bounds of argument based upon introvision and self-consciousness. As soon as men began to free their minds from these self imposed fetters, and dared to pass out of themselves into the boundless regions of creation lying beyond themselves,—when they had learned to employ their *senses* in making search for *facts*, without permitting their minds to be chained by preconceptions and their views coloured by pre-judgments, knowledge made that great bound onwards which is advancing now with an ever increasing speed.

Strange it is, and sad as strange, that with this proof before them of the relative importance of Sense and

Intellect, of fact and theory, so many of our modern Scientists should be found still cleaving to the old discarded folly of making their own mental conceptions the test of truth, and not only rejecting facts that do not square with their theories, but refusing even to inquire and investigate, contending that asserted facts are not facts because, according to their preconceived notions, such a fact is impossible. What is this unphilosophical folly but a tacit assumption of infallibility? Common sense as well as experience should teach them that the course of wisdom is to deal with a fact, asserted by credible witnesses, by bringing to it careful investigation, with patient trial and test, and thus to ascertain if *it be a fact* or a fallacy. If it be found A FACT, then it is their business to make that fact square, as assuredly it will, with the other facts of Nature. It is the duty of an honest truth seeker to mould his own theory as best he may to the new facts found. Unhappily for the cause of Science this appears to be too severe a toil, or perhaps is thought to be too humiliating a confession, for Philosophers who claim omniscience and infallibility, and so they go on obstructing, instead of promoting, the progress of all knowledge that happens to be in discord with their assumptions.

It is sad to see Professors exhibiting this dogmatism of Science which in them is more odious than the dogmatism they so lavishly charge upon the Professors of Theology.

The prevention of this error is to be found in a clear recognition of the relative values of the evidence of the Senses and of the Mind in the search after Truth, which it has been the purpose of this chapter briefly to define.

CHAPTER XVII.

ABOUT LIFE.

RUDELY outlined—and nothing more than a mere sketch was intended—such is the human structure: a machine of infinite complication in detail, but of singular simplicity in design. That structure is manifestly moulded for existence in a world formed of materials having a specific degree of substance and of what we term solidity. Every part of the body is framed to act upon the matter by which it is surrounded and to be acted upon by it. *The body is merely the instrument by which THE MAN communicates with the World without.* The limbs are the means of locomotion. The trunk is but the workshop for the machinery of the body, in which the material for growth and repair is prepared for use and where what is useless or used up is extracted and carried off.

But, because the body is constructed specially for the conditions under which it exists in this planet, it must not be concluded that there are no other conditions of existence to which organic structure might be moulded. We may well conceive of localities in the infinite expanse of creation in which matter may be so different in its substance, though composed of particles identical with our own, that a being called into life there would be developed in quite another shape than ours, or in the same shape with quite a different body, having wholly other capacities. It is not merely possible, it is highly

probable, that there are worlds in which matter is infinitely more compacted, and others in which it is infinitely less compacted, than in our Earth. The organic life upon such worlds must be constructed in accordance with the peculiar conditions to which it is there subjected. In the one, the living things would be as solid as is our granite, in the other as etherial as is that fine matter we call "spirit." There is no reason why the invisible ether itself that floats between the visible worlds should not be inhabited by living beings. On the contrary, it is most in accordance with the whole scheme of Creation, so far as we can penetrate it, that the spaces about us and beyond us should be thronged with Life in some shape. Do we not everywhere see an exuberance of Life in all that is evident to our senses? Does not the very strongest presumption thence arise that the vast interspaces between the worlds are not void of Life? If the same economy prevails in the creation beyond our Senses that we witness in so much of creation as is manifested to us, we must conclude that the Beings who probably dwell in the vast spaces between the solid worlds are constructed of material adapted to the conditions of their abode, and therefore of matter infinitely more refined than anything of which our keenest sense conveys to us the slightest impression. It is not impossible, nor even improbable, that the very atmosphere that enwraps us, from its base upon the solid earth to its summit, should be the abode of embodied beings fashioned for existence in such a sphere, but invisible and imperceptible to our coarser senses. It is in accordance with the known economy of Creation that so it should be. The absence of positive proof that so it is is no argument against its probability, because, from the nature of our own structure, composed of matter of a coarser kind, adapted to our more solid

world, we could neither see, hear, nor feel creatures made of such refined material, nor in any manner by our ordinary senses could we have knowledge of their presence.

What sets this marvellous machine of ours in motion?

LIFE.

What is Life? What *has* the living thing that the thing not living *has not?*

I do not hope to present to the reader a clear definition of Life. Science and Philosophy have alike failed to construct a distinct description of it, or to trace the moment of its beginning or of its ending. My present purpose is rather to remove some prevalent misconceptions of the nature of Life which exist even in the educated Mind, simply because it has been content to accept the current creed, and has never exercised its own judgment in a survey of the facts. I cannot pretend, more than others who have devoted thought to the subject, to have solved the problem what Life is. It is still to me as inscrutable a mystery as it appeared at first—or, I should rather say, the mystery has become more profound the more my knowledge of the facts has extended. But this much has been gained by studying the problem of Life; we have learned some of its conditions. If we cannot assure ourselves what life *is*, we know what it is *not*; and for the purpose of human progress it is often as needful to *un*learn as to learn. Ignorance is not so great an obstacle to Intelligence as is the assumption of knowledge. The one is merely the empty house, of which possession may be taken; the other is the house barred and bolted against ingress. Nowhere in the whole range of Science does the show of knowledge conceal more profound ignorance than in the provinces of Biology and Physiology.

First, let us clear the mind of prejudices and see distinctly what Life is *not*.

And here, lest I should be misunderstood or misrepresented, I must repeat that, inasmuch as this treatise is designed for a purely *scientific* examination of its subject, it purposely avoids all reference to Theological doctrine, and the term Life is used exclusively in its strictly scientific sense.

We are accustomed to think of Life as a specific entity, as a definite thing that comes into us and goes out of us, as something distinct from the body in which it exists.

No progress can be made in Psychology so long as this notion haunts the mind. The student must educate himself to a clear conception that Life is merely a condition of matter when combined in a special manner which we term "organic." When an organized body is constructed—be it of Man, animal, or plant—a Life does not come from without and enter into it. The Life it has is generated within. Wherever there is organic matter there is Life. It may be latent until the conditions occur that are requisite for its active development; but there it is, and when the conditions are favourable for combination in certain definite forms, it shows itself in the shape of a living being. We are wholly ignorant what is the source of Life, or why it exists in atoms aggregated in the specific form we term *organic* matter and not in the aggregations we call *inorganic* matter—if indeed the theory be true that denies Life to the latter. We can but rudely guess. Surveying the Forces that pervade the universe, it may be permitted to hazard a conjecture, but it must be received as conjecture only. We know that a Force of inconceivable power traverses ether, or is the ether

itself; that this Force strikes upon the worlds in its flight and on our atom of a world among them. This Force passes into and through our solid globe and plays about every particle of which it is constructed, keeping all the atoms in continual motion and compelling them to infinite combinations. According to the material upon which this Force impinges and through which it passes, it presents itself in different forms and we give to it different names. It is Electricity when passing through one combination of atoms, Magnetism when found in another, Light when traversing a third; as Professor Tyndall has demonstrated by experimental conversion of each form of the Force into the other forms of it.

May it not well be that the self-same Force, that changes its aspect to us according to the material in which it is found, is the Force that, passing through organized matter, we recognize as LIFE? I do not say that it is so, but only that the suggestion is not improbable. I throw it out as a conjecture merely, for those to ponder on who may be, like myself, in the pursuit of the very truth, sedulously keeping the mind open to accept it upon sufficient proof, from what quarter soever coming and however seemingly in conflict with scientific dogma.

That Life is a condition of organization, the product or outcome of it, and not something other than the body vivified, is proved by this, that with the lower forms of Life, animal as well as vegetable, we may carve them into slices and each slice will continue to live and grow and become a new animal or a new plant. The entire animal or plant was not possessed of more lives than one, yet each becomes many lives by simple division of its body. If the Life that exists in the severed section is not the same Life that possessed the perfect insect or plant, it is a new Life produced in the structure, or to be more

correct, it follows that Life is a condition of the organic material of which that structure is compounded.

Life does not depart from the body in an instant, as a guest leaves a house, merely closing the door behind him. We so speak of it by custom and perhaps we often so think of it.

Life and Thought have gone away
Side by side,
Leaving door and windows wide;
Careless tenants they.

All within is dark as night;
In the windows is no light;
And no murmur at the door
So frequent on its hinge before.

Close the door, the shutters close;
Or thro' the windows we shall see
The nakedness and vacancy
Of the dark deserted house.

Come away; no more of mirth
Is here, or merry making sound.
The house was builded of the earth,
And shall fall again to ground.

Come away; for Life and Thought,
Here no longer dwell:
But in a City glorious—
A great and distant City—have bought
A mansion incorruptible.
Would they could have stayed with us.

TENNYSON.

In fact, life does not *quit* the body, it merely *ceases*. The nerve centre fails to supply the structure with so much of nerve force as is necessary to maintain the *Organic* combination of the atoms against the force of Chemical action, and when this process of disintegration and recombination proceeds Life ceases. Death does not occur until the whole body is subjected to the Chemical Force.

We live, that is to say, portions of the body have Life in them, long after mental consciousness has ceased. The noting of the moment of dissolution, "he died at five minutes after three," is a fallacy. That was the moment of cessation of the heart's action and almost, but not quite, of the mental consciousness. The moment of actual death of *the whole body* is not to be discovered by the most experienced observer.

What then do we intend to describe when we say of a thing that *it lives* and of another thing that it does *not live?*

We have some definite notion in our own minds, and when we use the term "*living*" we assume that it will be understood by others in the sense in which we use it. The conception of *Life* is distinguished by us in some manner from our conception of a thing that has *not life*. What is the distinction? What is the speciality of the *living* thing that we contemplate when we say that it is *alive?*

Our notions of what Life is are derived almost entirely from our conceptions of what ourselves are when we are living, and what we suppose we shall be when we are dead. Consequently our notion of a thing that has Life is of a being possessed of self consciousness and having a sense of pleasure and of pain. When these cease we say that *Life* ceases.

But very slight reflection is required to satisfy us that this is not an accurate conception of Life. Nature teems with Life that has not these capacities, or at least, whose possession of them we do not acknowledge. It is not generally believed that vegetables have either self-consciousness, or a sense of pleasure and pain, although the fancy has been a favourite one with poets and a few speculative philosophers. Knowing that every separate bud is a distinct life, it is difficult to conclude that a tree

possesses a sense of individuality; but it is still more difficult to attribute such a sense to each separate bud. Life then must be something other than the possession of the powers we are accustomed to associate with it. It does not consist in a definite shape, for a crystal has more perfect symmetry of form than a Man. Nor in a complicated machinery working towards a definite end, for that may be seen everywhere in inanimate nature.

All we can confidently assert is that Life is an attendant upon matter when combined in the special manner we term *organic*. But if it is generated by the very act of combination by the particles, or proceeds from their combination after the body is formed, or how otherwise, is one of the many problems of Physiology that Science has not yet solved and has but little laboured to investigate.

Is there, therefore, nothing peculiar in organic life to distinguish it from inorganic existence?

One speciality suggests itself to me; but it is as *a suggestion only* that I offer it to the reader.

The Forces that govern *inorganic* matter are from *without*.

The Force that governs *organic* matter is *within*.

The mineral is constructed by currents of the Magnetic Force that carry the particles of which it is composed from the place where they exist in one form to the place where they are wanted in another form. Build a mimic mountain of clay. Place it in a saucer. In another saucer place the mingled materials of many crystals dissolved in water. In this saucer set one pole of a water battery. At the apex of the mould of clay insert the other pole of the battery. After awhile the mimic mountain will exhibit small clefts in the direction of the electric current. Do not disturb it for two years. Then break it open and in those clefts you will find small strata

of the crystals that were dissolved in the water in the saucer. There was no other communication with the little mines in the mimic hill than the wires that extended from the poles of the battery; yet the particles have been carried in the current of the invisible Force and deposited in the clefts of the clay each in its proper place, according to its affinity, like reuniting with like.

But a living body, be it animal or vegetable, is moulded by a Force apparently generated and undoubtedly flowing to it from *within*. It streams from a centre in the body to the circumference of the body.

Life, then, appears to be a property of certain germs which are nerve centres; which grow by expansion when surrounded by the conditions necessary to growth, taking shape according to the exigency of those conditions; which have power to produce Vital Force and to carry it through the organic structure by means of a nerve system radiating from those centres.

The importance of a definite conception of Life, or I should rather say, of clearing the mind from the misconceptions of it more or less universally entertained, will appear presently when we proceed to consider the various problems of Psychology that will come to be treated of hereafter.

With this caution as to the nature of Life full in your mind, imagine, if you can, the body of a man perfectly constructed and matured, but in which Life has not been kindled. You would behold a mere statue, carved of flesh instead of marble, lacking self-consciousness and the power of self-motion.

Let us now imagine the stream of Life suddenly made to flow from the nerve centre through the nerve cords and the marvellous network of nerve filaments that interpenetrate every part of the organic structure. Forth-

with, as the Force flows, the machinery moves and every part of it begins to perform its allotted work. The heart beats and pumps the blood through the arteries and veins; the lungs expand and contract; the Senses receive the impressions made on them by the world without; the nerves carry those impressions to the brain and convey the commands of the brain to the body.

But something more than this is requisite for support of the Life thus transfused. Motion may be given to every organ and its functions may be perfectly performed, but this would not suffice to maintain a continued existence without something to direct the action of the machine. We might even conceive a mechanism competent to work blindly to a definite end, without the exercise of volition on its own part, as do the machines which ingenious men have constructed in the shape and performing some of the actions of human beings. But there would be no choice of actions, no modification of them according to circumstances. Life alone does not impart such a controlling power. Life alone is a blind energy operating in blind obedience to certain laws. Something more than Life is necessary for voluntary action.

What is that something?

INTELLIGENCE.

CHAPTER XVIII.

OF THE BRAIN.

We are conscious that the head is the abode of the Intelligence. Nobody in his senses doubts that he thinks in his skull and not in his chest, and that his emotions have their source in his brain and not in his bosom, although our common speech is loaded with phrases attributing so many of our sentiments and purposes to that central pump—the heart.

Looking into the skull, where we know that we think and feel, what do we see? A pulpy mass of peculiar texture we call the brain.

Like the body, this brain is constructed of two halves united from base to summit, the point of junction being distinctly visible. It is precisely as would be anticipated as the result of the body being formed by the junction of two germs, as suggested in a former chapter.

This brain is planted on the summit of the great nerve system, of which it is the crown and over which it exercises more or less of control. It is directly connected with the whole of that system by the spinal cord.

The brain is in fact a great ganglion, or rather group of ganglia in Man. It is inclosed in the skull, a case of strongest bone which protects it from external injuries. It occupies the greater portion of the head, whose shape closely resembles that of the brain within.

But the Brain, besides having two hemispheres, presents other marked divisions. It is not merely one

whole constructed of two halves, like the skeleton, but each hemisphere is divided into parts, differing considerably in structure, and as may be thence presumed, having different functions. The frontal section of the brain, technically termed the *cerebrum*, fills the frontal cavity of the skull. Then comes the middle lobe. Behind it and annexed to it, is a third lobe, called the *cerebellum*, whose structure is more pulpy and less fibrous than that of the *cerebrum*.

At the base of the brain is a pulpy mass, the *medulla oblongata*, lying between the brain and the spinal cord, and from this there extends another ganglionic mass occupying the whole base of the brain, running almost from the back to the front of the hemispheres and thus being in direct connection with every part of it. This mass of brain matter is not homogeneous, and anatomists have found it to consist of parts to which it is assumed, but not proved, that separate functions belong. To this centre have been traced the extremities of the nerves of the Senses. But, although composed of parts, these are not separated, but run one into another, so that the entire ganglion is, in fact, a whole made up of parts. To this whole no definite function has been assigned. It appears to be nothing more than a base or bed for all the other ganglia that compose the brain, and to be the point at which the nerves of the Senses deliver their messages to the brain. Thus is there a point of junction at the summit of the spinal cord, or it may be a continuation of the spinal cord itself. Closely observed, this section of the brain will be seen to hold a position that places it in immediate communication with every part of the brain—alike with the front and back lobes and with both hemispheres.

Such a position suggests some very important office in

the brain system. The site seems to indicate some functions affecting the action of every part of the brain, for all its parts are here united, and to all it affords a common base and a common point of junction.

May not therefore this centre, upon which the several parts of the machinery converge, perform the important function of uniting all the parts of the brain structure so that all may work together, and that it is by the action of this centre that the whole Mind is enabled to call into exercise its entire powers for any required purpose. If this be its duty, what must be the process by which the brain actually conducts its operations? Let us endeavour to trace it.

An impression on one of the senses is communicated to that part of the brain in which the sense-nerve centres. By this centre, which is in direct communication with every part of the brain, immediately on the perception being received, the Mental Powers which that impression is calculated to call into action are instantly excited, and the Intellect deals with it, or the Emotions are kindled by it, or both, according to the character of the impression. This is the regular series of mental operations, although they are so rapidly performed that we are not conscious of the intricacy of the process. For an illustration, let us suppose that the external object is a wrong done. A ruffian strikes an unoffending woman. The impression of that object upon the retina is carried to the brain centre by the optic nerve that runs into it. Instantly there is excited in the Mind, by the impression so made, a sense of anger and an impulse to punish the wrongdoer and to protect the victim. As instantly a message is sent from the brain to the muscles of the arm; these, in obedience to it, contract, and the fist hurls the ruffian to the ground, while the other hand snatches the victim

from his grasp. Here is a series of mental actions followed by a series of bodily actions, all so swiftly that perception of the several links in the chain of action is not possible to us at the moment of their occurrence and are recognised only when we calmly review the process. But they are not the less certain, and will be apparent to us on the slightest reflection. Now the difficulty has ever been, and still is, to explain the connection between these operations on any theory that assigns some functions to one part of the mental machinery, and others to another part, or to suggest the contrivance by which the necessary communication between the various parts of the machine is so rapidly accomplished.

The above suggestion of the probable function of the small central ganglion lying at the base of the brain supplies a complete and rational solution of the problem. If this ganglion at the base of the brain be the common centre at which all the parts of the brain are united, the course of action for the performance of such a process as that adduced for illustration is at once made clear. The Sense receiving the impression of the fact conveys that impression to this centre. Thence it is, by impact at the point of junction, directly conveyed to the Intelligence and to the seat of the Emotions of Anger and of Benevolence, which also meet at the same centre, and whose function it is to come into play when the appropriate object is presented to them. These Emotions impel the Will to issue its command to the nerves of motion that control the limbs, and they, in obedience to that command, perform the muscular acts of punishment and protection.

If this suggestion of the primary function of the nerve centre at the brain base be right so far, and if this be the

medium through which the machinery of the Mind, constructed as it is of many various parts, is brought to act in concert for whatever purpose the Mind desires, may we not advance another step, and ask if it be not also probable that this nerve centre is the seat of THE WILL?

That a WILL exists in us, as a power distinct from the Intelligence, will not be disputed. We cannot pause now to treat of the Will and its operations, for these will more properly come for careful consideration hereafter. But, granting that we have in us a definite power through which we control, by a conscious effort of our individuality, many of the actions of the Mind as well as of the body, that power must have an abode somewhere. Phrenology has wholly failed to solve this problem. In its map of the Mind it has left no site for such a mental faculty, although it is certainly not less definite and distinct than the emotion of Benevolence or the faculty of Reason. I repeat, then, may it not be that the seat of this important mental power, the WILL, is in this group of ganglia at the base of the brain, which is connected with the whole brain, in which every part of the brain is centred, with which every nerve fibre of the brain is directly linked, and to which every action of the brain in every part is instantly communicated?

At all events, if THE WILL requires a dwelling-place, what more fitting one could be found than a position between the brain and the body, communicating equally with both, receiving the impressions of the one and controlling the actions of the other.

There is yet another argument in favour of this hypothesis. The Mind is one whole, although it acts and is acted upon through different organs. We know that it is the *same* Mind that received the impression, felt the emotion, formed the wish to punish, and com-

manded the infliction of the punishment. How could that unity of action be preserved without some connecting centre upon which all the parts of the machinery should converge? If this, then, be that centre, as I venture to suggest, it follows that here we are to look for the headquarters or seat of the Mind, of which the brain is the material organ. A machine constructed of parts through which that Mind communicates with the material world in which its existence in this life is cast seems to require some central point of action. May we not look for it here?

From this description of the structure of the mental machine we may reasonably surmise another condition which, if it should be established, will throw a blaze of light upon many obscurities at present affecting the operations of the mind, especially in its abnormal conditions. The brain is composed of two hemispheres. Hence we may conclude that, like the rest of the body, it is a duplex structure; that, as we have two eyes, arms, legs, so we have two brains, or in other words that the machinery of the mind is *dual*. Instead of one faculty of reason, of hope, of language, we have *two* of each, either hemisphere of the brain being in itself a perfect mental machine.

The duplex *construction* of the brain is certain. If the theory I have suggested of a double germ structure of the body be true, it will sufficiently explain this double formation of the brain. But, apart from this conjecture, there are manifest uses in a twofold organ. If the action of the whole mind were dependent upon the perfect action of every part of a single mechanism, the derangement of any one part of it would bring the entire machine to a standstill. As with the framework of the body, the duplex structure affords the best protection

against such a catastrophe. If one limb of the body be disabled, the other is still competent for many of the uses of life. So it is with the machinery of the Mind, if that indeed be dual also. If external or internal injury affects one mental faculty, the other contrives to carry on a less perfect communication between the Mind and the external world. Lesion of one organ only does not annihilate an entire mental faculty but only weakens it. If the brain were one, paralysis would not only destroy the power of the Will over one half of the body, but it would wholly annihilate the faculties of a single brain. That it does not so is due to the fact that the *brain is double also*, and that paralysis of one hemisphere alone leaves the patient enfeebled, but still with more or less capability of mental action in the machinery of the other hemisphere.

It would be impossible, in the small space here permitted to this great subject, to adduce the mass of evidence that appears to prove conclusively the duality of the mental machinery presently to be described. I must refer the Reader who desires to be further informed upon it to other treatises dealing with the question. Here I ask him only to keep it in his memory, as at least a probable arrangement of the machinery by which the Mind conducts its communication with the body and with the world in which it dwells, and in his future observations of himself as well as of others, he will discover innumerable cases in which the only rational solution of the facts will be found in the application of this hypothesis of the Duality of the Mind, or, to be more strictly correct, of the duplex structure of the machinery of the Mind.

CHAPTER XIX.

THE MECHANISM OF THE MIND.

WHAT is the Force that moves the machinery of the body? LIFE.

What is the Power that directs the action of the machine? MIND.

We are treading closely now upon the threshold of Psychology. The very next question that presents itself touches upon the border land where Physiology ends and Psychology begins.

What is this directing MIND?

The functions of all the organs of the body necessary to existence are performed by the Vital Force without the direction of the MIND, and, in the condition of perfect health, without consciousness. These functions know neither sleep nor rest, nor can we by any exercise of the MIND arrest or control them.

All other actions of the healthy body are performed in obedience to the commands of a power we call the WILL, which is itself directed by a sovereign INTELLIGENCE, meaning by the term a *something* of which we will not for the present attempt a definition beyond this, that it possesses a sense of Individuality—that it is One Being having a continuous consciousness and unity of existence.

So far all are agreed. But the next step in the answer to the question "What am I?" plunges us into an arena where controversy has been raging for centuries and is

still proceeding with unabated fury. The fight was and is as to the Nature, Qualities and Modes of Existence and of Action of this intelligent SOMETHING that constitutes what a man recognizes as *himself* and that governs all the voluntary actions of the body. Although Philosophers cannot agree what this *intelligent something* is, nor how it acts, all acknowledge its existence and agree in giving it a name. It is called, by common consent, THE MIND.

We will not *now* enter upon the question, so fiercely debated, if there be both Mind and Soul; or if there be Mind only and no Soul; or if the Mind and the Soul are the same. These questions will come for consideration in due course hereafter.

Without asserting or accepting any opinion upon these questions, banishing all foregone conclusions, leaving his Intelligence open for the reception of any evidence or argument that may hereafter be presented, I ask the Reader to accept for present use this term, "THE MIND," in its restricted sense, as designating the collective operations of an Intelligence that exhibits itself to others who know it only by its manifestations as having a variety of faculties performing various functions. I intend by the term the MIND in this place to treat only of that part of it which is obviously material;—which is so visibly and palpably a part of the organization that it grows, declines, and is extinguished with the body, is subject to corporeal disease, and is vigorous or weak according to the character of the structure that appears to be specially invested with the performance of these functions.

It is precisely at this point that Physiology parts company with Psychology. "Here," say the Scientists, "our inquiries end. This is the ultimate knowledge

attainable by the only instruments of investigation *we* can recognize in the researches of our science, the scalpel and the microscope. With these assistants to our senses we see a certain delicate structure, on the condition of which depends the condition of the Mind. As this structure grows in strength, so does the mind grow. If the state of this structure is that of health, so is the Mind healthy. If the structure degenerates, the Mind fails with it. While the structure lives, the Mind lives. When the structure is dead, the Mind is dead also. The conclusion from these indisputable facts is obvious and unavoidable. That fibrous mass is what you call the Mind. Its functions are what you call the operations of the Mind. Intelligence is a secretion of the brain, as Nerve Force is a secretion of the ganglia, or gastric juice a secretion of the stomach."

The answer of Psychology to this argument of materialism is an admission of the alleged facts — an acknowledgment that the Physiologists are right, so far as their researches extend; but an assertion that they have halted too soon; *that the brain they have truly described is not the Mind itself, but only the machinery through which the Mind acts in its communications with the material world in which it is existing.*

We Psychologists say that the existence of this MIND is not to be discovered by the scalpel and the microscope, because it is not constructed of the coarse material which alone those instruments can reveal; that it is governed by other laws, and that its existence is to be proved by quite another series of facts and by researches in quite a different direction.

All this, however, is for future consideration. It is referred to here only that the Reader may understand why it is that at this stage of the inquiry we exclude the

great question, *what the Mind is*, and, starting with the assumption that Mind exists in some form, proceed at once to examine the profoundly interesting process by which the MIND maintains its communication with the world in which it is its lot to dwell, and to the conditions of which existence it was necessary that its construction should be strictly conformed.

Whether Mind exists apart from the material structure, or is only that structure itself, in no way affects the subject now to be considered, for it will be agreed by all that, in its normal condition, Mind is cognizable to our senses only when acting by means of the mechanism of its material structure.

It will be convenient to call this "THE MACHINERY OF THE MIND," to distinguish it from the Mind itself.

Let us first endeavour to trace this Machinery from its connection with the body, whose emotions it directs, to its source and seat.

The Machinery of the Mind lies wholly within the body. It is born with the body. It grows with the body. It declines, decays, dies with the body. It differs in its degree of excellence not merely in the various races of men, but in the individuals of every race. It is not peculiar to man. It is possessed by animals also, and it must be confessed that as yet Science has failed to find the precise link in the long chain of animated nature at which Intelligence, as exhibited in voluntary action, ends and mere unconscious obedience to controlling law begins. From this it may be assumed that Intelligence must be looked for somewhere in the structure itself. In fact, we can distinctly trace it to one organ. Sever the limbs from the body, and there is no diminution of the Intelligence; but sever a portion of the brain, and there is a proportionate diminution of Intelligence. Extract or

paralyse the brain and Intelligence ceases. The Brain, then, is the seat of the Intelligence. But the Brain is not in all animals one collective ganglionic mass. It is sometimes severed into many parts, situate at a distance from each other and connected by nerves that associate the sections for the common use of the individual being. Ganglion, which is the name given to these scattered knots of brain, is only brain placed for special uses in other parts of the body than the head. Man has ganglia that are, in fact, lesser brains, parts of the general organ of Life, of Intelligence, and doubtless contributing to it, although as yet Science has failed to discover all the functions of these lesser brains or parts of the brain. The cause of this failure is that Science persists in looking for function through the microscope instead of carefully observing and noting the action of the organ, especially in its abnormal conditions. Physiology and Psychology will be found to depend for their progress mainly upon the study of *function* as learned from the *action*, regular and irregular, in health and in disease, of the various organs by which the work of Life and of Intelligence is sustained.

We are accustomed to think and speak of nerve as something distinct from brain and ganglion. But, in fact, they are one organ. The nerve cords are only filaments extending from the brain to every part of the body. The brain is the centre upon which the nerves converge. Nerve is an extension of the brain, which could neither receive impressions of the world external to itself nor direct its own force so as to affect the internal world unless means of communication were provided in its structure. That communicating medium is called the Nerves, which are threads passing from the brain to the organs of the body constructed to receive the impressions

of external objects, and to carry them to the brain; as also to convey the Will from the brain to the organs that are in contact with the world without.

Trace the nerves to their centres, from the extremities where they branch into innumerable streams, covering the whole surface of the body with a network of filament, to the centres whence they arise, and no point of junction between nerve and brain is perceptible. The nerves run into the brain mass and appear to form a part of it. There is no sufficient evidence of a distinct structure to which at a certain visible point the nerve is tied, so as to be nerve on one side of this point of junction and brain on the other side of it. The nerve is not a thread attached to the brain, but an expansion of the brain itself. In this sense the stomach is only an expansion of the brain, and the entire body is nothing but a huge mass of nerve threads, interspersed with bone, muscle, and the other materials of which the body is builded.

And here we are met by a problem not so easily solved as might be supposed before it is considered. Is the nerve itself sensitive to the impression made upon it, or does it act merely as a carrier of the impression to the brain? Take, for instance, the nerve of sight. When it receives the impression made upon the retina, has it the perceptive faculty, as being itself an expanded part of the brain, or does it in a merely mechanical manner carry the impression to the brain, which then becomes the perceptive organ? For practical purposes it concerns us little or nothing which of these is the true manner of communicating between the individual Man and the world without him. But it will be seen hereafter that some not unimportant questions in Psychology are affected by it. For the present, I note it merely to impress upon the memory of the Reader that it is still a

moot point and that neither solution of the problem should be taken as the foundation of an argument. It is as yet entirely unsettled.

But, for the sake of clearness, not as asserting it to be the fact, but with the emphatic declaration that it is doubtful, I assume that the nerves are mere carriers, like the wires of the electric telegraph, and *not* themselves the sensitive organ.

Some of the nerve threads run to the brain, but some run to certain nerve centres that are clustered upon a thick nerve cord that passes down the centre of the back bone, and which at its upper extremity expands into that bigger mass called the brain.

The brain is not one homogeneous mass. It is divided into distinct parts, differing from each other in structure, and therefore doubtless in function. The portion of the brain that occupies the front and upper part of the skull is composed of a huge bundle of exceedingly fine fibres among which the feeding blood vessels circulate. Two other sections of the brain occupy the back part of the skull. But for a more detailed description of this organ the reader must refer to CARPENTER or MARSHALL.

Thus will the Nerve System be seen to consist of one large and several smaller nerve masses or centres, from which nerve threads pass to every part of the structure after the manner of the branches of a tree, the main branches dividing into smaller branches, and these again dividing and diverging until the branchlets are so small and so abundant that they appear like a mass of intricate network. If all the building material which the nerves have attracted and constructed about them could be shaken off or dissolved, as with the skeleton leaves on our drawing-room tables, the nerve structure would bear a very marked resemblance to a leafless tree. From these

central masses the nerve threads convey *the Vital Force* (whatever that may be), *the Will* of the ruling Intelligence that controls and directs the actions of the body and *the Force* (not known) that performs the involuntary functions of organic life. Special nerves likewise carry to the nerve centres the impressions made upon the Senses and thus the Intelligence obtains information more or less perfect and reliable of what is going on in the structure and in the small circle of creation outside itself that comes within the range of the perceptive power of the Senses.

Brain and ganglia together form the centres of Life and of Intelligence; but as yet Science has failed to establish certainly the precise functions of each. The seat of the Intelligence appears to be in the frontal portion of the brain; that of the impulses necessary to the preservation of animal life in the lobes of the brain that lie behind and on the summit of the spinal cord; and that of the functions of organic life, over which the Mind has no control, in the other ganglia. But there are some abnormal conditions that throw considerable doubt over the strict correctness of this simple and convenient distribution of duties among the nerve centres, inasmuch as each under certain conditions appears to perform the functions of the others.

But for practical purposes the brain proper may be looked upon as the organ by which Intelligence is exercised, for, as a general rule, the amount of Intelligence is proportioned to the size and quality of the brain: whatever injures the brain to that extent affects the Intelligence, and whatever paralyses the brain destroys the Intelligence.

Intelligence is not a visible or tangible entity; it is not a structure; it is only a function. Precisely as

digestion is a function of the stomach, Intelligence is a function of the brain.

But Intelligence is not the single function of a single organ, as is digestion of the stomach or blood aeration of the lungs. It exhibits itself in various definite forms. We are perfectly conscious that we exercise different faculties when we reason, when we imagine, when we love, or fear, or see, or feel. We know that it is the same individual Mind that experiences all these various sensations, but we are conscious also that these are not identical operations of that Mind. Experience assures us that the whole Mind is not occupied in the performance of any one or more of its many functions. In short, while convinced by our own consciousness that the recipient Mind is one entity, we are equally compelled by that same consciousness to the conclusion that the homogeneous Mind receives its impressions, performs its own operations within, and conveys its desires to the body or to the world without, through *a variety of organs;* or, to speak more accurately, through some organ constructed of various parts, each of which has a distinct office.

The presumption, therefore, is that if the brain be the organ of the Intelligence, it is not one homogeneous whole, acting as a whole in all its operations, like the stomach, for instance; but that it is composed of parts, each part having its own functions like the nerves that, although inclosed in one sheath, has each its own office. It is improbable that the whole brain should be employed in every act of thought, of feeling, of imagination. The theory is equally inconsistent with the observed facts; for if the whole brain operated in every act of Intelligence, there could be no variety of *power* in the various expressions of the same Mind. The

same person would be weak or strong in every faculty alike, whereas the very reverse of this is the case notoriously, and there is no human being who has not some faculties of his Intelligence inferior and others superior to what may be termed the average condition of his intellect. The facts, without an exception, point to the conclusion that, if the brain be the organ of the Intelligence, different parts of the brain perform different intelligent functions.

But it must be admitted that Anatomy has failed to discover any visible divisions, if they exist. Even with the help of the microscope we can find no definite distinctions, no lines of demarcation, nothing that confirms to the eye the *à priori* probability of distinct organs to correspond with the distinct faculties. In the absence of such demonstrative proof, it has been sought by extensive comparison of character with shape of brain, to ascertain if there be any, and how much, correspondence between unusual development of certain mental faculties and certain forms of the skull, which is admitted to be, with rare exceptions, an exact map of the surface of the brain. Gall and Spurzheim first, and afterwards George Combe, devoted the greater portion of their lives to this investigation, and they claimed to have discovered the sites in the brain of the various intellectual and moral faculties. It is a strong fact in their favour that they did not set themselves to their task with any preconceived notions as to the locality in which certain of the mental powers were to be looked for. They were content merely to observe and note, without theorizing, until a great mass of facts had been accumulated. Nevertheless, when they came to classify these facts, and to make a map of the brain in accordance with their observations of correspondence between form and faculty,

it was found that all the Intellectual powers, as they had traced them, were grouped together, as also were the Sentiments and the Propensities. Seeing this, which, if a mere coincidence is marvellous, it is not surprising that they should have made it the basis of a Science of Mind which they opposed to all previous theories, nor that they should have found many disciples.

They were answered in the usual manner of the estalished Hierarchy of Science: not by investigating and disproving the asserted facts, but by argument *à priori* that, inasmuch as the fact conflicted with certain theories they assumed to be true, it *could not* be and therefore *was* not. They called it an imposture or an hallucination; they declared that the observers did not see what they asserted they had seen. They avoided the only scientific answer that can be given to the allegation of newly discovered facts, an examination of those asserted facts by experiment and test. The assertion was, that certain shapes of the brain were associated with the possession of certain faculties of the Mind. Science and Philosophy were challenged to investigation, and if the fact were so found frankly to declare it; and if it were found to be otherwise, that the doctrine should be demolished by demonstration of its error and the delusion dissipated. But, instead of acting thus, Metaphysical and Medical Science took their stand upon simple denial of the facts, without bestowing on them the slightest examination or inquiry, content to declare that Anatomy could not find the divisions of the organs and, *therefore*, that they did not exist.

But if the Phrenologists failed, as to a considerable extent they did fail, to adduce demonstrative proof of the correctness of their map of the skull as representing the faculties in the brain beneath it, they established many important points in Mental Physiology. They settled the

controversy whether the brain is the organ of the Intelligence. This is not now denied by any Philosopher or Physiologist. They *proved*—and this also is now universally admitted—that the whole brain is not employed in every mental operation or emotion. It is now universally agreed that parts only of the brain are employed in the different mental processes. It is further admitted generally that the frontal part of the brain is mainly employed in the operations of the Intellectual Faculties. It is acknowledged that certain largely developed forms of forehead indicate certain marked mental capacities. But it cannot be affirmed that Phrenology has established more that this. It constructed an elaborate map of the surface of the brain, but it has not yet proved the existence of corresponding structure. But not, therefore, is it a baseless Science, a fantastic Philosophy, having no foundation in fact. It may be that the skull is not a correct cast of the brain it incloses. It may be that the brain itself has no variations of external form corresponding with the variations in the features of the Mind. It may be that the brain is a homogeneous mass without parts, as some Anatomists declare. These are yet unsolved problems and a judgment cannot be pronounced upon them. Phrenology is certainly very imperfect in its proofs of all that portion of its teachings which belongs to *Cranioscopy*, the section of it by which it was best known to many and only known to more. But even if all these questions as to the shape of the brain, and of the skull as moulded by the brain, and the power to read character by the shape of the brain as shown on its bony coverlet, be rejected as unproved, there remains to Phrenology the high honour of having explored the Machinery of the Mind, distinctly defined the Mental Powers, arranged them in admirable

scientific order, and investigated the manner of their action separately and in combination.

If, therefore, Phrenology has not sustained its whole case, and has failed to prove the possibility of reading on the skull an accurate map of the Mind, it has undoubtedly performed a service scarcely less important. Phrenology has given to Science the most correct map of *the Mind* ever drawn, even if it has failed to construct a perfect map of *the brain*. The facts that the Mind works through separate organs having distinct faculties; that in the combinations of the various faculties we must look for the key to the various mental operations; the classification of those faculties in their natural order; the admirable definitions of them perfected by successive investigators, are of incalculable service to Mental Science, even if the whole theory of Cranioscopy, based on the exhibition of the organs on the skull, be held to have failed in proof. It was the first rational analysis of the Human Mind. It was the first adaptation of Mental Science to the practical business of Society. It brought that Science down from the region of metaphysical abstraction to the intelligence and common uses of every day life. Mental Science was by Phrenology subjected for the first time to the same process of investigation that had wrought such wonders in the Material Sciences. Patient observation and gathering together of *facts* were substituted for the dreams of the inner consciousness. Instead of merely contemplating themselves, the students of Mind were taught to observe the Minds of others, and especially to note their operations under abnormal conditions. In brief, the great principle of the Baconian Philosophy was shown to be as applicable to the investigation of Mind as it had proved in the investigation of matter, and as rich a harvest speedily rewarded the work.

Admitting, then, that the Phrenologists have not yet established their doctrine that the character of the Mind is exhibited upon the skull—setting aside entirely, as unproved, the assertion that they have found the precise locality in the brain where each variety of thought and of emotion has its birth, it must be acknowledged that they have succeeded in producing the most rational and perfect analysis of the Mental Faculties ever given to Science. They may not have found the particular part of the brain or the very spot upon the skull where the faculties of Imagination, Music, Hope, Fear and Self-esteem are located, but they have established by conclusive evidence that such faculties exist with others as separate parts of that whole we call the Mind. It may probably be that further research and observation will discover that some of the mental faculties now supposed to be distinct are only modifications or combinations of the action of others, and new faculties may be found. But these cannot materially affect the accuracy of the grand outline of the machinery of the Mind traced by the successive labours of Gall, Spurzheim, and Combe. Their scheme of the Mental Faculties may be said to be now more or less adopted by the Mental Physiologists of our time as substantially the true one, and to be generally accepted as the only practicable and rational theory of the Human Mind.

I repeat this theory in few words, asking the Reader to commit it to his memory.

The Mind is either composed of or works by means of various organs, each of which constitutes a distinct faculty or power. In every exercise of the Intelligence, one or more of these faculties is or are called into action. Each faculty has its own functions, but the function of each is modified by its combination with others in the production

of all our ideas, thoughts, or emotions. To these combinations of the Faculties we owe the infinite variety of human character, which is unaccountable upon any of the previously received theories of the unity of the Mind.

In this sketch of the human structure I adopt the analysis of the Mind enunciated by George Combe; not affirming it to be in every particular certainly correct, but as being, upon the whole, the most rational, supported by the most powerful array of evidence, most consistent with all other branches of Science, and most recommending itself alike to the reason and to the experience of every man who observes the mental actions of his neighbours, instead of limiting his researches to the dissection of his own. It will certainly convey to the Reader a far more accurate conception of the Human Mind and its operations than he could derive from any of the numerous theories of the Metaphysicians. Who does not lay down the treatises of the transcendental Philosophers with a painful consciousness that, instead of increased knowledge, he possesses less definite notions of his own Mind than he had when he took them up? But he rises from the perusal of Combe with a far clearer conception of Mind and its operations than he had before. He feels that the knowledge he has obtained is capable of hourly application to the practical affairs of life, whereas the teachings of the Metaphysicians are never practically useful; they can be received as intellectual exercises only and not as applicable to the daily and hourly intercourse with living men.

Even if there be no corresponding organs in the brain, the Mind undoubtedly possesses certain faculties, distinct one from another and enjoyed in various degrees, not only in different minds, but by the same Mind. The same man

may have one or more faculties in excess while found to be deficient in other faculties, a fact which of itself proves that the Mind is constructed of parts, or acts through a machine made of many parts that have different functions. Careful noting of the various operations of the Mind has exhibited a long list of distinct faculties which it was not difficult to classify according to the nature of their several operations. It was to the power to perform these operations that the convenient name "Faculty" was given, and the Mind was said to possess certain "faculties," or powers to perform certain recognised acts, as to reason, to imagine, to imitate, to feel self-esteem, or attachment. To these capacities of the Mind so to operate were given the names we employ when we speak of the faculty of reasoning, or of loving, meaning by this only that the Mind reasons or loves.

It remains for the reader to understand distinctly the sense in which the term "Faculty" is used in this and the following chapters. It is not a satisfactory name to be given to the thing intended to be designated by it; but there is no other in common use, and to invent a new name, however it may conduce to scientific accuracy, is a process very liable to scare those whom it is the special purpose of such a book as this to tempt into a field of science that has been hitherto made almost repulsive by enveloping it in abstractions and technicalities.

By the use of the term "Faculties of the Mind" nothing more is intended to be affirmed than that the Mind manifests itself in various distinct and definite forms of expression. The term "Faculty" is here given to the form in which the Mind so manifests itself. Mind is in truth never cognizable by other Minds save in its

expression through some one or more of its Faculties or Feelings. It is otherwise with self-contemplation. We can conceive and do recognize our own Minds as being a whole and perfect MIND, apart from its exhibition through its Faculties and Feelings. We have in fact a consciousness of a certain entity which we call "Our Mind," as distinct from the mechanism by which that Mind works.

It is to the almost exclusive devotion of Mental Philosophers to the study of this self-consciousness, and their almost entire neglect of the Mechanism by which the Mind works, and which Mechanism is apparent only when we observe the Minds of others, that is to be ascribed the unprogressive condition of Mental Philosophy, while all other branches of Science are advancing at such a rapid pace.

Let it, then, be understood that by the term Faculty I design nothing more than to describe the power the Mind possesses to do certain acts or feel certain sensations, as to reason, to perceive, to hope, to fear, to love. When the term "Faculty of Hope" is used, there is intended to be expressed by it this only—that the Mind has in its Mechanism a capacity to feel a certain emotion to which the name of "Hope" has been given. And so with the others.

CHAPTER XX.

CLASSIFICATION OF THE MENTAL POWERS.

After careful consideration and comparison of the various divisions of the Mental Powers advanced by the greatest of those who have treated of the Philosophy of the Mind, I have adopted the scheme propounded by Gall and perfected by Combe, as that which, although far from perfect and by no means free from reasonable objection in parts, is yet, upon the whole, vastly more complete than any other. It has the great merit of a classification so natural that it commends itself at once to the judgment, carves itself upon the memory of the most careless reader, once learned is never forgotten, but is ever prompt to present itself for the solution of the many problems in Humanity that daily present themselves to the observer. If Phrenology had done nothing more than give to the world this admirable classification of the Mental Faculties, it would have a claim to the gratitude of all who endeavour after that knowledge of themselves which has been truly called the most valuable of all knowledge. Viewed by the light thus thrown upon it, the study of the Human Mind ceases to be the dim and perplexing metaphysical speculation it has been hitherto. Mental Philosophy is thus removed from the region where it could be contemplated only by transcendental Philosophers, and in the more tangible shape of Mental Physiology is brought within the reach of the common understanding. It is converted from being

little more than a dream of the study to subserve the practical uses of everyday life.

For these reasons, without accepting the Cranioscopical doctrine, that the Mind may be read upon the skull, moulded, as the skull is affirmed by the Craniologists to be, to the shape of the brain, I gratefully adopt the Phrenological classification of the Mental Faculties and Feelings, with some trifling alterations which will be indicated in their proper place.

According to this scheme of the Mental Powers the Mechanism of the Mind closely scrutinised will be found to arrange itself in two well-marked divisions (1) The INTELLECTUAL FACULTIES; (2) The FEELINGS.

The *Intellectual Faculties* are those the character of which particularly distinguishes man from the lower animals. Formerly it was asserted, and general assent was given to the assertion, that the absence of these Faculties in the animal world was the distinguishing difference between Man and his fellow tenants of this earth. Intelligence was declared, by a sort of unthinking unanimity of assent, to be peculiar to Man, and INSTINCT was the unmeaning name given by thoughtless ignorance to all the voluntary acts of the brute. More extensive and accurate observation of the animal world has disturbed this doctrine, and it is now admitted that the lower animals possess many of the Intellectual Faculties of which Man has arrogated to himself the sole possession, differing from ourselves in degree rather than in kind. But there are as certainly some mental faculties in animals which appear to be so limited and incapable of improvement that, in despite of general similarity, the differences between the Human Mind and the Animal Mind are such that the lowest Man enjoys a degree of intellectual life higher than that of the highest animal.

It seems to me to be doubtful whether the Intellectual Faculties of animals do not differ from those of Man in kind as well as in degree. Time has not been permitted to me for investigation of this great and difficult question by a sufficiently extensive observation of the ways and works of animals, but I am strongly inclined to the conclusion that animals possess some Faculties which we have not, or which are developed in us only under rare and abnormal circumstances. However this may be, it is by his Intellectual Faculties that Man maintains his place as the sovereign of the world he inhabits, and all other animals seem to acknowledge that supremacy by submission to his service or retreat from his approach.

In the following description of the Machinery of the Mind, it will be convenient to trace the various faculties and feelings upwards from the lowest to the highest. Thus arranged, they form two great classes or orders.

I. The FEELINGS.
II. The INTELLECTUAL FACULTIES.

Each of these two Orders is further sub-divided.

I. The FEELINGS are ranged under three classes:

1. The PROPENSITIES, common to man with the lower animals.

2. The SENTIMENTS, common to Man with the lower animals.

3. The SENTIMENTS peculiar to man.

II. The INTELLECTUAL FACULTIES are ranged under four classes.

1. The EXTERNAL SENSES.

2. The KNOWING FACULTIES which perceive the existence and qualities of external objects.

3. The KNOWING FACULTIES which perceive the relation of external objects.

4. The REFLECTING FACULTIES, which compare, judge, and discriminate.

A brief sketch of the various Faculties ranged in each of these classes will be instructive and interesting. No more details will be given than are necessary for a clear comprehension of the functions of each, without a knowledge of which it would be impossible to understand the principles of Psychology. In the first place the distinction between the Feelings and the Intellectual Powers must be accurately observed. Note with care the operations of your mind. Observe the distinction between an *emotion* and an operation of *thought*. The Feelings are called into involuntary action by the presentation to the Mind of an object for their exercise. They are very imperfectly subjected to the presiding Will. They cannot be handled at command, although the Will may to some extent control, and in rare cases subdue, them.

But it must be well understood that this and all like classifications are merely convenient contrivances to assist the memory. They have no existence in fact. Nature knows nothing of species, of genera, of orders, of classes—all of which are inventions of human ingenuity to assist the Human Intelligence, whose perceptions are subjected to conditions, compliance with which is requisite if it would range beyond the circle of the Senses. It is in obedience to this necessity that Phrenology has arranged the Mental Powers into the seven classes named above, and which are now generally acknowledged to be as correct as they are convenient.

CHAPTER XXI.

OF THE PROPENSITIES.

THE *first* of the seven classes comprises the Propensities that are common to MAN with the lower animals.

All of these will, upon examination, be found to be necessary to the maintenance of the existence of the individual and of the race. There are *nine* of these Propensities, namely :—

1. Sexual love.
2. Love of children.
3. Attachment to persons and places.
4. Combativeness.
5. Destructiveness.
6. Secretiveness.
7. Acquisitiveness.
8. Constructiveness.
9. The Faculty of Concentration.

I preserve the names given to them by Phrenology as being eminently descriptive; none better have been suggested even. A full exposition of the scope and action of each of the mental powers, an exhaustive account of their uses and abuses, together with necessary illustrations of their practical operation as experienced in ourselves or exhibited in the actions of others, would fill a very large volume. In this endeavour to present merely an outline of Psychology, nothing more can be attempted than a rude sketch of the structure of the Machinery of the Mind. We are limited to a definition, slightly expanded,

of each of the feelings and faculties—such a brief description of them only as may enable the Reader to commit to memory the most prominent of the functions of each of his mental powers. I take them in their order:

1. SEXUAL LOVE.—This emotion is too well known to need definition or description. It is the foundation of the family, which is the unit of Society. It possesses the mind for a very considerable portion of the lives of both sexes, although in unequal degree.

> Man's love is of man's life a thing apart,
> 'Tis woman's whole existence.—BYRON.

It is the primary theme of all fiction, and it has ever played a most important part in the world's history. Its uses are obvious. Its abuses are in the absorption of the mind in one passion, to the more or less exclusion of other feelings and thoughts, leading to neglect of the duties which we all owe to others as well as to ourselves.

2. THE LOVE OF CHILDREN.—This has been treated by some writers on Mental Physiology as being a faculty specially and exclusively devoted to the love of a parent for its offspring, and perhaps they are right, if it be contemplated only as developed in the lower animals. I say *perhaps*, because I am not sure that in the animal world there is not to be found, as among ourselves, a love for young creatures, as such, although not the offspring, or mistaken for the offspring, of the animal exhibiting the emotion. I have certainly seen, in dogs especially, signs of affection for young ones not their own, and a tenderness of treatment very different from the regard shown for acquaintances of larger growth. But, however this may be with animals, with Man unquestionably, and with him everywhere, whether civilized or savage, a love is felt for children, *as such*, independently altogether of the relation-

ship of the child to him. Children appear instinctively to recognise those in whom this propensity prevails. The primary purpose of the faculty is to secure for the helpless the protection of the strong, not by a slow process of reasoning, but by an emotion that impels to immediate action. Although one of the animal propensities, it is of incalculable service to humanity. The universal diffusion of it among the people of all countries, among all classes and both sexes, is a bond of harmony that goes far to counteract the force of some of the unsocial emotions, and almost more that any other reminds us continually that "we have all of us one human heart."

The Love of Parents for their offspring is only this propensity concentrated more powerfully upon their own children, not because they are theirs, but because they see more of them and are more often reminded of that dependance which pleads so powerfully to the heart and makes the mother love best her sickliest child—a beautiful provision of Nature that they who most want care should find the most of it and be the more loved for their very helplessness.

But there is a difference of kind as well as of degree in the parental love of the two sexes. The love of the father is his natural love for children generally, strengthened, in the case of his own child, by the constant presence of its object and the interest and pride he feels by reason of its near connection with himself. The mother's love is for *her* offspring, an attachment bordering closely upon instinct and entirely independent of external or extraneous circumstances. It is found to prevail with equal strength through the greater portion of the animal world, but differing from the love of the human mother in this, that it ends when the offspring has ceased to require a mother's care, while the human

mother's love is life-long and hopes to be eternal. By this propensity of the mother, acting after the manner of an instinct, the care of the infant is made to depend, not upon the mere dictates of virtue, or the recommendation of reason, but upon an immediate and irresistible impulse. "Were it not for this," says BROWN, "how many thousands would be left to perish ere they could ask pity and aid. Mark the helplessness of the infant, and think what care, what toil, what watching the little being requires. It is wonderful that all these troubles should be endured. But Nature has placed him above the dangers of human feebleness. She has given to him the strength of his parents, and even in the pride of his manhood he is not more strong to effect his wishes than when, by a few tears and murmurs, he commands the ready aid of parental love."

The abuses of this beautiful emotion are too often seen in the excessive indulgence of it by the pampering of its objects, and the unfortunate victims of that excess are the well known pests emphatically called "spoiled children."

3. Next in order is the important faculty which makes man a social being, and which may be defined as the feeling of ATTACHMENT to persons and things about us, known in its various modifications as Friendship, Love of Country, Love of Home, Love of Society. Who has not experienced the pleasure proceeding from some or all of these emotions? Who has never known what it is to have a friend or to be a friend? Whose heart has never thrilled and whose eye has never flashed, at the name of his own, his native land?

> Breathes there a man with soul so dead,
> Who never to himself hath said
> This is my own, my native land?

Whose heart hath ne'er within him burned
As home his footstep he hath turned
From wandering on a foreign strand?
If such there breathe, go, mark him well;
For him no minstrel raptures swell:
High though his titles, proud his name,
Boundless his wealth, as wish could claim,
Despite those titles, power and pelf,
The wretch, concentred all in self,
Living, shall forfeit fair renown,
And, doubly dying, shall go down
To the vile dust from whence he sprung,
Unwept, unhonoured, and unsung.—SCOTT.

That Man is endowed with an original faculty for attachment to persons and places, a natural susceptibility for friendship, can be doubted by none who consult their own feelings or look abroad into the world. "If we are gay, we love to share our happiness with another; if sad, it is a consolation that the miserable only can appreciate, to confide our woes to the sympathy of an acquaintance. In doubt, in trouble, we fly to some one for advice and aid. We cannot enjoy the simplest pleasures of life alone. Beautiful or sublime objects are thrice delightful if there be by our side one to whom we can express our admiration." (BROWN.) "The very excess of our emotions," says the same eloquent philosopher, "leads them to pour themselves out to some other breast, and the stronger the emotion the more ardent the propensity. We must make some one know why we are glad, or our gladness will be an oppression almost as much as a delight. If we are in wrath, our anger seems to us incomplete till not one only, but many, share our resentment. The sovereign would feel little pleasure in all the splendour of his throne if he were to sit upon it for ever with subjects around him to whom he was to be always a sovereign and only a sovereign; and the very

misanthrope, who abandons mankind in his detestation of their iniquity, must still have some one with whom he may give vent to his indignation by describing the happiness he feels in having left the wicked to that universal wickedness which is worthy of them, and which he almost loves because it enables him to hate them the more thoroughly."

The *Love* we have for our *Parents* and *Brotherly love* are other forms of this emotion. These are attachments from intercourse and not, as is commonly supposed, the natural impulse of a blind instinct, like that of a mother for her child. If you believed a person to be your parent, although in fact a stranger in blood, you would not love him or her the less while ignorant of the error. But so long as the belief exists, that belief serves to strengthen the bond of attachment which is really forged by the sense of dependence on the one side and the memory of acts of love and kindness on the other.

The *Love of Country* and the *Love of Home* are products of the same propensity of attachment directed to things instead of persons. These emotions are evoked by the memories of places and persons awakened by the presentment to the mind of names that suggest a whole world of past pleasures and distant dear ones for ever associated with the localities where they were enjoyed. In his "Farmer of Tilbury Vale," WORDSWORTH has admirably described the expression of this powerful emotion as evoked in old Adam, the yeoman who, when ruined in his fields and compelled to earn a livelihood amid the smoke and din of London, sought to recall some of his past country pleasures, to forget the painful present, and for awhile to live again in the happy past. Thus does the Poet, often the truest and profoundest Philosopher, interpret in action the faculty of ATTACHMENT.

In the throng of the Town like a stranger is he,
Like one whose own country's far over the sea;
And Nature, while through the great city he hies,
Full ten times a day takes his heart by surprise.

Mid coaches and chariots a waggon of straw
Like a magnet the heart of old Adam can draw;
With a thousand soft pictures his memory will teem,
And his hearing is touched with the sounds of a dream.

Up the Haymarket Hill he oft whistles his way,
Thrusts his hands in the waggon, and smells at the hay;
He thinks of the fields he so often has mown,
And is happy as if the rich freight were his own.

But chiefly to Smithfield he loves to repair,
If you pass by at morning you'll meet with him there.
The breath of the cows you may see him inhale;
But his heart all the while is in Tilbury Vale.

4, 5. Next in order are the propensities to which the names of COMBATIVENESS and DESTRUCTIVENESS have been given by the Phrenologists, and which, though somewhat misleading, must be adopted for lack of some more accurate designations. The uses of these propensities are plain. Primitive Man had to struggle for his existence against the opposing forces alike of animate and inanimate nature; and even civilized Man, although employing ingenuity and cunning more frequently than muscular power, is continually compelled to meet force by force. Hence the uses of a faculty that impels him to the combat by giving to him a certain sense of pleasure in the indulgence of it, and which, like all the propensities, is kindled instantaneously and involuntarily by the presence of the exciting cause, prompting to action on the moment, without waiting for the slower commands of the Intelligence. But it would not have sufficed for Man's needs to possess merely a spirit of *Combativeness*, unless

attended with an impulse to extinguish the objects of hostility. It would often be of little use merely to conquer a mortal foe. When the life of the Man is staked against the life of the wild beast it is necessary that he should kill as well as subdue. This, it must be remembered, is the original and primary purpose of the faculty of *Destructiveness*. Both of these propensities were also requisite to Man in his earlier stages for the procuring of his food. Primitive Man was probably a flesh eater, his choice lying between eating or being eaten. However that may be, the uses of these propensities are manifest. Their abuses are equally obvious, for are they not written in letters of blood in the annals of all the peoples of the world? The highest form in which these propensities present themselves is in that spirit we recognise as COURAGE—a virtue difficult to define in words, but readily recognised, as it is universally held in just admiration. It is seen in boldness to confront danger, to overcome difficulties, to resist attacks. But for the propensities of *Combativeness* and *Destructiveness*, Man would long ago have fallen a prey to other animals. Without them, society would be impossible, for wrongs would be perpetrated with impunity and the weak would be the victims of the strong. It is the sudden kindling of this emotion, when ourselves or others are wronged, that rouses the passions of *anger* and *revenge*; passions which, when in excess, are noxious and terrible; but in their normal expression, when provoked by an honest indignation at the sight of oppressed innocence, or the tale of successful vice, are not only laudable in themselves but of the utmost advantage to mankind. These emotions are thus graphically described by Dr. BROWN. "There is a principle in our mind, which is to us like a constant protector;

which may slumber indeed, but which slumbers only at seasons when its vigilance would be useless, and which, waking at the first unjust intention, becomes more watchful and more vigorous in proportion to the violence of the attack which it has to dread. What should we think of the providence of Nature if, when aggression was threatened against the weak and unarmed, at a distance from the aid of others, there were instantly and uniformly, by the intervention of some wonder-working power, to rush into the hand of the defenceless a sword or other weapon of defence . And yet this would be but a feeble assistance if compared with that we receive from those simple emotions which Heaven has caused to rush, as it were, into our minds for repelling every attack. The instant *anger* which arises does more than many such weapons. It gives a spirit which knows how to make a weapon of everything, and which of itself does, without a weapon, what even a thunderbolt would be powerless to do in the shuddering grasp of the coward. When anger arises fear is gone; there is no coward, for all are brave. Even bodily infirmity seems to yield to it, like the very infirmities of the mind. This effect the emotion of anger produces at the very time of aggression, and though no other effect were to arise from it even this would be most salutory. But if the momentary feeling were all, the contest would be a contest of mere degrees of force. It is the long remaining resentment which outlasts, not the momentary violence of emotion only, but all the evil consequences of the crime itself, which renders the anger of the weakest formidable, because it enables them to avail themselves, even at the most distant period, of aid before which all the strength of the strongest individual must sink into nothing. There is a community, to the whole force of which

the injured may appeal, and there is an emotion in his breast which will never leave him till that appeal be made. Time and space, which might have afforded impunity to the aggressor, are thus no shelter for delinquency, because resentment is of every place and every time, and the just resentment of a single individual may become the wrath and vengeance of a nation. . . . . It is necessary, therefore, for deterring unjust provocation, that a man should not feel anger merely, but should be capable of retaining the resentment till he can borrow the general aid of the community, to which on the instant of any well planned villainy it would probably be in vain to look. The wrath of a single person—of the weakest and most defenceless individual—may thus carry with it as much terror as the wrath of the strongest, or even of a whole army of the strong."

The abuses of these propensities are angry passions of extreme violence, excited upon trifling occasions and by fancied offences. They are exhibited also in a love of contention and a tendency to provoke and assault others. They are especially remarkable in the persons commonly called "passionate," "tetchy," or "quarrelsome." *Destructiveness* in excess is often shewn in a reckless disregard of life for an insufficient motive.' It probably lies at the foundation of that love of sporting, characteristic of certain races of men, and which was doubtless inherited from far off ancestors with whom the chase was almost the sole source of food.

6. The next propensity common to Man with the Lower Animals is an impulse to conceal that which we do not desire to be known to others, and therefore the Phrenologists have given to it the appropriate name of SECRETIVENESS. In the animal world it has the same important uses which it performed for Man in the

earlier stages of his civilization. It is the faculty that enables the weak to avoid by stratagem the dangers they would incur from foes physically stronger than themselves. It also incites the creatures to whom the earth does not yield a sufficiency of food at all seasons to lay up a store for future use in secret places where it may escape the eyes of the plunderer. "When wild in woods the noble savage ran," to him also was this propensity a protection against the stronger than he. In civilized society it has its uses. Constructed as man is with many passions and propensities that are designed mainly for self-preservation, and therefore purely selfish in their direction and expression, Society could not hold together for a week, if each individual member of it were to express by word or action every passing wave of feeling and every recurring thought. It is this faculty of *Secretiveness* that impels and enables us to conceal the *expression* of our emotions though unable to stifle the emotions themselves. By this unconscious adaptation of manner to the moods of others, and suppression of discordant elements that exist more or less in the character of every human being, the harmony of social life is sustained, and indulgence in the gregarious propensity, due to the influence of the faculty of *attachment*, is rendered possible and which but for this propensity would be impossible. It is also a principal ingredient in the virtue of *Prudence*. Combined with *Cautiousness*, it produces *the reserve* which is always so justly lauded as a feature in the character of public men. It teaches them to be chary of talk. It is appealed to when we are charged "to keep a secret." It is expressed in the proverb, "Speech is silvern, but silence is goldern."

Moreover, *Secretiveness* is a faculty essential to certain

forms of genius. It is the foundation of the dramatic capacity. If it be deficient in a man, he never can become a great or even a tolerable Actor, and to enable him to be eminent as such this Propensity must be strong in him. The reason will be apparent at a glance. To be a great Actor, it is necessary that a man should not only assume the character he represents, but as perfectly suppress his own. He must cease to be Kean and become Hamlet. His success will be measured by the extent to which he can accomplish this double effort, and the Mental faculties that qualify him for the task are *Secretiveness*, enabling him to conceal his own character, and *Imitation*, enabling him to assume the character of the play.

Its abuses are exhibited in *Cunning*, which is calculated deception for a wrongful purpose; *Duplicity*, which is the pretence of one purpose while designing another,—a character assumed and acts done with intent to deceive; and *Lying*, which is duplicity practised by asserting, with purpose to mislead that which the speaker knows to be untrue. A lie being a deception practised upon another, it may be acted as well as uttered. The pointed finger may lie as effectually as the lips.

7. The next in order is the propensity to Acquire, which has been aptly termed ACQUISITIVENESS. Its purpose, alike in animals and in man, is to stimulate to the toil more or less necessary for both in order to obtain the objects of their wants or desires. Nature has given us many wants. Besides the food and clothing necessary to our existence, Man thirsts for pleasures, and *must* have them in moderation, or mind and body will be alike sufferers. These innocent gratifications would be unattainable if we had not also a *desire* to procure the means of enjoyment, and the propensity is so universal and is shewn in so many shapes there can be no

doubt that it is a special faculty of the Mind. Its advantages are patent. Without it we should not trouble ourselves to procure anything to which we were not immediately prompted by present appetite; we should hunt only when hungry; we should enjoy that which was before us, but seek nothing more; we should not trouble ourselves to acquire knowledge; we should pay no regard to the future; the gains of the day would be dissipated before night; no man would accumulate that wealth which is the mainspring of civilization and the nucleus of still more wealth and still more improvement; we should still have been but hordes of roving savages. But this propensity is not limited, as is commonly supposed, to the acquisition of the materials we call "wealth;" *it prompts to the acquirement of whatever the individual desires to possess,* and thus it is the foundation of many virtues and of many vices. In some it is shewn in a thirst for knowledge; in others it takes the form of ambition. It is the largest ingredient in the desire for fame. Its primary purpose is to induce us to make provision against want in the future and this is the most frequent form it takes and the most useful.

Its abuses are shewn in the vice of *avarice,* in the fault of *selfishness,* in the crime of theft and its allied offences. Hence its abuses are more frequent and more familiar to us than are the abuses of any of the other propensities. By the construction of modern society everything from early youth tends to foster this feeling, which frequently, so fostered, becomes in mature years an uncontrollable passion. The greatest attention should therefore be paid to the first years of childhood, in order to check as much as possible improper excitement of this propensity. *How it grows* has been graphically described by Dr. Thomas Brown, whom I have already quoted.

"Before," he says, "the boy lays out his penny in the purchase of an apple or orange, it appears to him valuable chiefly as the means of obtaining the apple or orange. But the fruit is soon devoured, its value with respect to him has wholly ceased, and the penny he knows is still in existence and would have been still his own if the fruit had not been purchased. He thinks of the penny, therefore, as existing now, and existing without anything which he can oppose to it as equivalent; and the feeling of regret arises—the wish that he had not made the purchase and that the penny, as still existing, had continued in his pocket. A feeling of regret thus associated with the loss of his penny will, by frequent repetition, be still more intimately combined with the very conception of those little purchases to which his appetite otherwise might have led him. It will seem a serious evil to part with that the pain of having parted with which was a serious evil before. If he has purchased anything which retains a permanent value the regret will be less likely to arise. It will be the same if he has given it away in the relief of distress, since in this case, the pleasure of the thought itself, as often as the thought occurs, may almost be considered a something permanent. Our first expenses then, like all the subsequent expenses of our mature years, may be attended, according to the circumstances, either with regret or satisfaction; and it is not easy to say how much of the future avarice of the man may depend on the nature of a few purchases made by the boy."

This is a truthful description of the manner in which character may be formed, or, I should rather say, moulded by education. But the emotion that prompted both the selfish and the benevolent expenditure was the *impulse to acquire* the something that was supposed to give pleasure;

in the one, the pleasure of eating, in the other, the pleasure of the giving.

8. CONSTRUCTIVENESS is undoubtedly an original propensity common to animals with Man. Its uses are indicated by its name. Its primary function is to prompt to the formation of the structures required for breeding, or residence, or the storage of food. It is as yet an unsolved problem whether in the animal world this faculty suggests manner of the structure, or only the impulse to construct something, the structure itself being contrived by other faculties of the mind. In Man there are certainly but few traces of an instinct to adopt fixed forms of structure. Animals for the most part do so and the processes they pursue are attributed to Instinct—that convenient phrase for concealing our ignorance from ourselves. But, although the animal world usually adopts stereotyped forms, it moulds those forms to the special requirements of circumstances. It can modify, though it cannot invent. In civilized Man this *Faculty* shows itself in many shapes; in the construction, not of edifices alone, but of anything required for use or pleasure, as in the constructing of plots for the drama or the novel, the production of a statue or picture. The persons in whom it largely exists are known to fame as Inventors, and Watt was indebted for his greatness to the same faculty that distinguishes the beaver and the bee.

I venture the suggestion that the reason why man does not construct in uniform pattern, as do the lower animals, is not, as commonly supposed, a difference in the nature or even the degree of this faculty of *Constructiveness*, which is common to both, but that man has also a faculty of *Imagination*, which is not developed in other animals, or only to much less extent, and that it is the influence of the Faculty of *Imagination* that directs his *Construc-*

tiveness to other forms which are conceived in the Mind. The animal, having no *Imagination,* is unable to devise any change in the structure beyond that which is directly suggested by the circumstances apparent to its senses, as when the bird builds its nest of materials resembling in aspect the bough on which it is placed. Man adapts his structure to the locality, like the bird; but he does more, he changes shapes and other conditions according to his *Imagination.* If he had not this Faculty, would he not, as animals do, construct with very limited deviation under the unaided prompting of *Constructiveness* alone—or with a very limited reasoning power that extends only to objects patent to the Senses?

9. The Phrenologists have introduced among the propensities a faculty which they call CONCENTRATIVENESS. They intend by it the power, very unequally possessed by different persons, of concentrating the Mind on one subject or purpose. The Mind, they say, is composed of a great number of distinct faculties, of which more or less are actively engaged in every mental operation. The uses of this faculty are to concentrate into a focus, as it were, the various faculties called into action, and so to bring them to bear together on the matter upon which the Mind is engaged. Another secondary purpose of this faculty is to enable the Mind to pass rapidly from one subject to another, which would be impracticable if one set of faculties were left to subside of themselves before another set could be called into play. But the very existence of such a faculty seems to me problematical. Is not the power of passing from one subject to another dependent on the rapidity with which each of the faculties can be called into action and subside again? And is not the WILL, rather than a special Faculty, the controller under whose influence the

one theme is banished and the other brought to the front? I place it among the rest because of the great authorities who have recognized it; but I cannot see my way clearly to its positive adoption. Is it to this Faculty that the power is due of what is termed "fixing the attention?" This is a power possessed by different persons in very different degrees, and it appears to be a special and independent faculty, and not merely a quality of other faculties—like memory, for instance.

CHAPTER XXII.

THE MECHANISM OF THE MIND.

THE SENTIMENTS COMMON TO MAN WITH THE LOWER ANIMALS.

LET us turn now to the SENTIMENTS common to man with the Lower Animals.

These are *Four* in number, viz.,

10. Self-esteem;
11. Love of Approbation;
12. Cautiousness;
13. Benevolence.

10. SELF-ESTEEM.—In its best form this Faculty is shewn in what is termed *Self-respect.* Its uses are to prompt that regard for our own dignity which so often restrains from the commission of crime, or the doing of unworthy if not wrongful acts, and stays the indulgence of a vice even after conscience has pleaded in vain. By causing every man to set a higher value upon himself than probably would be awarded to him by others, *Self-esteem* serves to maintain the general character of the race. The abuses of this Faculty are seen when in excess it assumes the form of *Pride*—giving a ridiculously exaggerated self-importance to the individual and to all that appertains to him. It is well embodied in the proverbial description of such a man, "All his geese are swans." His own estimate of himself is extended to whatever is his. *Self-esteem*

differs from *Vanity* in this, that Self-esteem is satisfied with its own valuation of itself and cares little for the applause of others; whereas Vanity is a desire to attract the attention and applause of others and is not satisfied by any amount of self-laudation. Self-esteem is an ingredient in *obstinacy*—for it cannot confess to error which would be humiliating to pride. It is probably an ingredient also in another powerful sentiment, which, like the rest, is a virtue or a vice according to its degree and the direction of its energies. The Phrenologists assign no place to *Ambition* as a distinct mental faculty, but say that it is the product of an association of other faculties. It is, they contend, the result of a combination of *Self-esteem* and *Love of Approbation*. The latter alone in any amount of excess would produce only *Vanity*, which is a very different vice from *Ambition*, if indeed this be a vice. It is the combination of desire for the notice of others—and to be distinguished in the world, as the best means to secure that notice—with great *Self-esteem* that constitutes Ambition. In itself, *Ambition* is neither a vice nor a virtue, but readily becomes either according to the object of its aims and the means taken to secure them. The Ambition for Fame is generous and noble; but it may easily degenerate into a vice, if Fame be sought by unworthy means, or if mere notoriety be striven for without much care for honourable mention. So it is if Ambition gratifies itself without due regard for the well being or even for the feelings of others, and, worst of all, where it seeks the reputation for which it thirsts, as so many magnates of the earth have done, in the pomp and circumstance of war, to the sacrifice of uncounted lives, and at the price of untold miseries to millions. To the abuse of this sentiment mankind are

indebted for all the tyrants who have afflicted them. It is found, also, in the petty tyranny of those despicable despots to be seen in so many homes, "who lord it over the unfortunate wives," children, or whosoever may be subject to them, "with the same insolence of power which, if fortune had placed them upon a throne, would have made them Neros or Napoleons."

11. The next in order is LOVE OF APPROBATION. Its primary purpose is a desire for the approval and esteem of others, a sentiment of the utmost value and indeed almost essential to the existence of Society. Man is a social being and therefore he craves for the good opinions of those with whom he associates. As was said in treating of Self-esteem, *Love of Approbation* is a large ingredient in the thirst for *fame*, which is a desire for the praise, not of those alone with whom we live, but of those also whom we have never seen and never shall see, and even of generations unborn. The benefits that flow from this faculty are innumerable. The wish to please restrains the promptings of selfishness, puts a bridle upon the passions, induces the cultivation of the arts of pleasing and therefore prompts to the good manners which are the charm of social life. If all indulged their propensites, or even their higher sentiments, at all times without regard for the opinions of their associates, the intercourse of individuals would be restricted to the mere necessities of existence and society would be an arena for perpetual strife. It is *Love of Approbation* that induces us to repress our personal feelings and opinions when they threaten to be obnoxious to others and to be the causes of contention. The very habit of restraining the exhibition of a fault often results in the extinction of the fault itself. The endeavour to please others that we may have their approbation is the

parent of that true politeness which makes society delightful; which, by wearing the face of joy, even though the heart be heavy, insensibly restores the joy itself to the bosom from which anxiety had banished it; and which, by careful avoidance of whatever can by possibility inflict a moment's pain upon those about us, not merely banishes discord but creates happiness.

The abuse of this Sentiment is seen in *Vanity*, whose weakness it is to seek the applause, or even the mere notice, of others by any means, worthy or unworthy. The vain man is ever fishing for notoriety and would be ill spoken of rather than unnamed. *Vanity* is exhibited in dress, in gait, in the bearing of the head, and even in the lineaments of the face. *Self-esteem* wraps itself in its own pride and, content with self-approbation, cares little what the world it despises may be pleased to say. But *Vanity* is ever being wounded, and feels its wounds poignantly, and thus, as with all the sentiments when in excess, it becomes a source of continual pain. In its uses, *Love of Approbation* prompts to actions that deserve approval and is gratified by receiving the approval it has deserved. But when abnormally in excess, or stimulated into inordinate activity by indulgence, it takes the form of *Vanity*, there is no more fertile source of misery; none is more wretched than its victim.

It is a favourite Debating Society problem, to what Mental Faculty we may trace the sentiment of *Ambition*, which has been called the infirmity of noble minds. This can only be solved by inquiring what is the object of Ambition. Is it an intense desire to be great and powerful, to rise to a higher place in the world for the gratification of self applause? This form of Ambition would be the product of *Self-esteem?* Is it a thirst for position and power for the sake of the applause

of others that usually attends upon them? Ambition in this shape has *Love of Approbation* for its parent. Or is it an eager greed for the good things that ever flow to the centre of power and greatness—a desire, in fact, for the material profits to be reaped from them? Such an Ambition would be the offspring of *Acquisitiveness*. Ambition is not one special mental faculty but the product of a combination of faculties. It is frequently commended by moralists, and we are accustomed to speak of it with a sense of pride, as a feature in the character of a man to be held in honour. In some aspects it *is* good, as being the prompter of goodness; but more often it is noxious to others as well as to the subject of it; and it is always selfish. Even where it seeks its gratification in works of benevolence, its bounty or its exertions are not always proper subjects for admiration and applause, for they are too often bestowed, not for the sake of charity, but for the glory that is to accrue from the public laudation expected to be lavished upon the public benefactor.

12. The next in order of the Sentiments is CAUTIOUSNESS. The primary purpose of this Faculty is to prompt us to the avoidance of danger. The Phrenologists attribute to this Sentiment the too familiar emotion of *Fear*. I am rather inclined to think that Fear is more commonly the exciting cause of Caution. No part of the Machinery of the Mind has more marked characteristics. It shows itself in so many forms that there is no difficulty in discovering, after a short acquaintance, the various degrees of *Cautiousness* possessed by various persons. It may be profitably studied by observation of children, in whom the emotions exhibit themselves with less of that restraint which is one of the earliest lessons of experience. Watch them in some position of

real or fancied danger or terror. The boldes,t that is, the one having the most *Combativeness* and the least amount of *Cautiousness*, takes the lead; the others follow at distances almost precisely proportioned to their several capacities for Fear—the most timid of all, that is, the child having the greatest amount of *Cautiousness* in his brain, bringing up the rear. In its use, *Cautiousness* tempers *Courage*, and a due combination of these qualities is a rare and admirable feature in the mental character. Allied with some of the Intellectual Faculties, it produces the virtue of *Prudence*, which is a combination of *Reason* and *Caution*.

Too much *Cautiousness* in the presence of real or imaginary danger is seen in the shape of *Cowardice*. In such case the whole Mind seems to be paralyzed. The voice of reason and even of prudence is unheard. Fear is in this condition singularly contagious. The panics which occasionally seize crowds of men, in common with all other gregarious animals, are an excitement of this faculty by a species of sympathy communicated with extraordinary rapidity—a phenomenon which has not been sufficiently investigated, seeing what light it is calculated to throw upon some obscure problems in Psychology.

But the excess of *Cautiousness* is not so often exhibited in *Physical* as in *Moral* Cowardice. No character is more frequently to be found than the man lacking moral courage. Many a man, who would face a mortal danger without trembling or hesitation, shrinks with terror from a criticism in a newspaper and is even held in awe by dread of what an obscure neighbour may say of him. He dares not whisper an unpalatable truth; he conceals his sincerest convictions if they are unpopular at the moment. This lamentable condition of mind results from the combination of excessive *Love of Approbation* with

excessive *Cautiousness*. It is a cowardly fear to be ill spoken of by others, and the victim is willing to sacrifice even his own self-respect if he can thereby save himself from the censure, not of the good and sensible, but of the ignorant and silly, whose opinions he would despise if offered to him privately. To this evil combination of two sentiments, each of the highest utility in itself, must be ascribed the popular submission to the tyranny of fashion and of custom. Thence, too, comes that slavery of the Mind which in modern Democracies seems to be substituted for the scarcely less tolerable slavery of the body that prevailed in the ancient Autocracies.

This is the faculty which when diseased gives rise to unfounded apprehensions and melancholy; and when combined with a disordered and depressed condition of the Sentiment of *Hope*, is the most frequent cause of suicide.

13. The next in order of the Sentiments is BENEVOLENCE. Essayists and poets have exhausted language in praise of this faculty. And rightly so, for the possession of it in full measure is not only a source of self satisfaction, but it is the sure passport to the affection of friends and the loving admiration of all who come within the sphere of its influence. I must again borrow an eloquently descriptive passage from BROWN: "The benevolent spirit, as its object is the happiness of all who are capable of feeling happiness, is as universal in its efforts as the miseries which are capable of being relieved or the enjoyment which it is possible to extend to a single human being within the reach of its efforts, or almost of its wishes. When we speak of benefactions, indeed, we think only of one species of good action, and Charity itself, so comprehensive in its meaning, is used as if it were nearly synonymous with the mere opening of the purse. But it

is not money only which the unfortunate need, 'and they are but sluggish in well doing,' as Rousseau strikingly expresses the character of this indolent benevolence, 'who know to do good only when they have a purse in their hand.' Consultations, counsels, cares, friendship, protection, are so many resources which pity leaves us for the assistance of the indigent, even though wealth should be wanting. The oppressed often continue to be oppressed merely because they are without an organ to render their complaints known to those who have the power of succour. It requires sometimes but a word which they cannot say, a reason which they know not how to state, the opening of a single door of a great man through which they are not permitted to pass, to obtain for them all of which they are in need. The intrepid support of disinterested virtue is, in such cases, able to remove an infinity of obstructions, and the eloquence of a single good man in the cause of the injured can appal tyranny itself in the midst of its power."

The mental Faculty to which the significant name of *Benevolence* has been given has a wide range for its exercise. It is not limited, as in the popular understanding of it, to merely *giving*: it is something more than the possession of "a hand open as day to melting charity." In its general feature it is a desire for the happiness of others, prompting to the actions by which their well being may be promoted. Where this faculty is largely found, there is the charity, not alone of the purse, but the more rare and admirable charity that is felt and expressed always and everywhere in relation to all other persons. *Benevolence* is the Charity of the Mind that seeks always for the good that is in its fellow men and sets the kindliest construction upon their motives and acts. It is, indeed, perfectly summed up by

the Apostle in that passage of unrivalled terseness and exquisite eloquence: "Charity suffereth long and is kind; charity envieth not; charity vaunteth not itself, is not puffed up, doth not behave itself unseemly, seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things, hopeth all things, endureth all things. Charity never faileth. But whether there be prophecies, they shall fail; whether there be tongues they shall cease, whether there be knowledge, it shall vanish away. . . . . And now abideth faith, hope, charity, these three, but the greatest of these is CHARITY." This is the virtue that is the function of the sentiment of *Benevolence* implanted in the mind for the noblest uses, and the exercise of which is inculcated by the same powerful eloquence: "Though I speak with the tongues of men and of angels, and have not charity, I am become as sounding brass, or a tinkling cymbal. And though I have the gift of prophecy and understand all mysteries, and all knowledge; and though I have all faith, so that I could remove mountains, and have not charity, I am nothing. And though I bestow all my goods to feed the poor, and though I give my body to be burned, and have not charity, it profiteth me nothing:" (1 Cor. xiii.)

To this faculty is to be referred that mildness of disposition which is a marked feature in many characters, shewing itself in slowness to take offence, readiness to forgive, and leniency to faults and failings. Nor are its regards limited to humanity. They extend to all animated beings. It is exhibited towards the horse and the dog equally as to man, and to all men alike without regard to class or country.

Its abuses, for even the virtues may become vices by

excess, are seen in thoughtless extravagance of bounty without regard to the title of the receiver or the means of the giver; in an incapacity to say "No," to strongly urged persuasions; in weak indulgence to the fancies and frivolities of those under its charge; in that general easiness of disposition which cannot bear to cause annoyance to another by thwarting even noxious desires, and which culminates in the contemptible character expressively described as being no man's enemy but his own.

CHAPTER XXIII.

THE MECHANISM OF THE MIND.

THE SENTIMENTS PROPER TO MAN.

THESE are eight in number, namely:

14. Veneration.
15. Firmness.
16. Conscientiousness.
17. Hope.
18. Wonder.
19. Ideality.
20. Wit.
21. Imitation.

14. The next in the catalogue of the Mental Faculties is VENERATION. That the mind possesses such a sentiment, and that it is not the result of a combination of other faculties, is admitted by all the Mental Philosophers who acknowledge the existence of separate and distinct mental faculties. But considerable difference of opinion has prevailed, and still prevails, as to the precise province and manifestations of this sentiment. It is undoubtedly that to which we owe our *sense* of Religion, by which I mean that *impulse to worship* which exists apart from any teaching of Theology by the Reason. Upon the presence of such a faculty in the Mind, a powerful argument has been founded for the existence of

an object of worship, or wherefore should such a faculty have been provided. But if the operation of this Sentiment be analysed carefully, it will be found not to bear out the too hasty assumption as to its duties. *Simpliciter* its function is to make us regard with respect whatever is great and good—that is to say, whatever we *deem to be* such. Contemplation of Divinity, as being to our conceptions the height of greatness and goodness, excites the most powerful emotion, and hence Worship of that Divinity—which is the highest expression of the emotion of Veneration. But this sentiment is not directed to the Divinity alone, nor excited because it is Divinity, but because of the conception of greatness and goodness that attaches to the notion of Divinity. Hence the same sentiment, though in less degree, is awakened by whatever is great and good in man. We use the term freely to express that form of regard. We are content to say of a good man, "I respect him;" but when we feel a more powerful emotion for somebody greater, we use the term "I venerate him." That *Veneration* is a special faculty, and not a mere result of conviction, or of faith, is proved by the fact, familiar to all observers of society, and which many readers will recognise in themselves, that the sentiment may be strongly excited by religious exercises, solemn ceremonials, sacred music, or by the mere aspect of a grand cathedral aisle, even in Minds whose Reason rejects the doctrines there taught.

In its excess, this sentiment exhibits itself in the abject prostration of the Intellectual Faculties before its overwhelming influence. It is often shown also in an irrational reverence for things that have no intrinsic merit, because of their accidental association with persons or places that *are* reverenced. In minds thus constituted, the mere antiquity of an object, although it

has nothing but age to recommend it, excites the sentiment of *Veneration*. It is the fruitful parent of superstition. The peculiar emotion termed "*awe*," which every reader will recognise although he cannot define it, and which differs from the cognate emotions of reverence or respect, is the product of this Faculty when in excess. It is a sensation never felt save in the presence of something which impresses the mind with the notion of overwhelming *power*. We unconsciously compare our own littleness with that greatness and the emotion of *awe* is the consequence. The expressive term by which this is known is to be "awe-stricken." There are few who do not sometimes feel this emotion of awe, as a consequence of the mighty Forces that are manifested to us occasionally, but which are ever about us. We are conscious that we are encompassed with mysteries we strive in vain to penetrate. But where *Veneration* is in excess the sense of *awe* is caused by things altogether wanting in real greatness and power. It is awakened by shows and shams, and indulges itself in reverence for objects which the reason rejects as being unworthy of respect.

15. The next is FIRMNESS, a Faculty more readily observed when defective or in excess than in its normal condition. We can recognise in a moment the vacillating persons in whom it is wanting, and the obstinate persons who possess it in overflowing measure. It is not easy to gauge the precise degree of *Firmness* that constitutes true manliness. It is plainly to be seen when it takes the form of *Perseverance*, than which there is no virtue more conducive to a prosperous career. The possession of a full measure of *Firmness* constitutes what is known as the determined character, which carries out its resolves in defiance of difficulties. It differs from *Perseverance* in

this—that perseverance is persistency in the pursuit of an end; determination is the resolve to secure that end and to remove whatever obstructions may stand in the way. A man may be determined without having perseverance, and possess perseverance without determination.

The lack of *Firmness* is but too familiar to us. In excess, it becomes *Obstinacy*, which is an impulse to do or not to do, because the mind has so resolved, without reference to the right or wrong of the course adopted! Its use or abuse mainly depends upon the other mental powers with which it is combined. If the good faculties predominate, *Firmness*, even if a little in excess, confirms the good and gives to it the force of its alliance; but, if the other Faculties are not well balanced, the Firmness that strengthens the good strengthens the evil also.

The Phrenologists have erroneously classed this as among the sentiments proper to Man. It needs very slight acquaintance with animals to satisfy the observer that it is a Faculty possessed by them also. Who has not witnessed its presence in horses and dogs; its excess shewn in obstinacy, its deficiency in a lack of perseverance and a shirking of obstacles and difficulties?

16. The next in the list is CONSCIENTIOUSNESS. It is the Faculty that gives us the Sense of Justice, which is the substantial foundation of Morality. Philosophers have been disputing, from the earliest recorded time to this hour, whether we have in us a natural sense of right and wrong, and what that sense is, if we possess it. The true foundation of morals is as hotly debated now as ever, and the contest must continue so long as the argument is conducted by the antiquated process of the disputants drawing their facts from their own inner consciousness. It is the great merit of the Phrenologists (even if they

have too hastily assigned special functions to particular parts of the brain, or rather, I should say, professed to have discovered the special portions of the brain devoted to the special functions), that they have lifted the Philosophy of Mind out of the endless and hopeless conflict that had been raging round it into a position in which it can at least be treated, like other subjects of Science, by experiment, and observation, and argument based on facts capable of proof or disproof. Viewing the Mental Faculties as a branch of Physiology, and admitting the existence of *Conscientiousness* as one of these Faculties, the consideration of its uses and objects goes far to solve the problems about which the Metaphysicians have been disputing for centuries.

The action of this Faculty requires to be carefully considered, for unless it be rightly understood, the most erroneous conclusions may be come to. The function of this Sentiment is *to give us a sense of satisfaction at the contemplation of that which we deem to be right, and of pain on the contemplation of that we deem to be wrong.* But does it teach us what is right or what is wrong? True it is, that though all Men in all ages and countries have some notions of right and wrong, there have been and are endless diversities in the definition of right and wrong as associated with actions and thoughts. That which whole nations hold to be wrong other nations esteem as right, and the contrary. *Conscientiousness* gives to both peoples alike the pleasure and the pain; but the self-same action that is the cause of pleasure to the one is the cause of pain to the other. This has been held to prove that the function of *Conscientiousness* is not to determine what *is* right or wrong, but only to prompt to the doing or not doing of that which the Intellect contemplates as right or wrong; and that this is effected by

a sense of pleasure attending the doing of what we believe to be right and a sense of pain when we do what we believe to be wrong.

Doubtless the Reader will ask if the Mind has *no* sense of right and wrong, apart from that which it is educated to recognize as being the one or other; that is to say, have we no *natural* sense that certain actions are right and certain others wrong? Is there no universal mental test of justice and injustice, but are these terms descriptive only of the estimation in which certain acts are held at certain times and in certain places, varying from time to time and recognizing no fixed natural standard? It is the contention of many Philosophers that no such natural sense of right and wrong, of justice and injustice, is to be found in the constitution of Man, but only a sense that approves or disapproves actions, not as being right or wrong in themselves, but as having a certain character which we have been educated to look upon as right and wrong. But I venture to question this conclusion. It appears to me that there *is* a *natural* sense of *justice*, and that this is a function of the Faculty of *Conscientiousness*. I very much doubt if the Mind goes through the elaborate and slow process of trial by the Reason in the Court of Conscience of any particular act done or contemplated, before it is presented to the Faculty of *Conscientiousness*. True it is that the notion of *what is just* varies in various countries and changes among the same people in the lapse of centuries; but I am satisfied that a common sense of *what* is just or unjust exists, however hidden by an overgrowth of conventional impressions. In despite of appearances to the contrary, I think all men would be found to agree that certain acts approve themselves to the Mind, and certain others excite a sense

of disapproval. To take a single instance. Possession gives a notion of property:

> The good old rule, the ancient plan,
> That he should take who has the power,
> And he should keep who can,

only expresses what Men *will* do, not what they would avow they *ought* to do. A sense of wrong implies a sense of right. The Man who would rob another without remorse would yet feel that a wrong had been done to him if he were himself robbed. Nor would that sense of a wrong done be the less keen if he were robbed of the goods he had himself stolen. This is not a sense of indignation, as some have supposed, but a consciousness that *a wrong* has been done to him, and the indignation that follows is the emotion of anger kindled by the presence of a wrong. *Conscientiousness* may be so blunted by habit as not to prick the thief in the pursuit of his calling; but it is promptly heard when he is himself the victim. If then he *feels* that he has been wronged, it means that somebody has done to him something which he feels not to be right; and from this we may conclude that there is in us a Faculty that gives us a sense of justice and injustice, and that in at least one important particular—the depriving another by force or fraud of that which he possesses—we instinctively and as a part of our mental constitution recognize a right and a wrong. Whether our natural sense of justice extends beyond this elementary stage; or if, indeed, as I am much inclined from an imperfect consideration of it to conclude, all our notions of justice and injustice are limited to the deprivation of property, is a question too large to be treated here as its interest and importance would demand.

Like all the Emotions and Sentiments, this Faculty of *Conscientiousness* operates instantly on the presentation of the object. Its verdict is not governed by the slow processes of the Reason; it is pronounced instantly, and I may say, instinctively. It is this universal sense of wrong which, more powerfully than the strength of laws, conduces to the security of life and property. "When we reflect," says BROWN, "on the temptations which would lead men, but for this monitor, to gratify their passions without restraint, when they could obtain wealth without the toil of industry, and when we yet see a thousand enjoyments laid within the reach of others which it requires, perhaps, but the stretching forth of the hand, a falsehood, or a fraud, to obtain, it is astonishing to think of the simple means by which security is produced. Grosser crimes may be prevented by punishments which make the attempt to commit them too perilous. But how many actions are there over which the laws cannot extend. They may, indeed, check open violence, but there are secret crimes which they cannot control—those frauds, for instance, of mere persuasion, which can only be known to be crimes to the conscience of the deceiver. It is in these circumstances that He who formed and protects us has provided a check for that injustice which is beyond the restraining power of man, and has produced what the whole united strength of nations could not produce, by a few simple feelings, a check and control as mighty as it is silent and invisible, which He has placed within the mind of the criminal himself when it would be most needed; or within the mind of him who, but for these feelings, would have been a criminal, and who with them is virtuous and happy. The voice within, which approves or disapproves, long before action and even before the wish that would lead to action can be said to be fully

formed—has in it a restraining force more powerful than a thousand gibbets: and it is accompanied with a certainty that in every breast there is a similar voice that would join its dreadful award to that which would be far more felt within. The feelings of moral approbation and disapprobation are at once the security of virtue and its avengers; its security in the happiness that is felt and the happiness that is promised to every future year and hour of virtuous remembrance; its avengers in that long period of earthly punishment when its guilty injurer is to read in every eye that gazes on him the reproach which is to be for ever sounding in his heart."

Childhood, that speaks the language of nature, emphatically proclaims the existence of this sentiment. If we have no memory of our own feelings, who of us is there who has not witnessed the emotions of the child to whom some tale of wrong is told. With what fixed gaze and motionless limbs he listens to the story of oppressed virtue and prosperous crime. Is the theme the familiar tale of the Babes in the Wood? With breathless anxiety he hearkens to the devilish design—he traces the steps of the innocent children to the wood: his young imagination sees their terror, hears their sobs, feels their agony; his eyes flash indignation, his cheeks glow with a virtuous rage; he longs for the strength of a man that he may hurl immediate vengeance on the murderer. As the tale proceeds and he learns how Heaven had punished the wretch with the loss of home and wealth—then, and not till then, does the little champion of virtue become calm and resume his sport, satisfied that a deed which seemed to him so horrible was not permitted to escape unavenged. What is this but the eloquent voice of Nature uttered in the flashing eye and flushed face, proclaiming that there is within us, not only a tribunal that

judges between right and wrong, but an impulse that prompts us to assist the injured and punish the evil doer. This voiceless eloquence must have been witnessed often by all. Can it be doubted that a provision so wise has been made for the express purpose of directing our thoughts and actions, and showing us what is our duty, as defined in a strict adherence to the dictates of *Conscientiousness*? All effective human law is based upon these natural sentiments of right and wrong, and no law which opposed itself directly to the common sense of justice and right, or which openly commanded what *Conscientiousness* whispered to be wrong, has ever survived the tyranny that constructed and enforced it.

Another shape in which *Conscientiousness* exhibits itself is Truthfulness and Love of Truth. Deception, which is only a meaner form of lying, is hateful to the mind that enjoys the possession in a large degree of this fine faculty. Openness to conviction and the courage of its convictions is a marked feature in such a mental structure. It is more easy to form opinions than to avow them when formed, if they are unpopular or unprofitable. The moral cowardice of so many persons who conceal their true convictions through fear of petty personal inconvenience is a sorry sight, but the picture is relieved by the spectacle of the few good and honest men who are found to face calumny, and even to endure persecution, in the assertion of that which they believe to be true.

The painful emotion known as *Remorse* is the expression of outraged *Conscientiousness*. In excess, even this virtue may become a fault, when it prompts to scruples so refined that they paralyze decision of thought and firmness in action.

17. Hope next follows. The emotion is familiar to most of us, and there are few so fortunate as never to

have tasted the bitterness of its absence. Ingenious endeavours have been made to dispute the claim of this emotion to be an original and distinct Mental Faculty, and to assign it to some other source by resolving it into a product of other faculties or combinations of faculties, denying to it a special place of its own in the anatomy (if I may so term it) of the Mind. But the more closely we examine the emotion to which we have given the name of Hope, whether as felt by ourselves or expressed by others, the more we shall be assured that not merely is it not a condition of the whole mind under certain circumstances, but that it is implanted as a distinct and definite faculty in the mental organization, having special functions adapted to the conditions to which existence in this world is subjected.

The immediate function of *Hope* is to give us confidence in the future. We are hedged round by the unknown, possibly by the unknowable. We *know* little of the present, less of the past, nothing of the future. We are ignorant what the next moment may bring forth. We are subject to tremendous Forces ever passing through us and about us, permeating our bodily structures, keeping in perpetual motion every particle of the matter of which our bodies are builded — Forces which we cannot control, and of which we are in truth the passive slaves. Of all the mighty questions, whence we come, why we are here, what the world is in which we live, what relationship it has to the Universe in which it is but as a grain of sand in an African desert, to what end we exist, whither we go—these and such like mysteries that clip us round about would speedily plunge us into the inaction of despair had there not been implanted in the mind an Emotion that gilds, if it does not penetrate, the darkness that surrounds us, converting the gloom into

glory and giving even to the clouds that hang upon the path into which we are journeying tints that convert them into the very portals of heaven. No more sinking of heart. No more darkness. No more dread. The future is ours. Onward. Upward. *Excelsior*. It is the voice of *Hope* that whispers confidence and courage. It is the beam of *Hope* that lights the prospect and converts gloom into glory. Onward. But whither? To what goal? Ah, we know not. But no matter. *Hope* impels us forward. *Hope* illumines the present. *Hope* gilds the future. "Sorrow may endure for the night, but joy cometh in the morning." What care we for the darkness now, we shall live in light hereafter. *Hope* throws the beams of her lamp upon to-morrow and with the reflection of those beams lights up to-day.

Hope is so often associated with Imagination that they are not infrequently mistaken for each other. But *Hope* is purely the emotion that causes us to look to the future and the distant for whatever we cannot find in the present and the near. *Hope* does not conjure before us specific objects of anticipation; that is the province of *Imagination*. The Fancy builds airy castles, and when they topple down *Hope* incites to the building of others. *Hope* is a faculty which adds vastly to human happiness. Without it life would be intolerable.

And we can see how intolerable is such a life by noting instances where *Hope* is defective or diseased. When the brain is prostrated by long and severe illness, as after fever, has the Reader never felt the terrible sense of depression during which, for no assignable cause, all the present seems dark and the future without a gleam of light?—when there is for us no to-morrow? when we shed tears for any cause or no cause? This is the result of the Faculty of *Hope* under temporary prostration.

That is what we should always be if the Emotion of *Hope* had not been bestowed upon us. Despondency, which is the paralysis of the function of *Hope*, is not an infrequent form of Insanity, and it is a frequent cause of suicide. *Despair* is, in common phrase, the opposite to *Hope*. It is, in fact, only the death of *Hope*.

In excess, *Hope*, beneficent as it is, may be a source of mischief. It then incites to extravagant expectations and unfounded confidence. It is the parent of that credulity so often witnessed where advantages are anticipated. It is upon this frequent frailty that rascaldom relies as offering so wide and wealthy a field for fraud to cultivate. The ready victims of bubble schemes are they by whom the Faculty of *Hope* is possessed in undue degree, surrounding every promise with a halo that blinds them alike to the lessons of experience and the warnings of reason. It is a large ingredient in the character of the gambler.

18. WONDER is another of the contested Sentiments. The existence of such an Emotion is not denied, but it is questioned by many of those who have treated of the Science of Mind, if Wonder be an original faculty or merely a special phase of some other faculty. It has been by some assigned to the Imagination, which is said to be excited by the idea of anything very grand or strange, on the perception of which we feel the sensation to which the name of *Wonder* has been given. But this, as it appears to me, is entirely to mistake the course of our mental operations. There is a marked and unmistakeable difference in our own consciousness between a Sentiment and an Idea. A Sentiment is a mere emotion, excited by the presence of the object, and the various emotions are distinctly perceptible to ourselves. No sane man ever mistakes one sentiment for another.

For instance, no man says "I wonder," when he means "I hope;" nor does he say "I am angry," when he means "I am imagining." The sentiment of *Wonder* is, like all our emotions, indefinable although clearly recognized by all who have ever felt it.

But if the emotions cannot be described in words there is no difficulty in defining the objects that excite them. *Wonder* is awakened by the presence of whatever is grand and mysterious, and consequently, it is a marked feature on the character of the religious. It has a language of its own. "Marvellous! Wonderful! Strange! Mysterious! Awful!" Thus does the Sentiment of Wonder express itself. It is a necessary ingredient in the mental structure of the poet and the novelist, for without it no effectual appeal can be made to the Sentiment as it exists in the reader. The larger part of the Poetry the world possesses is indeed dedicated to this faculty. Combined with *Veneration*, it produces religious enthusiasm, and the founders of all Faiths, in all times and countries, have addressed themselves to this Sentiment of *Wonder*, and seldom without success, the extent of which is usually to be measured by the extent to which the sympathy of this emotion is excited.

Its excesses are seen in the abasement of the reasoning faculties and their subjection to dreamy visions and unsubstantial fancies; in the substitution of superstition for religion, of faith for conviction, of fancy for knowledge. Combined with excessive *Benevolence* and excessive *Hope*, it is the parent of fanaticism. Ignorance is the surest promoter of its abuses. Knowledge is the cure for them.

19. IDEALITY is certainly a more correct term for that faculty usually called and known as the *Imagination*, for its function is not merely to draw mental pictures, but

to produce ideas generally. It is the great creative Faculty of the Mind; the foundation of all Art and the constructor of all knowledge. To this Faculty we are primarily indebted for the greatest productions of the Poet, the Painter, the Sculptor, the Architect, and for much of the wealth bestowed upon the world of Philosophy and Science, to the progress of which, according to the high authority of Dr. Tyndall, the Imagination largely contributes by the power it possesses of presenting to the mental vision distinct pictures of things as they may be conceived to exist under conditions not yet realized in practice. The immediate function of Ideality is, as Shakespeare has expressed it, "to body forth the forms of things unknown." But when we speak of the creations of Ideality, we must be careful to remember the limit of this creative power. Indeed, the term does not convey a strictly accurate description of the faculty itself. The Imagination really *creates* nothing; it operates wholly upon the materials provided by the senses, and by its consciousness of the emotions of the Mind of which it is a part. It does not by itself *create* a single idea. If it could be severed from all communication with the world without and the other Faculties of the Mind, *Ideality* would be a blank, and no image would ever be transmitted by it to the Intelligence. This great faculty of the Human Mind operates by seizing the ideas that have been from time to time conveyed to it by the senses, and which it has stored up by the marvellous power of memory; and these ideas, or pictures of objects, it reproduces and recombines and presents them to the Intelligence in new shapes, which we mistake for *creations*, because their forms are new.

Ideality is probably the most influential of the Mental Powers in man. We are accustomed to look upon the

Reasoning Faculty as that which especially distinguishes Man from other animals. But it is questioned by Naturalists if the fact has not been assumed too hastily. With the great stores of anecdotes of animals that have been collected by competent observers, and even with the memories of our own experience before us, it seems almost impossible to deny to some portion at least of what we are pleased to term the Brute Creation, the possession of a certain amount of reasoning power, limited, indeed, in extent as compared with our own, but not the less the product of a similar mental organization. Undoubtedly animals act often as we act when we know that reason directs our action. It may be fairly asked of us why should we attribute to them, the structure of whose brains substantially resembles our own, some motive force other than that which our consciousness informs us is operating in ourselves? True that we have invented for the sensible actions of animals a name that may serve conveniently to conceal our ignorance. Instinct is the title we have given to the seemingly rational doings of the Elephant, the Monkey, and the Dog. But they who cannot or will not be blindfolded by words without meaning must reject such a solution of the problem. They are compelled to the conclusion that many of the lower animals have limited reasoning power.

But is it not otherwise with *Ideality?* Is there any evidence that the lower animals possess the faculty of Imagination? Can they reproduce the ideas they receive, and recombine them so as to construct a new mental picture, which is the proper function of this Faculty? Is not the real difference between the Human Mind and the Animal Mind to be found in this, that, although both receive and retain the impressions made upon them by the senses and are enabled by the like power of *Memory*

to recal them, those impressions, are, by the Animal Mind, restored and entertained precisely or very nearly as they were received. In the Human Mind they are not only reproduced, but also actively and incessantly subjected by the Faculty of the *Imagination* to a process of recombination. It is indisputable that by this power of recombining his stored-up ideas, Man is enabled to produce new ideas, and therefore it has been called a *creative* faculty; although it is not such in the proper sense of the term. It is by virtue of this power of recombination that man is progressive, and, hence he derives his capacity for civilization. Its total absence, or extreme feebleness in the lower animals, forbids their advancement save with exceeding slowness, by the gradual process of evolution.

May it not be that, as suggested in the description of the faculty of *Constructiveness* (*ante*, p. 190), it is by reason of the absence of this faculty of *Ideality* that birds build the same nests, generation after generation, with very slight variation of form, because they are unable to idealize other forms, and that Man varies and improves *his* structures because he can invoke the aid of Imagination, and construct in his mind, by new combinations of the ideas stored in it, a new and better dwelling?

May not this suggestion be applied to explain many other of the differences between the apparent mental constitution of Man and Animals? The theme is a tempting one for thought and pen; but it would not be in place here, and I must content myself with throwing out the hint to others who may think sufficiently well of it to deem it worth pursuing.

No Mental Faculty yields such an abundant and perpetual source of enjoyment as that we are now contemplating. It clothes the external world with a beauty

which, if only the reflection of our own emotions, is not the less a reality to ourselves. It cheers us with visions of grandeur and of happiness which are not the less parents of present pleasure because they may never be realised. *Ideality* can convert the hovel into a palace; the beggar into a prince. Life would be dull indeed but for this cheerer of its sadness—this light thrown upon its path by the lamp which Providence has kindly set up in the Mind itself by the precious gift bestowed upon it of creating its own world of light, and beauty, and happiness, and excluding, for a time at least, the real world of trouble and sorrow.

But, as with all the Mental Powers, *Ideality* in excess is a source of much mischief. It produces the character so well known as dreamy and unpractical. Indulgence in the too familiar amusement of building castles in the air, is the result of an Imagination so powerful or so active as to eclipse the other mental faculties, substituting fancy for fact, shadow for substance, dream for action. It is the parent of that frequent character—the visionary. Where, on the other hand, *Ideality* is deficient, either in activity or in power, we have the hardness, the dryness, the coldness, that mark the matter-of-fact man, so admirably depicted by WORDSWORTH in his portrait of Peter Bell.

He roved along the vales and streams,
In the green wood and hollow dell,
They were his dwelling night and day;
But Nature ne'er could find a way
Into the heart of Peter Bell.

In vain through every changeful year
Did Nature lead him as before;
A primrose by the river's brim
A yellow primrose was to him,
And it was nothing more.

At noon, when by the forest's edge
He lay beneath the branches high,
The soft blue sky did never melt
Into his heart, he never felt
The witchery of the soft blue sky.

20. The next Faculty placed upon the list by the Phrenologists is WIT, the function of which, according to them, is "to give us the sense of the ludicrous, and to dispose as to mirth."

But if *Wit* be so defined, the name has been lil chosen. That the Mind has a distinct Faculty that produces in us a sensation of mirth, and that this emotion is especially provoked by objects of a peculiar class to which we have given the title of "ludicrous," it is impossible to doubt. But a close critical examination of the subject will compel us to the conclusion that Wit and Humour are not identical: that they appeal to distinct faculties and excite two distinct and differing sensations. In popular phrase, the terms witty and humorous are often used indiscriminately. The same man will be called a witty man by one person and a humorous man by another person. But bring a Wit and a Humourist together in any company and no listener would hold them to be inspired by the same faculty. Note them closely and you will observe this much at least, that while you admire the Wit, you laugh with the Humourist. You are conscious that different mental senses are appealed to by each, and that different sensations are produced in yourself. The same person rarely thoroughly appreciates both *Wit* and *Humour*. Many have a keen perception of the one and very imperfect apprehension of the other. *Wit* is often heartily enjoyed by a man who has no relish for *Humour*, and a lover of the Humorous is frequently inaccessible to *Wit*.

Examined more closely, it will be found that the apprehension and enjoyment of *Wit* are the results of education. A cultivated taste is necessary to perception of its flavour. The untutored mind is rarely seen to recognise the aroma that marks true *Wit*—while *Humour* is as readily recognised, produces as vivid a sensation, and is as keenly relished by the untutored as by the most cultivated Mind. The inference from this should be that *Humour* is the fundamental faculty, and that *Wit* should be relegated to some other faculty that has been educated to quick perception of it. If this be so, the faculty which the Phrenologists have called "Wit," is wrongly named. It should properly have been called *Humour*. The endeavours to define them have been many. "What Wit is?" and "What is Humour?" have been eagerly debated by critics and philosophers. But no disputant has declared them to be identical. More or less of alliance has been claimed for them, but no thinking man has ever fallen into the vulgar error of calling a merely humorous man "a wit;" nor has he mistaken the fun that makes him laugh for the polished product of the intellect that makes him feel or express merely an intellectual gratification. The mind has a sense of pleasure in both; but the sensation is not the same. *Wit* is not recognised without reflection. We must perceive the point of it before we can enjoy it, and then the enjoyment is not a special sense, but the satisfaction felt on the approval of several faculties combined. It is otherwise with *Humour* which, instantly on presentation of it to the mind, produces a sensation peculiar and distinct and the excitement of which is pleasurable. No education is required for the recognition or enjoyment of *Humour* as of *Wit*. It is an instinctive emotion—by which unsatisfactory term I intend only that it is a

faculty acting without the direction of the Intellect, or the control of the Will, the sensation following the presentation of the object of which it is constructed to take cognisance.

And what is that object? What is the difference in the *things* that we call respectively *Wit* and *Humour?* In what does Humour differ from Wit and Wit from Humour? Innumerable conjectures have been hazarded, and therefore I may be permitted to venture another. It is short, simple, and intelligible; but I leave it to others to say how far they can approve it.

Wit is the unexpected suggestion of *resemblance* in things that appear unlike.

Humour is the discovery of unexpected differences in things that are expected to resemble.

In other words,

Wit is the recognition of congruities.

Humour is the sense of *in*congruity.

The effect of the presentation to the mind of incongruity is to provoke the sense of humour or the sensation of the ridiculous, according to the degree and nature of the incongruity, and in practice we use these terms almost indiscriminately. The natural expression of the sense of *Humour* is laughter; a language peculiar to Man, from which it may be presumed that other animals have not the faculty of which it is the expression. I cannot here enter upon the proofs of this proposition by the citation and comparison of instances of Wit and of Humour; but I would invite the Reader, as a curious and instructive exercise, to perform this task of comparison for himself. Let him extract from our best Humourists and Wits, or from any collection of Wit and Humour, a page of witticisms and a page of humourous pictures, and careful analysing both, let him say if he does not find

that all the *Wit* consisted in the presentation in a striking form of unexpected resemblance in things apparently unlike, and all the *Humour* in the presence of incongruities in things that have an apparent resemblance.

The uses of the Faculty of *Humour* are very much higher than those commonly assigned to it. Its province has been looked upon as merely the production of mirth and cheerfulness. But experience does not support this view of it. In fact, *Humour* and cheerfulness, so far from being always associates, are by no means constant companions. Humourous persons are not always cheerful persons. On the contrary, many men famous for Humour have been distinguished by their melancholy dispositions. It is a proverb that a "funny" man, as a humorous man is popularly termed, is habitually morose and melancholy, which could not be if the faculty for *Humour* were the faculty for Cheerfulness and Mirth. The province of Humour is the perception of incongruity; its emotion is the sense of the ridiculous; its expression is laughter. The purpose of it is to enable us to discern the true from the false, the reality from the sham. Truth is always consistent with itself, not in aspect merely, but in substance. Where there is incongruity there is always falsehood. The deep, rapid, and vivid perception of incongruity imparted to us by the Faculty now under consideration affords a security against imposture vastly more efficient than any the Reason could supply by its slower processes for arriving at truth. In this sense it is that *Ridicule* has been asserted to be the test of truth. The false only is pervious to the shafts of Ridicule. But perhaps the Reader, with his memory full of instances of the highest and holiest truths made the themes of overwhelming ridicule, will ask how is this fact to be

reconciled with the assertion that "Ridicule is the test of Truth?" The answer is clear. Closely examine all such instances and it will be seen that the caricaturist was compelled to misrepresent before he could ridicule, and that he presented as ridiculous, not the veritable subject, but some distorted image of it. Where no distortion is employed, but the incongruity in the subject itself is palpable, and Ridicule applied to it makes it ridiculous, we may be assured that it is an imposture, and not a Truth.

21. The next is *Imitation*. The name describes the function. Its existence will be admitted universally. It is the earliest developed of all the mental powers, for it is the first that is called into requisition. It is the predominant faculty in childhood, and it has immense sway over us in after life, even when the development of the other Faculties subdues somewhat of its activity. Its influence in our young days has been thus described by Wordsworth:

Behold the child among his new-born blisses,
A six-years darling of a pigmy size!
See where 'mid work of his own hand he lies,
Fretted by sallies of his mother's kisses,
With light upon him from his father's eyes!
See, at his feet, some little plan or chart,
Some fragment from his dream of human life,
Shaped by himself with newly learned art;
A wedding or a festival,
A mourning or a funeral;
And this hath now his heart,
And unto this he frames his song:
Then will he fit his tongue
To dialogues of business, love, or strife;
But it will not be long
Ere this be thrown aside,
And with new joy and pride
The little actor learns another part:

Filling from time to time his humorous stage,
With all the persons, down to palsied age,
That Life brings with her in her equipage;
As if his sole vocation
Were endless imitation.

To this Faculty we are indebted for all progress. We imitate what our fathers have done and add to that the accumulations of our own experiences and the inventions of our own genius, and thus slowly but surely improvement is accomplished. It is a characteristic of whole nations, as of the Chinese and Hindoos. Among our own people we observe infinite varieties of this faculty, from an almost total incapacity to originate anything and a servile imitation of others to an equal inability to copy anything correctly. It is to *Imitation* that we must refer the extraordinary influence of that capricious tyrant, Fashion. But we are also indebted to it for much of the social under that exists and which it would be impossible to maintain if each individual were to strive to differ as much as possible from all others, instead of endeavouring, as he does under the unconscious influence of *Imitation*, to be as like his fellows as he can.

CHAPTER XXIV.

THE MECHANISM OF THE MIND.

THE INTELLECTUAL FACULTIES.

We come now to *the Intellectual Faculties*, which are conveniently arranged into four classes.

I. The Faculties that are connected with the External organs of Sense, and which are the immediate recipients of the impressions made upon those Senses.

II. The Faculties that Perceive the *existence* and *qualities* of *external objects*.

III. The Faculties that perceive the *Relations* of *external objects*.

IV. The Reflecting Faculties.

I. The External Senses.

The External Senses, *Feeling, Taste, Smell, Touch,* and *Sight,* have been already treated in previous chapters; therefore, I pass them here and proceed at once to consider

II. The Perceptive Faculties

whose function it is to perceive the *Existence* and *Qualities* of *External Objects.*

These are five in number, namely—

22. Individuality.
23. Form.
24. Size.
25. Weight.
26. Colour.

22. The first of these has been somewhat inaptly termed

by the Phrenologists INDIVIDUALITY, a name which conveys but a very imperfect conception of its functions. According to them the office of this faculty is "to take cognizance of existence and simple facts." Its work is merely passive. It does not seek information; it only receives that which is presented to it by the external senses. But it seems to have been forgotten that every faculty has a perception of the facts that belong to itself. Humour perceives humorous facts, music musical facts, and so forth. May not *Individuality* be more properly defined to be the faculty by which we discern differences, and so are enabled to recognize the distinct existence of two or more objects. If this be a correct view of it, the faculty ought to be largely possessed by scientific observers generally, and by naturalists in particular, for it would be an essential assistant in the work of classification. It is said to be especially exhibited by those persons commonly known as "matter-of-fact" people, whose minds are stored with facts, but who want the power to arrange them in orderly fashion, or to reproduce them in any regular sequence of relationship, or to make any logical application of them. Dame Quickly is usually cited as a notable instance of the predominance of this faculty. Mrs. Nickleby is another. Indeed, it is an idiosincracy of frequent occurrence in the experience of all observers of character.

23. FORM; 24. SIZE; 25. WEIGHT; 26. COLOUR, are the other perceptive faculties by means of which we perceive the *qualities* of external objects. *Individuality* is said to recognize only the mere fact of existence. It may be that in this the Phrenologists have carried division too far. It might well be that all of the alleged perceptive powers are only different functions of one faculty of Perception. It is difficult to conclude that,

when we contemplate any solid body—an orange, for instance—separate mental organs are occupied in perception, one of its form, another of its size, a third of its weight, a fourth of its colour. There is no *à priori* reason why one perceptive Faculty should not take cognizance of all the qualities that are capable of being perceived. The answer of the Phrenologists to this objection is that experience shows the power of perception of these various qualities of an object to vary immensely in the same individual. One man possesses a fine perception of colour, with almost entire incapacity to perceive weight. Another man has little sense of colour, but a keen sense of form. Hence the conclusion that the Perceptive power is not one, but made up of a variety of distinct faculties having distinct functions. But the Perceptive faculty itself may be so imperfect as to produce deficiency in its power in certain directions ; and, therefore, I should have been content with describing them as one faculty, but that it is desirable to have a clear conception of functions which undoubtedly exist in the mind, and which work in like manner, together or separately, whether they are looked upon as different functions of one faculty, or as having a distinct existence of their own. The definitions are strictly correct, and equally applicable to either view.

Form is that which gives to us the perception of *shape*.

Size in like manner enables us to discern and measure *magnitudes*.

Weight communicates the perception of *momentum*, *weight*, and *resistance*. To this faculty, if such it be, is also assigned the important business of preserving our perpendicularity. Its main function is to enable us to keep our balance when we stand or walk. It is contended that the partial paralysis of this faculty by

alcohol causes the drunkard to stagger and fall, and George Combe believed that sea-sickness is caused by the continual effort of the organ of *Weight* to restore the equilibrium of the body, this repeated effort producing in the part of the brain it occupies a shock in the nature of concussion, which is always attended by vomiting. There is no doubt that some persons have much more keen perceptions of *weight* than others, and the possession of this power is almost necessary to success in engineering and mechanics.

The Faculty of *Colour* gives the perception of colour and a sense of pleasure in that perception. Here again the Phrenologists point to facts in proof of the distinct existence of this faculty. They contend that the power to perceive the more delicate shades and the harmonies and discords of colour varies greatly with various persons and has no relationship to the differences of perceptive power generally. Thus, a person having uncommon keenness of perception in all other matters is frequently found to possess very imperfect capacity for perception of colour. This defect, known as Colour Blindness, where the patient perceives some one or more colours not at all, or as being other colours than they are, has been attributed, not to a defect in the eye, or in the optic nerve, but in the mental faculty devoted to the perception of colour. As they say with some reason, if the perception of colour be only the action of a general faculty of Perception, it would be enjoyed in more or less degree in precise accordance with the general power of the perceptive faculty. But not only is it that no such relative proportions can be found, but frequently the contrary condition is seen, of great power to perceive colour combined with inferior perceptive power generally, and *vice versâ*. There is another argu-

ment in favour of the special faculty. Colour is a sensation in ourselves. It is doubtful if it actually exists in the world without us. All that we really perceive are impressions of waves of light which beat upon the optic nerve with inconceivable rapidity and certain combinations of which cause in the brain a sensation which we refer back to the reflecting object as its source, and call "colour," and it is contended that a special faculty is necessary for so distinct and delicate a process as the perception of the many varieties of impressions made by the infinite combinations of the reflected rays of light which constitute the infinite variety of colours.

CHAPTER XXV.

THE MECHANISM OF THE MIND.

III. The Faculties that Perceive the Relations of External Objects.

To the next class of the *Intellectual Faculties* belong all those whose function it is *to perceive the relations of external objects.*

They are *seven,* according to the Phrenologists; but it may be questioned if, in these also, division has not been carried somewhat too far, and if the functions assigned to some of them may not more properly be referred to other Faculties. They are—

27. Locality.
28. Number.
29. Order.
30. Eventuality.
31. Time.
32. Tune.
33. Language.

27. Locality is said to give the idea of relative position. Hence persons who possess the faculty largely are sure to find their way easily in places strange to them, while persons in whom the faculty is defective are continually losing their way in places known to them. Combined with the Faculty of *Attachment* it is said to produce a love for places as distinct from persons. The same combination is the cause of the home sickness, sometimes amounting to a disease, that has been known to infect whole companies of soldiers, especially

such as come from mountainous countries, whose inhabitants appear to be generally possessed of these two faculties in more than average extent. This is the probable result of inheritance from ages when they enjoyed the largest amount of freedom, the consequence of their defensible position against an enemy, their sense of just pride in themselves being thus associated with a devoted love for the land to which they were indebted for their independence.

28. Of NUMBER as a special mental faculty there will be no serious question. It is an operation of the mind entirely distinct from any other, and which no other mental faculty could perform successfully. If any proof were wanting it would be found in the frequent instances of persons, called Calculating Boys, who have early exhibited a power to perceive combinations of numbers and of their results by a species of intuitive mental act, other than the ordinary process of counting. Investigation of the mental operation performed in such cases indicates that, by virtue of this faculty, the persons so gifted perceive the results of combinations of extensive series of figures precisely as we see the result of a simple addition of two figures, without going through the process of counting. Themselves describe it as an end arrived at without consciousness of the means. But for assurance of the existence in the mechanism of the Mind of such a faculty it is not necessary to make research beyond the nearest school, where the Student of Psychology will find abundant instances that cannot be mistaken in which the faculty of *Number* is seen to be very powerful as well as very defective.

29. ORDER is another Faculty whose separate existence will not be disputed by any of those who hold that the Mind possesses a variety of faculties existing sepa-

rately and having distinct functions. The faculty of *Order* needs no description, for it is familiar to all. Few are the households that cannot shew its lovers of order, and its victims of mess and muddle: the orderly who, having a place for everything, keep everything in its place; and the disorderly who, having nothing in place, never know where to find anything they want. That this is not the mere accident of training is proved by the fact that the opposite extremes of order and disorder will often be seen in members of the same family, educated alike. Moreover it exhibits itself in very early childhood, long before good or bad teaching could have wrought such a result.

30. More doubtful is the next in the Phrenological catalogue. The function of EVENTUALITY is asserted to be to "take cognizance of occurrences or events." It is contended that in fact we find some persons having a keener perception of and a better memory for events than others,—which is true. But may not this be sufficiently explained without introducing a special mental faculty devoted to the one purpose. In the first place, the function defined so nearly resembles that assigned to *Individuality* (22), whose office is said to be "to take cognizance of existence and simple facts," that the two functions might well be blended or ascribed to the same mental power. Otherwise it appears, upon examination, that the office of taking cognizance of facts is performed by the other faculties, each one of which notes the facts with which its functions are designed to deal. According to the Phrenologists, a good story-teller is a person having large *Eventuality*. To this Faculty is due the marvellous memory for dates shewn by some persons and to a defect in it the difficulty other persons find in remembering any date whatever. So it

is urged that some persons can note the order and relationship of facts with an accuracy utterly unattainable by others, who can recall nothing in orderly array. The observation is true enough, but these instances of excess and of defect do not affect the question, to the operation of what Faculty are they referable? I would suggest that they appertain, not to any one Faculty, but that each kind of fact is the subject of cognizance by the particular Faculty to which it is related.

31. TIME is certainly an original Mental Faculty. Its office is to give the perception of duration. *Time*, as measured by our own consciousness, is a sense having vast variations. The duration of Time to our perceptions, apart from some external evidence, varies according to circumstances. Let us be waiting for a train, and ten minutes appear to the mind as long as an hour passed in our usual occupations. If we are late in starting to catch a train, the minutes appear to fly as fast as seconds. In employments that absorb the thoughts, as in composition, hours speed along and we are not cognizant of their flight. If we are in pain or grief, the hours travel with lazy feet, and the long day seems as it would never end. In profound sleep we lose all consciousness of time, and the moment of awaking seems to be the next after that of falling asleep. Moreover, in sleep, although we are not aware of time, the Mind is conscious of its flight, for it is a familiar fact to many persons that if they have occasion to wake at a certain hour, even an unusual one, they do so wake, although they have slept a sound unconscious sleep in the meanwhile.

The Faculty of *Time* is exhibited also in another form. Music is sound falling upon the sense of hearing at certain regular intervals. The observance of these is

called by musicians "keeping time." Music played out of time is pain instead of pleasure to minds that have the faculty of *Time* fully developed. Such persons, if themselves performers of music, are distinguished as excellent "timeists" a word invented to describe a person who has a sensitive ear for time. Dancing is motion at regulated intervals of time, and the music that directs the dance requires to be played with that object; hence the frequent remark that such a person or such a band plays the music so well that it is pleasure to dance to it. This means nothing more than that the player has a large faculty of *Time*, and not only keeps Time, but expresses his keen sense of Time by a marked measure in the music.

32. TUNE has relation solely to Music. It gives us the sense of *Harmony* and *Melody*. It is, in truth, the faculty by means of which Music is both perceived and conceived. If we had it not there would be no such thing as Music, which is a sensation of the Mind, and probably not existing at all in external nature. If the Mind had not a faculty by which it is enabled to perceive certain combinations of waves of sound, and to feel a sense of pleasure in that perception, there would be no Music. To creatures constructed with other perceptions of sound than such as we have, what we call harmony might be harsh discord, and an air tuneful to them unpleasing notes to us. Be that as it may, the fact now for consideration is the possession by Man of a Mental Faculty specially constructed to perceive and to derive a sense of pleasure from the perception of impressions made upon the brain by waves of sound falling upon the Sense of Hearing in certain specific combinations, and with more or less of rapidity, and which sensations we have reduced to the art and science of Music. The

possessor of this faculty in large degree has what is termed a fine ear for tune and harmony, and the Mind deficient in it is unconscious of any discords save the harshest. Few faculties are more marked than this, alike in its presence and absence, and, therefore, it is an excellent subject for examination by the Student of Psychology and Mental Physiology.

33. LANGUAGE is no less manifestly a distinct and original Faculty of the Intelligence than are *Time* and *Tune*. Every school boy can bear witness to the difference of capacity for acquiring languages shown by his schoolfellows. Every member of a household hears among its inmates different powers in expression of thoughts, and every lawyer knows how some men speak fluently without an effort and others are unable to find words for the simplest ideas. There are recognised diseases of this faculty, not unlike in their effects to those exhibited by the faculty that is framed for the perception of colour. As there is colour blindness, in which condtiion certain colours are not perceived by the intelligence, so, in certain disordered conditions of the faculty of language, there is an inability to recal certain words or classes of words. True, that Ideas come into the mind spontaneously, or, to be more accurate, from some source of whose origin we are ignorant; but when we make an effort to recal an idea, a thought, or a word, we do it only by connection—that is to say, one idea suggests another with which it was associated, and by seizing any one link in the chain of associations we arrive at that we are seeking for. When the faculty of *Language* performs its functions imperfectly, some link in the chain is lost, and hence the inability of the speaker to recal the word he wants. He knows, as it were, the direction in which it lies in his memory, but the thread that should guide his thought to it being

broken, he is unable at once to grasp the word he wants, although he is close upon it. Doubtless the same failing is common to all the Faculties of the Mind, for all are equally liable to disorder; but in none is the effect so obvious, because so inconvenient, as in the Faculty of *Language*, the constant exercise of which makes its defects more obvious to others than are those of any other part of the Mental Mechanism.

A familiar and painful instance of the disorder of this faculty, not by disease but by the stealthy growth of a bad habit, is the infirmity known as *Stuttering*. The Physiology of this malady is very simple. In their normal condition the organs of the body obey with astonishing ease and rapidity the commands of the Will. An instance of this obedience, so rapid as to appear to us as one act, is the precise adjustment of the muscles of the arm to the desired direction of the billiard ball, although an infinitesimal difference in the pointing of the cue, or an unmensurable change in the contraction of a fibre of the directing muscle, would send it far from its intended destination. The like process is performed when a gun is by a practised sportsman fired at an object in motion. He does not take aim, as does a rifleman; he sees the flying bird, and the muscles of his arms following the direction of his eye, without conscious effort the gun is instantly and precisely pointed at the object. So, when we talk, the process that seems so simple is really very elaborate. The idea is formed by one mental faculty; it is clothed in words by another mental faculty. The organs of speech obey the Will, and the sounds are expressed by those organs as fast as they are conceived by the Mind, the motions of the larynx, tongue, and lips keeping perfect pace with the inconceivably rapid motions of the Mind. But some-

times it happens that, the organs of speech being unable to keep pace with the words framed in the Mind, a block ensues by reason of the unuttered words, which come, as it were, tumbling one over the other. In the effort to escape from the block and catch those unuttered words, the organs of speech attempt an impossible feat, and the nervousness thus produced is the immediate cause of Stuttering. Usually it is at first slight and occasional; but it grows, by nervous excitement and the painful consciousness of the difficulty, into a confirmed habit. The obvious cure for Stuttering is the removal of the cause—the too rapid rush of thoughts and words beyond the physical power to express them. It is hopeless to attempt to educate the organs of speech to sufficient speed to keep pace with the Mind. The remedy must be directed to the brain and not to the tongue.

This sketch of the cause of Stuttering at once explains the seeming paradox that has perplexed so many investigators—why persons who stutter terribly in talking frequently read, preach, make speeches and act plays without the slightest perceptible impediment of speech. The explanation is that the words in such cases come slowly into the mind, and are slowly delivered to the organs whose business it is to express them in sound. *There is no block.* This fact proves also that the true cause of stuttering is in the brain, and not in the organs of speech, as seems to be almost universally assumed, and consequently that the cure must be sought mentally and not bodily. The larynx and tongue will do their work steadily enough if only the brain will adjust itself to *their* capacities, and not try to spur them faster than they can go without stumbling. The cause indicates the cure. *Check the flow of words in the Mind, and forbid the tongue to make the vain effort to give*

expression to them as fast as they flow. It is difficult undoubtedly to restrain the Mind, or to control the struggling efforts of the organs of speech. But it is clearly not impossible; for in reading, when the utterance is of the thoughts and words of another person, and even in oratory, where both thoughts and words are the speaker's own, only that they are more slowly conceived and expressed than in talking, there is no stuttering. The patient, therefore, should assimilate as nearly as by persevering endeavour he may, the relative action of the Mind and speech organs when talking to their condition and relationship when reading, speech-making, or acting. What is the process of reading aloud? The Mind receives the words from the book considerably in advance of the tongue's utterance of them. Eye and Mind alike precede the tongue. The words are taken into the Mind from the printed page more slowly than they would be self-produced by the action of the faculty of Language and hence their slower transmission to the tongue which, being enabled to keep even pace with the march of the words from the Mind, proceeds without stumbling or stuttering to express them evenly as they come. The patient should teach himself slowness of thought as well as of speech by *making it a rule to think out in his mind the sentence he is going to speak before he begins to speak it,* precisely as he reads the sentence of a book in advance of the utterance of it by his lips, and then he will be in fact very much in the condition in which he is when he *reads* without stuttering, only that he will mentally read the production of his own Mind instead of the printed characters in a book. It is difficult to give a clear explanation of this in writing, but I hope the suggestion will be sufficiently intelligible to be tried by those who suffer from this very painful affection.

CHAPTER XXVI.

THE MECHANISM OF THE MIND.

THE REFLECTIVE FACULTIES.

We come now to—

IV. The Reflective Faculties.

The function of these faculties is to compare, to judge, to deduce conclusions from premisses, to trace causes, and to anticipate results. They are only two in number—

34. Comparison.
35. Causality.

34. Comparison is the first of these important faculties. Its name indicates its function. It is the faculty which enables us to perceive differences and resemblances between objects presented by the senses and ideas presented by the mind, and thus it becomes the basis of the act of reasoning. Its possession in various degrees by various persons is shown not only in the imperfect power to perceive the results of comparison in argument, but also in a frequent inability to discover differences in external objects. It is exhibited in that characteristic known as "having a correct eye," the possessor of which discovers at a glance that an object which should be placed in a certain relationship to other objects is not so placed. To a spectator having a large faculty for *Comparison* the aspect of pictures hung awry—of lines not quite straight or parallel—of symmetry de-

signed but not accomplished—is a positive pain, and the acumen of such an eye in its measurements and in its detections of minute irregularities is often amazing to those who, defective in the faculty, can see nothing unsightly in the most careless defiance of straightness in lines and equality in spaces.

Its function being simply the perception of resemblances and differences, its operations are seen most frequently in combination with other faculties, as for an instance, with that which gives us the sense of *Humour*. Two objects are presented to the Mind's eye—that is to say, two ideas or mentally formed images are pictured in the brain. The Faculty of *Comparison* instantly discovers to the Mind certain similitudes and certain unlikenesses. If these differences appear where they had not been expected, and especially if they are in striking contrast, the sense of Humour is provoked, and we feel the agreeable sensation that is expressed in laughter, which is peculiar to Man, the faculty of *Humour* not being developed in the lower animals. Thus the faculty of *Comparison* is employed alike upon the ideas brought by the senses and those produced in the Mind, and as with most of the other mental faculties, its operations are rapid beyond anything of which the body is capable—the presentation of the ideas, the comparison of them, and the judgment upon them, being apparently one act, although they are in fact three distinct and separate operations performed not simultaneously but in succession.

35. The last in the list, but highest and noblest of all, is the Faculty to which Phrenology has given the name of *Causality*, but better known by the familiar title of the *Reason*, or the *Reasoning Faculty*. The popular phrase is incorrect and insufficient, and the Phrenologists have adopted a more philosophical defi-

nition, by giving to this Faculty a name that strictly indicates its function. In nothing is the misleading influence of words over ideas more noxiously exhibited than in the misuse of the word "*Reason*." It has been called "God's great gift to Man," "the attribute of Man," "the faculty that distinguishes the Man from the brute;" and such like phrases, conveying to the unreflecting mind the notion of some definite sense or capacity, like sight or hearing, with which Man is specially endowed. This conception of the Reasoning Faculty has manifestly directed the entire current of thought in most of those who have treated of its operations and relationship to the other mental faculties. Reason has consequently been contemplated as something different in kind, and not merely in degree, from the other mental faculties, and come to be viewed, not by poets only, to whom exaggeration is permitted, but by sober philosophers condemned to the cold, hard region of fact, as being "sublime," and even "Godlike." What is it in truth? What action of the mental faculties do we describe when we say of Man that he possesses the "Godlike" power of Reason?

We must begin by clearing the ground. There is no such faculty as *the Reason*, nor is Reason a cognizable entity. What we have wrongly so termed is really nothing more than a power which the Mind possesses of bringing together two or more ideas and from them deducing a third idea. Reduced to its simple elements this, and nothing more than this, is the function of the faculty from the exercise of which such grand results have come that, dazzled by their brilliancy, we forget the simplicity of the process.

The process of "reasoning" is not a simple act of one faculty, like the sense of anger, or the sentiment of

Hope; it is effected by the combined action of several of the Intellectual Faculties. When ideas are contemplated together, the Reasoning Faculty does not thereupon, without further aid, deduce from them inferences and conclusions, by a special action called "reasoning." The aid of other Mental Faculties is first invoked to discover the relationship of the ideas so associated, that is, their resemblances and differences, and with the materials thus supplied *Causality* works.

It is unnecessary, in this place and when presenting an outline merely of the structure and functions of the machinery of the Mind, to dwell upon the debated question, if that Mind has innate ideas or only such as are brought to it by the Senses. For all practical purposes it may be assumed that the brain, which has grown from an invisible speck to be what it is, has received all its impressions from the Senses, through which alone it can hold communication with the world without and even with the very structure of which it is a part. We know that the Reasoning Faculty can exercise itself only with the materials supplied by the other faculties; consequently that all its operations are only *conditioned*—that is to say, are conclusions derived wholly from materials supplied by the other faculties, and therefore true only in relation to those materials. We cannot possibly know whether those conclusions are absolutely or universally true, because we do not and cannot know if the impressions brought by the Senses, and by a mental operation translated into ideas, do in fact correspond precisely with the external objects they represent.

Remembering, then, that the results of the operations of the Reasoning Faculty are only conditionally true, and cannot be assumed to be absolutely true, let us now

endeavour to trace the process by which the act of Reasoning is performed.

The Phrenologists term the faculty that plays the principal part in the process of reasoning—*Causality*. They define its proper function to be to "trace the dependence of phenomena and the relation of cause and effect." With all deference to them, I must demur to this definition, for the same cause that I object to the popular use of the term Reason—its vagueness. If by "dependence of phenomena," they intend their likeness or unlikeness, that is not a function of *Causality*, but of *Comparison*. If the conditions of their existence be designed, that is simply the work of some or all of the perceptive faculties. If they refer to the connection of one phenomenon with another, either in respect of certain similarities or dissimilarities, or in point of time, or otherwise, then "the dependence of phenomena" is only another phrase for the relation of "cause and effect," which term would better express it. But this very term, "the relation of cause and effect," involves an affirmation of one of the most disputable questions in philosophy. There is no such thing as "cause"—it is said. What we call "cause and effect" is only sequence. It seems to me that the dispute is a waste of time and ink. We *cannot* in this life attain to absolute truth. We exist under conditions, and we can perceive and know only in accordance with those conditions. Our profoundest knowledge is and must be relative merely. It may or may not be real knowledge; but it is the best we can arrive at, and it is the truest wisdom to accept it and trouble ourselves no more with disputations whether it is real or illusory. We have at least this consolation, that we find so much of creation as we are acquainted with constructed with infinite skill and moving in

obedience to some harmonious laws that work together for good. We know this, also, that the conditions to which our existence here is subjected are sufficient for all the purposes of that existence and, therefore, that knowledge of the *facts as they appear according to those conditions* will serve all our necessities.

This is the Philosophy of Common Sense, not to be mistaken for that much abused term so often invoked to hide ignorance, gratify conceit, confound intelligence, and stifle investigation. The Common Sense of common-place people is not that so designated here. The term is here used as meaning the utterance of the universal experience of mankind when opposed to the doubts of the Philosophers, who too often disdain facts, endeavour to find the truth by consulting only their own consciousness, and pronounce this to be true and that to be false, not by investigation of the asserted facts, but by the fallacious test of the accord or discord of the assertions with their own pre-conceptions.

The Common Sense here referred to is that confidence common to all mankind in certain conditions of things as true which, because it is common, may be presumed to have its foundation in some universal truth, or something which the human intelligence is constructed to recognize as truth, and the belief in which is not a mere intellectual acceptance, but that firm *conviction* upon which we *act* without hesitation or doubt. That Common Sense is the basis of our belief in the existence of an external world; of our confidence that the senses in their normal state convey accurate impressions of external objects, and that, whether things are or are not actually as they appear to be, we must be content with relative truth and submit with cheerfulness to the conditions under which alone knowledge is permitted to us in this material existence.

The Faculty of *Causality* is constructed to deal with this condition of things, to accept the evidence of the Senses and from what is thus made known to it to arrive, by the process of *reasoning*, at the unknown.

And the process is thus. Contemplating a number of facts, the faculty of *Comparison* discovers their relationships to one another. When certain resemblances and differences are found, it separates and groups them according to those resemblances or differences, and thenceforth the MIND views and remembers the group and dismisses the individual. Where two or more facts are always found to bear a certain invariable relationship to each other, or are always immediately succeeding one to the other, they are said to be *cause and effect;* and, consequently, when either of these related facts occurs, the presence of the allied fact is assumed. Seeing, for instance, by the faculty of *Comparison*, that there is no daylight in the absence of the sun, but when the sun rises daylight comes and when the sun departs daylight departs, *Causality* concludes that the sun is "the cause" of daylight. This is the starting point for the entire process of *reasoning*. When daylight is afterwards contemplated, the presence of the sun as its "cause" is assumed. Other facts are found to be connected inseparably with daylight, and consequently with the sun, and these facts are again associated with others, the circle continually enlarging, each linked with each, the most remote being connected with the original association of sun and daylight, although many of the intermediate links may have escaped from view or have been but imperfectly remembered. The conduct of this process is the proper business of the Faculty of *Causality*—once believed to belong to Man alone,—but now generally admitted to be possessed also by many of the lower animals.

CHAPTER XXVII.

OF THE MEMORY.

MEMORY is not, as commonly believed, a distinct Faculty of the Mind, as will appear from this, that there is no universal Memory. We are accustomed to say of a man that "he has a good Memory," as being equally good for storing up ideas of all kinds. In truth, Memory is not a possession of the whole Mind, as distinct from the particular faculties of the Mind. Each faculty has its own Memory and that Memory is usually proportioned to the capacity of the faculty. Thus the memory of words is in the faculty of *Language;* of facts, in *Individuality;* of figures, in *Number;* of music, in *Tune.*

This is manifested upon the slightest observation of other Minds or examination of our own. But we are almost wholly without knowledge of what Memory is. An image, or idea, or picture, of an object brought by the eye, or a sound conveyed by the ear, or a flavour carried by the sense of taste, is impressed upon the brain, causes a sensation there, is perceived by the Intelligence, and vanishes. Even although its presence may have been but momentary—although it has passed away from contemplation—it has not passed out of the Mind. It is stored up there, we know not how or where, and many years afterwards it may be recalled to the Mind's perception almost as vividly as when it was first presented. How is this wonderful result produced? By what process is the idea stored away and in what form? Where, how is

it recalled? Tens of thousands of other ideas have been impressed since it was received, and yet it is found among them, brought out of its place, contemplated for the object of its recal, and restored again to its proper site. Does it go back to its former place, or is it set in the order of succession as the latest impress? This is not ascertained; but there is some reason to conjecture that it is restored to its old home, because, when again required it is brought again from the storehouse by the same suggestions of associated ideas which had recalled it before.

In contemplating the Physiology of Memory, it is necessary to bear in mind what that is we so call. We speak of pictures in the mind, as if our belief were that a positive picture, drawn and coloured as it appears on the retina of the eye, were really painted upon the brain and stored up there somehow to be reproduced by the Memory. But the fact is, that no forms nor colours are really thrown upon the brain itself. The entire action of the brain is *sensation*. The various forms and hues on the retina cause various motions among the molecules of the optic nerve, which in its turn transmits those motions to the brain, where they produce in us a certain combination of *sensations* which we call an idea, or mental picture. We can understand the possibility of storing up an actual picture; but the storing up of a *sensation*, which is only a certain motion of molecules, is in our present state of knowledge wholly inexplicable. If this be not the true explanation, the most probable conjecture is that Memory is not the recal of a picture, or of an idea, but simply *the reproduction of a sensation*. How it is reproduced is as yet a mystery. We only know that one path to it is by suggestion, that is to say, the tendency of the Mind is to reproduce sensations in

the order of their occurrence, one calling up another, until that sought for is found.

It will be important for some subsequent inquiries to note that Memory does not always require an effort to remember. It is more than probable that *every* sensation brought to the brain (even such as are conveyed without consciousness) is impressed there and capable of reproduction, and that to this may be attributed much of what appears to come into the Mind uncalled for and seemingly disconnected with any passing occurrence. The power to recal at will is limited to the ideas (or sensations) that have been brought to the brain consciously. All that comes unconsciously is reproduced only by accident and in a desultory manner. Hence it is that our Memories directly control only a fragment of the entire mass of sensations that have come into the Mind and remain impressed there. Doubtless the strange and unaccountable ideas that so often come uncalled for are only revivals of impressions that have been made upon the Mind unconsciously, when our attention has been distracted, or even during the seeming insensibility of sleep.

It will be seen hereafter how important is this fact, as explaining some mental phenomena which will come to be considered in a future chapter.

This, then, is the structure of the organ that is either the Mind itself, or the machinery by means of which the Mind works. This is all we *know*. Beyond this there is nothing as yet but conjecture more or less probable. For practical purposes, it matters little which view we take of it. Whether the brain be merely the organ of the Mind, or the Mind itself, in no manner affects the question, What are the Mental Faculties? for these have a proved existence in the

constitution of the Mind, whether the Mind and the Brain be distinct or identical. So, likewise, is it unimportant whether each of these various faculties has its own discovered place in the brain, or if we are still in ignorance how it is located. The fact that they exist is all that needs to be recognised for the attainment of that clear comprehension of the Physiology of the Mind which is so necessary a preliminary to the study of PSYCHOLOGY.

I repeat that, although these various Mental Faculties have been traced and classified by the Phrenologists, who contend that the skull exhibits upon its surface their places and magnitudes, their existence as definite and distinct Mental Powers is proved by other than the questionable evidence of it produced by Phrenology, and may be accepted, although the entire doctrine of Craniology be rejected.

CHAPTER XXVIII.

HOW THE MACHINERY OF THE MIND WORKS.

Such are the Faculties, so far as the investigation has yet been carried, which the Mind appears to possess, each having functions distinct and definite. A larger collection of facts, or a more profound examination of them, may prove hereafter that some of these Faculties, which by Mental Physiologists have been deemed to be original, are in truth only the product of combinations of other faculties, and thus their number may be considerably reduced. On the other hand, it is equally possible that there may be further discoveries of independent faculties which have hitherto escaped observation. But whatever the modifications to which they may be subjected in points of detail, it is improbable that any material change will be wrought in the main features of the anatomy of the Mind above rapidly and imperfectly described. For this map of the Mind (if the phrase may be permitted) has not been constructed, like the theories of the Metaphysicians and Mental Philosophers, out of self-consciousness and *à priori* argument. It was framed in strict accordance with the rules universally adopted by modern Science and to which her great progress is due—patient observation of phenomena, laborious accumulation of facts, and cautious deductions from those facts. We do not now say, as formerly we did, this or that *cannot* be because it

conflicts with some law or fact which we have already accepted as true, and on this childish plea closing the eye and the Mind and refusing to inquire; but we ask, first of all, *is* the fact as asserted, and we set ourselves to ascertain by experiment and test if it be a fact; then we proceed to assign to it its proper value in science, and to find, as always we *do* find, that being recognized and investigated it is not antagonistic, as we had supposed, to other facts, but is in strictest harmony with all other scientific truth. There is the less probability of any material change being made in this catalogue of the Mental powers because it has been based upon the common characteristics of humanity and not upon the self-reading of an individual consciousness, while many of those faculties are found to exist also in the lower Animals.

These faculties, however, are not the Intelligence. They are only the organs of the Mind, as the various parts of the fleshly structure are the organs of the body. As the body is one whole, although composed of a variety of parts, so the Mind is one whole, although operating through many parts. Whether it be feeling fear, or anger, or reasoning, or imagining, it is the entire Intelligence that fears, angers, reasons, or imagines. But the Intelligence (and, for the present, I use that term simply as synonymous with Mind) can only carry on communication with the world without through the medium of a material organ. It is cognizable to others only by the action of its Faculties. It can itself take cognizance of external things only through the interposition of these Faculties, and as a consequence, both what it receives and what it conveys is coloured by the medium through which it passes. For instance, a Mind having a very powerful Imagination will be perceived

by others with the hues of fancy more or less tinging every expression of itself in thought and speech; and, in like manner, the communications that come to that Mind from the world outside will be unconsciously tinted by the touches of its own too vigorous fancy.

The material bodily organ of the Intelligence is undoubtedly *the brain*. As is the brain so is the Mind. I must repeat, that I assert nothing (for we have no knowledge on the subject) whether the shape of the brain does or does not affect the Mind, or whether special portions of the brain are specially devoted to the several mental faculties. Many Mental Physiologists confidently assert, not only that so it is, but that they can lay their fingers upon the very spot upon the brain that is occupied by each of the faculties, and they adduce an extensive array of facts in proof of their contention. Anatomists, on the other hand, assert that, with the most careful dissection, they have been unable to trace any lines or signs of division in the shape or in the substance of the brain that would indicate distinct functions for separate parts of it. That there *is* a dedication of distinct portions of the brain to some distinct operations of the Mind may be looked upon as certain; but whether they have been as yet correctly traced must be deemed very doubtful. This, however, in no way affects the accuracy of the general description of a MAN designed to be given in these pages, for the material fact to be clearly apprehended by the Psychologist in answering the question, "WHAT AM I?" is that the Mind actually possesses these various Faculties, or a considerable proportion of them, although the precise seat of them in the Mind's material organ, the Brain, may not have been, and may never be discovered.

The existence of material organs, through which alone

Mind operates, implies a modification of the mental powers in accordance with the structure of those organs. As with other parts of the body, size is the measure of power, other conditions being the same. A large organ will be more powerful to feel, to think, and to act than a small one. But this rule is subject to so many limitations that it would be an unsafe guide for estimating mental power in individual instances. Some brains are endowed physically with more activity—which probably means more Vital Force—than others, and do more work in less time. By persons ignorant of Mental Physiology *activity* is commonly mistaken for *power*. A keen observer will readily discern the difference between them—a difference difficult to define in words, but intelligible to every Reader. So, likewise, some brains are more refined than others, more sensitive, more prompt to action and excited by lesser stimulus. All of these qualities more or less modify the effect of size, and their presence frequently misleads the observer, who cannot understand why, if the brain be the organ of the Mind, B., with a big brain is less clever than A. with a smaller brain. That is precisely the difference. A. is rapid in thought, energetic in action, delicate in feeling; while B. is slow in apprehension, in reflection, and in action. But B.'s big brain is seen in a conscious power to advise, to command, to construct, to reason, which, when the occasion occurs, throws A.'s cleverness completely into the shade.

We can now readily understand the difficulty of reading character, composed, as it is, of combinations of some thirty-five Faculties, each the subject of infinite variations, insomuch that it is probable that, among all the countless millions of men who have lived and died during the millions of years that have elapsed from the prehistoric

ages to our own time, no two have ever precisely resembled each other in the character of the Mind. Who then shall presume to pass a positive and hasty judgment on the characters of his fellow men? But who of us is there who does *not* too often, upon the most superficial acquaintance, presume this man to be a fool, that man to be a rogue, a third to be a sage, a fourth to be virtuous, a fifth to be depraved, in entire forgetfulness that the infinite combinations of a multitude of elements must be calculated before a fair estimate can be formed of the true character of any living man. This consideration should at least teach us that *Charity* is wisdom as well as virtue.

A most profitable method of studying the Physiology of the Mind is by practical application of the above anatomical sketch of its various Faculties to the analysis of the characters of distinguished personages in History or in Fiction. The creations of Genius are as real and true as the creations of Nature, and the experiment is more easily tried with them, because more of the thoughts and motives of action are revealed to us in the pages of the Dramatist or Novelist than in the volumes of the Historian. This instructive exercise consists in taking some Personage of some great master of fiction and deducing from a close scrutiny of the thoughts and acts represented the mechanism of the Mind of that Personage. Read a dialogue and say what mental faculty or combination of faculties inspired this or that speech; by what sentiment or propensity each action was prompted; what intellectual organs were at work to produce this reflection or that observation, and so forth; thus, as it were, mapping out the character of the Mind which (according to your judgment based upon these expressions of it) that Personage, had he lived

would have possessed. Half a dozen of such exercises will teach more of the Mechanism and Physiology of the Mind than would the perusal of all the treatises on Mental Philosophy that have been evolved from the self-consciousness of all the Metaphysicians who have ever lived.

The Machinery of the Mind appears to work somewhat in this manner.

Suppose a sudden awakening from a profound and dreamless sleep, if such can be. *Consciousness* returns; the Senses resume their functions; the eyes convey to the brain, through the optic nerve, the forms and colours of the surrounding objects. Let there be a window encircled with climbing plants and giving glimpses of a garden without. The ear carries to the brain the song of a blackbird perched on a near bough "singing of summer with full-throated ease." The Sense of Smell is pleased with the odour of the honeysuckle that is wafted into the chamber by the breeze that seems so soft to the Sense of Touch. These sensations, borne to the brain by the nerves, instantly by suggestion call up the memories of other delicious mornings such as this, and these awake in their turn innumerable recollections of persons and events associated with those times; and each of these memories produces other memories, until the attention is diverted by accident or by the power of the Will. Some of these memories are sad and by their presence excite the Faculty of *Attachment* to the loved and lost, and there is the sense of sorrow; or of *Benevolence* in the contemplation of the success of some friends who have fought the battle of life and come out conquerors. Then the *Intellectual Faculties* compare the sorrows with the joys and the facts that produced them; and seeing, by the aid of *Comparison*, their resemblances

and differences, *Causality* traces the causes that had produced these effects and applies them to other circumstances to which they bear a similitude, and deduces conclusions for the guidance of the Mind in other conditions. In this manner more or less of the Mental Faculties are called into action at every moment of our waking lives and during a large portion of our hours of sleep. So long as health continues and the machine works smoothly and perfectly, these operations are conducted so easily and rapidly that we are not conscious of the complicated action that is going on in ourselves, nor do we perceive it in others. But if disease intervenes, and the motions of the machine are stopped or even partially impeded, the variety of functions and the combinations of movements before imperceptible become painfully apparent. When these amount to positive Insanity, the intricacy and variety of the mechanism I have described become palpable to the most careless observer.

But the mode of action, as well as the uses, of the Mental Faculties may be best learned from an experimental application of them to the analysis of character, and for this purpose I present an abbreviation of a very able and interesting one found in the pages of a journal long ago extinct.

It is one of the marks of true science, by which it may without difficulty be distinguished from what is false, that the instant it is discovered, by whatever means the discovery is made, it becomes available for purposes of utility. None of the metaphysical systems regarding the mind has ever been converted to any useful purpose; nor are they capable of being so converted: for though they have been, by the great but misapplied ingenuity of their authors, devised with the express intent of explaining some of the phenomena of mind, they all of them leave untouched a greater number of phenomena than they attempt to explain; and of many of the most ordinary and striking facts they do not pretend to give any explanation. The investigations of phrenology,

as is well known, were not begun with any view of forming a system, and were merely the result of following out a train of observations (to which the first discoverer was led more by accident than design), with regard to the functions and uses of different parts of the brain. But no sooner had these investigations been carried to a certain length, and the conclusions to which these led, been placed in their due order, than a system unfolded spontaneously, more perfect by far than any which human ingenuity could devise, and more perfect, merely for this reason, because it proceeded from an observation of nature, and was not the product of human ingenuity. No sooner was this system evolved, than it was found to be capable of being applied to, and of explaining with ease, those differences in the characters and talents of men which had baffled the ingenuity of the most acute metaphysicians. They who have studied the subject, and who have consequently accustomed themselves to *think* phrenologically, are able, in all cases of real character, even the most anomalous, to discern the combination of powers and feelings (according to the phrenological system), which produce the manifestations perceived; and whenever a character is well or naturally described, either in real or fictitious writing, have no difficulty in applying to the delineation the same mode of analysis. We, who have experienced this in numberless instances, feel, in the occurrence of every new case, a confident expectation that it is capable of being explained satisfactorily on phrenological principles, and we are never disappointed. We can assure our readers, that, if they will only be persuaded to try the efficacy of this system as a medium of thought, they will find it to furnish a key to human character, and to afford an insight into human nature, of which, antecedently to actual experience, they could not have formed the remotest conception.

The Character of Macbeth.

This character has been alleged by some critics to be out of nature. They have thought, that no man, who possessed in any degree the good, nay, the great qualities with which he is described at the beginning of the play, or who was capable of the noble actions there attributed to him, could have suddenly become so wicked as to murder his kinsman and his king, when under the protection of his roof, without provocation, and without any other motive than that of inordinate ambition. Others have with more reason vindicated Shakspeare from any departure from nature in this particular, observing, that nothing is more inconsistent than the human character, and that many times men, who are far from being destitute of good qualities, and who are even capable of performing great and noble actions, may be drawn on by strong temptation to commit the most atrocious crimes, of which

antecedently they would have conceived themselves altogether incapable. When the Prophet declared to Hazael, yet uninfluenced by the desire of a crown, the various atrocities he should commit to obtain one, he exclaimed with horror,—"Is thy servant a dog, that he should do this thing?"—and yet Hazael did as had been foretold. Though aware, however, of the inconsistencies in the characters of mankind, previously to the discovery of that system of the human mind which has been revealed to us by phrenology, we were not before this able to trace the sources from whence these inconsistencies arose; nor were we able to see to what lengths they might be carried, nor whether all men were equally liable to such aberrations from the known path of right and duty. We have thought that it might be interesting to examine the character of Macbeth, as pourtrayed by our great dramatic poet, by the principles of our new science, and we think we shall be able to shew that it is strictly conformable not only to nature, but also to phrenology.

In the third scene of the first act, after the prophetic addresses of the witches (which in one event had been almost in the instant verified), the bare thought of the murder, just suggested to him, throws him into a state of the greatest mental agitation. His ambition and his conscientious feelings are immediately placed in violent opposition:

> Two truths are told,
> As happy prologues to the swelling act
> Of the imperial theme.—I thank you, gentlemen.—
> This supernatural soliciting
> Cannot be ill; cannot be good:—If ill,
> Why hath it given me earnest of success,
> Commencing in a truth? I am thane of Cawdor.
> If good, why do I yield to that suggestion
> Whose horrid image doth unfix my hair,
> And make my seated heart knock at my ribs,
> Against the use of nature? Present fears
> Are less than horrible imaginings:
> My thought, whose murder yet is but fantastical,
> Shakes so my single state of man, that function
> Is smother'd in surmise; and nothing is,
> But what is not.

It appears from this opening that the ambition of Macbeth, depending on his *self-esteem*, *acquisitiveness*, and *love of approbation*, is strong. His soul dilates at the swelling thought "of the imperial theme." On the other hand, it appears that he is not without *conscientiousness* and *veneration*; but that these are moderate in degree, and not sufficient—or not sufficiently active—to keep down the evil thoughts that begin to rise in his mind. Had these been sufficiently strong, such evil thoughts, if they had risen at all, would have risen only to be instantly

repressed. It occurs to him, however, in his desire to avoid crime, that it may not be necessary for his purpose:

> If chance will have me king,—why chance may crown me,
> Without my stir.

And at last he resolves to leave things to their course, and to be guided by circumstances:

> Come what come may,
> Time and the hour run through the roughest day.

In the next scene, temptations gather round Macbeth, when the king declares his purpose of visiting his castle; and, at the same time, invests his son Malcolm with the title of "Prince of Cumberland" thereby openly designating him as heir to the crown:

> The Prince of Cumberland! That is a step,
> On which I must fall down, or else o'erleap,
> For in my way it lies. Stars, hide your fires!
> Let not your light see my black and deep desires:
> The eye wink at the hand! Yet let that be,
> Which the eye fears, when it is done, to see.

Here it is evident he is now becoming more familiar with the thoughts of murder. *Destructiveness, secretiveness,* and *cautiousness,* seem all to have a share in dictating this speech, while *conscientiousness* and *love of approbation* seem only so far awake as to shew him the evil nature of the deeds he is meditating, without making him resolve to avoid them. His desire seems to be, "not to leave undone, but to keep unknown."

In the next scene, Lady Macbeth, by a few expressive touches, pourtrays his character to the life:

> Glamis thou art, and Cawdor; and shalt be
> What thou art promised:—Yet do I fear thy nature;
> It is too full o' the milk of human kindness,
> To catch the nearest way: Thou wouldst be great;
> Art not without ambition; but without
> The illness should attend it. What thou wouldst highly,
> That wouldst thou holily; wouldst not play false,
> And yet wouldst wrongly win.

In perusing this, which would almost appear to be the character of a man of average good dispositions, we must consider the character of the person who draws it. It is Lady Macbeth, who is throughout represented as a bold bad woman, selfish, cruel, remorseless, of unbounded ambition, without principle, and without any benevolent or virtuous feeling. She says that Macbeth is "too full o' the milk of human kindness," (a most expressive term for *benevolence*), not that we are to understand this to have

been very predominant in his character, but that he is not, as she is, utterly destitute of that sentiment. His benevolence, and all his higher sentiments, seem to be moderate, while the propensities leading to ambition are too strong to be resisted by them effectually; and if there is any hesitation in his own mind, it is afterwards overborne by the influence of the lady, who seems, for all that is ill, a much more determined character. In saying "what thou wouldst highly, that thou wouldst holily," she does not mean that her husband's feelings of right were so strong as to reject any elevation to which he was not justly entitled—for she immediately qualifies it by adding—"Wouldst not *play false*, but yet wouldst *wrongly win*;" that he would scruple at doing a very bold and wicked act himself, though he would have no objection to profit by a wicked act done by another. She explains this still further in what follows:

> Thou'd'st have, great Glamis,
> That, which cries, *Thus thou must do, if thou have it;*
> *And that which rather thou dost fear to do,*
> *Than wishest should be undone.*

But she is aware of his want of decision. His dispositions are not, as hers are, entirely on the side of evil. Though she knows it is *love of approbation* and *cautiousness*, not *conscientiousness*, that would restrain him, yet she fears, that without her influence these may prevail so far as to make him lose the glorious opportunity that now offers itself. Conscious of her own power, and of the influence which a determined spirit possesses over one that is balanced between opposite motives, she exclaims,

> Hie thee hither,
> That I may pour my spirits in thine ear;
> And chastise, with the *valour of my tongue*,
> All that impedes thee from the golden round,
> Which fate and metaphysical aid would seem
> To have thee crowned withal.

The soliloquy in the seventh scene opens to us the character of Macbeth still farther. From the first part of it, it will appear, that his *veneration* and *hope* are not sufficiently strong to be felt as religious sentiments, or that not having been turned into the channel of true religion, they are dormant and useless for any moral purpose.

He is willing to "jump the life to come," were he only sure of immediate success "here upon this bank and shoal of time;" but his caution seems to have been great, and fully alive to all the dangers of the attempt, so far as regarded this world. He recollects, that "whoso sheds man's blood, "by man shall his blood be shed;" a maxim perhaps more religiously acted upon in *former* days than it is at present; as the death even of a common clansman

was sure to excite a determined purpose of revenge in the breasts of a whole clan, and seldom passed without ample retribution. Hence the following reflections arise:

> But, in these cases,
> We still have judgment here; that we but teach
> Bloody instructions, which, being taught, return
> To plague the inventor. This even-handed Justice
> Commends the ingredients of our poisoned chalice
> To our own lips.

What follows would almost appear to be dictated by *conscientiousness;* but that feeling, as we said before, seems to have been only so strong so as to point out what is right, not strong enough to induce a resolution to do it:

> He's here in double trust:
> First, as I am his kinsman and his subject;
> Strong both against the deed,—then as his host,
> Who should against his murderer shut the door,
> Not bear the knife myself.

To a mind well constituted, the bare mention of these motives would have been sufficient to supersede every other. Had *conscientiousness* been strong, it would have presented these as excluding every thought of such a deed;—there could, after this, have been no hesitation upon the subject. No temptation could, in this case, have induced the individual to do a deed so abhorrent to every good feeling. But Macbeth requires *other* motives to persuade him against it; and he brings to his aid the *love of approbation,* which, in him, seems to be a far stronger feeling than the sense of moral obligation:

> Besides, this Duncan
> Hath borne his faculties so meek, hath been
> So clear in his great office, that his virtues
> Will plead like angels, trumpet-tongued, against
> The deep damnation of his taking-off!
> And pity, like a naked new-born babe,
> Striding the blast, or Heaven's cherubin, hors'd
> Upon the sightless couriers of the air,
> Shall blow the horrid deed in every eye,
> That tears shall drown the wind. I have no spur
> To prick the sides of my intent, but only
> Vaulting ambition, which o'erleaps itself,
> And falls on the other.

It would appear, that without any great share of moral feeling Macbeth's *caution* and *love of approbation* have now almost persuaded him to lay aside the murderous designs which he had once entertained. But to prevent this, the lady comes in, and,

with her wiles and persuasions, turns the beam which was only slightly swayed toward virtue, and casts the balance to the opposite side. It will be seen, that, probably knowing her temper, and her contempt for every thing that savoured of goodness, he does not hint any conscientious motive *to her*, but only dwells on what *might* have some effect with her—*love of approbation*:

> We will proceed no further in this business:
> *He hath honour'd me of late;* and I have bought
> *Golden opinions* from all sorts of people,
> Which should be worn now in their newest gloss,
> Not cast aside so soon.

The manner in which this is met by Lady Macbeth is worthy of notice. There are three things which a man cannot bear without uneasiness, and least of all from the woman he loves; the appearance of contempt—the imputation of indifference,—and the suspicion of cowardice. To a man of Macbeth's temper, in whom the *love of approbation* and its inseparable concomitants, the dislike and the fear of *disapprobation*, seem to have been predominant feelings, these would be all highly grating; and it will be observed, that Lady Macbeth contrives to combine them all in her reply, which is at once scornful, sarcastic, and bitterly taunting.—

> Was the hope drunk,
> Wherein you dress'd yourself? hath it slept since?
> And wakes it now, to look so green and pale
> At what it did so freely? From this time,
> *Such I account thy love.* Art thou *afeard*
> *To be the same in thine own act and valour,*
> *As thou art in desire?* Would'st thou have that,
> Which thou esteem'st the ornament of life,
> And live *a coward* in thine own esteem,
> Letting *I dare not* wait upon *I would,*
> Like the poor cat i' the adage?

Macbeth, however, does not yield immediately, but rouses at these taunts. He answers in a noble and spirited manner—

> Pr'ythee, peace:
> I dare do all that may *become* a man;
> Who dares do more, is none.

Dr. Johnson says, that "these lines ought to bestow immortality on the author, though all his other productions had been lost." We cannot entirely concur in this unqualified praise, in a moral point of view. We do not deny that the sentiment is noble, but it is not the highest moral sentiment. It is dictated by *love of approbation*, and not by *conscientiousness*, and hence it is the more conformable to the character of Macbeth. He does not say that he dares do all that is just and right and virtuous, but all

that is *becoming*, all that is great, and noble, and glorious: not that which is approved by his own conscience, but that which is applauded and admired by men. We beg of our readers to observe this distinction; a distinction which passed unobserved by the acute mind of Johnson, but which is perfectly apparent to every one who is acquainted with phrenology.

She has now brought him to the point she wishes—*Conscientiousness*, or the sense of right, has been long out of the question. The *love of approbation* has been neutralized by opposing the glory of courage, firmness, and consistency, and the shame of their opposites, to the simple reprobation due to crime; and all that now remains is a lurking portion of *cautiousness*, giving rise to the fear of discovery and failure. This she proceeds to remove by showing him a plan by which their enterprise may be easily and safely accomplished, while, at the same time, their guilt may be concealed, and the blame of it transferred to the guards of the unfortunate and fated monarch.

This plan, proceeding from the superior readiness and invention of his wife, seems to delight Macbeth. It removes his only remaining scruple; and he yields thenceforth entirely to her wishes. He even seems to express admiration of her thorough going and intrepid spirit, in this apostrophe:—

> Bring forth men-children only!
> For thy undaunted mettle should conceive
> Nothing but males.

But even to the last, his *love of approbation* and *cautiousness*, acting on defective *conscientiousness*, prompts the desire of avoiding the shame and danger of the crime, at the expense of ruin to others.

The scenes that take place after the murder are no less characteristic than those before it. Lady Macbeth has no struggles before the crime. She has no immediate remorse after it. But Macbeth, who is represented with so much more feeling of a good tendency than she possesses, with some *benevolence*, some *conscientiousness*, large *love of approbation*, and considerable *cautiousness*, has no sooner committed the act to which he was goaded on by his own and his wife's ambition than he is seized with the utmost horror at what he has done. Conscience, in such minds as his, is said to be a treacherous monitor, inasmuch as, before the commission of crime it warns us only in the gentlest whispers, but afterwards raises its accusing voice like thunder. This is easily and beautifully explained by the phrenological doctrine, that the organs of the different faculties are not always in an equally active state, but come into activity *seriatim*, either from internal causes, or as they may be affected by external circumstances. The doctrine is, that previously to the commission of crime, the propensities leading to that crime are in a highly

active state; but no sooner are these gratified than a reaction takes place; the propensities, wearied with long exertion, become dormant, and the moral powers, coming into activity, shew us the enormity we have been guilty of in all its horror. It is not merely *conscientiousness* that being roused is offended by the commission of the crime. *Veneration*, where it exists, is offended, by our seeing that we have transgressed the laws, and done outrage to the commands of our Maker. *Love of approbation* is offended, in that we have incurred the reprobation, the scorn, and the hatred of all the wise and the good. *Cautiousness* is alarmed at the evil consequences which may attend our guilt in this world, and the punishment which awaits it in the next. This, joined with *secretiveness*, alarms us with the fear of detection—and we start at every sound, and mistake every bush for a minister of vengeance. In the case of murder (which outrages a greater number of the higher sentiments than almost any other crime) *benevolence* is highly offended, and through that all the social affections. All these feelings being roused in the mind of the murderer, after the passions that led to the murder have subsided, are sufficient to convert his mind into a nest of scorpions. The whole mixed state of feeling constitutes what is called *remorse*,—and which probably, when these feelings are naturally possessed in any considerable degree, continues to haunt the culprit during life, and to render him his own tormentor, even when he is not overtaken by public justice.

The scene which follows the murder of Duncan illustrates these reflections in the most striking manner. The lady comes in, bold and determined, pluming herself on her skilful arrangements, and her success in intoxicating the grooms—yet even she is not without her fears; but these have only one object, the possible failure of their enterprise. The agitation of Macbeth is indicated by his calling within—

> Who's there?—What, ho!

She is startled with this, and explains—

> Alack! I am afraid they have awaked,
> And 'tis not done:—th' attempt, and not the deed,
> Confounds us—Hark!—I laid the daggers ready,
> He could not miss them.

Here a most striking circumstance is mentioned:

> *Had he not resembled*
> *My father as he slept—I had done't.*

This, as Warburton observes, is very artful. For, as the poet has drawn the lady and her husband, it might be thought the act should have been done by her. "It is likewise (says he) highly

just; for though ambition had subdued in her all the sentiments of nature towards *present* objects, yet the likeness of *one past*, which she had been accustomed to regard with reverence, made her unnatural passions for a moment give way to the sentiments of instinct and humanity." This is the explanation of the circumstance given by one of the ablest critics of our great bard, but it is rather an obscure one, and is not founded on any known principle in human nature. Phrenology furnishes an explanation which is not liable to these objections. Lady Macbeth is represented as almost totally void of *benevolent* feeling, or of any of the higher moral sentiments; but she is nowhere represented as incapable of *attachment* or domestic affection. On the contrary, she seems, throughout the play, to be devotedly attached to her husband. It is *his* greatness, *his* advancement she desires, more than her own. She everywhere speaks to him in the language of kindness and affection; and, destitute as she is of the higher moral qualities, we can easily conceive her to have been a dutiful and loving daughter. Shakspeare, who seems to have known human nature by an intuitive power, was aware of a fact, which phrenology, founded on careful observation, has since taught its disciples—*that these two species of feelings are totally distinct, and not at all dependent on each other.* There are many men and women who are ardently attached to their near relations, or others who are nearly connected with them, from possessing a strong *adhesiveness*, and who yet have no feelings of love or charity to any others of the human race, because they are destitute of the sentiment of *benevolence.* This seems to have been exactly the case with Lady Macbeth. Duncan, merely as her guest, her kinsman, and her king, she could have murdered in his sleep, had not his accidental resemblance to an object of her strong affection, her father, stayed her hand. But for this trait, the character of Lady Macbeth would have been too horrible and fiendlike; but this single instance, in which she seems accessible to a touch of natural affection, allows us to feel, that, though unfeeling and cruel in her disposition, she still partakes of human nature, which is never so depraved as to be totally void of every good quality.

It is a trite remark, "*c'est ne que le premier pas qui coute.*" Macbeth having once imbrued his hands in blood, needs not his lady's instructions to incite him to any other murder. Having obtained the crown by means of this kind, he goes on to commit fresh crimes to secure himself in it. As he himself says,

> I am in blood so far stept in,
> Returning were as tedious as go o'er.

Till now he has been chiefly under the guidance of *love of approbation;* but his elevation to the crown renders this feeling less effective, and fear (cautiousness) is now the master passion of his heart. It is this which incites him to the removal of Banquo:

Our fears in Banquo
Stick deep; and in his royalty of nature
Reigns that which would be fear'd: 'Tis much he dares;
And, to that dauntless temper of his mind,
He hath a wisdom, that doth guide his valour
To act in safety. There is none but he
Whose being I do fear.

The prophecy of the sisters, who said that Banquo's issue should be kings, confirms his bloody purpose. But even while the act is on the eve of being accomplished, he confesses to his wife how much his mind is torn by fears and disquietudes, insomuch, that, even on the throne itself, he almost envies the condition of that victim whom he has immolated in order to obtain it:

We have scotch'd the snake, not kill'd it;
She'll close, and be herself; whilst our poor malice
Remains in danger of her former tooth.
But let
The frame of things disjoint, both the worlds suffer,
Ere we will eat our meal in fear, and sleep
In the affliction of these terrible dreams,
That shake us nightly: Better be with the dead,
Whom we, to gain our place, have sent to peace,
Than on the torture of the mind to lie
In restless ecstasy. Duncan is in his grave;
After life's fitful fever, he sleeps well;
Treason has done his worst: nor steel, nor poison,
Malice domestic, foreign levy, nothing
Can touch him further!

We need not follow him through the farther scenes of blood,—only to observe, that even to the last, though grown more inured to evil deeds, he no where shews that callousness and utter disregard of crime that is exhibited in Richard III. and some other wicked characters pourtrayed by the same masterly hand. To the end he is subject to the horrors of remorse, and these seem even partly to realise the sentence, which his conscience in its first exasperation denounced upon him, that he should sleep no more in peace. The lady tells him,

You lack the season of all natures, sleep.

We think it is evident, from this examination, both on the principles of phrenology, and on the acknowledged facts in the history of man, which are known to us independently of that science, that the character of Macbeth, as drawn by our immortal bard, so far from being out of nature, shews the deepest knowledge of the human heart, and is throughout perfectly natural. We have seen that it is not otherwise inconsistent than the nature of man is itself inconsistent,—and that the apparent inconsistencies

are all reconcileable to a few plain and easily-understood principles, operated upon in certain obvious and intelligible ways, by the circumstances in which he is placed. The only feelings which seem to be possessed strongly, are *love of approbation* and *cautiousness*, —the rest both of the lower propensities and higher sentiments seem either so moderate in degree, or so equally balanced, that the character might have been turned either towards good or towards evil, according to the situation in which the individual was placed, or the example and persuasions of those who happened to be near him. Unfortunately such is the character of his lady, that the example and persuasions coming from her, and to which even some of his good propensities lend an additional force, all tend towards evil. This affords a key to the whole wavering in Macbeth's mind, his fall into irremediable crime, his consequent remorse, and final ruin.

CHAPTER XXIX.

OF THE WILL.

THE machinery of the Mind is not self-moved. It is set in motion by some Force, as the machine of human construction is moved by the steam-engine. That Force is doubtless the Vital (or Nerve) Force. But the Vital Force does no more than impart motion; it does not direct nor control the motions it imparts. Those motions are not automatic, for if the Vital Force ceases to flow, the motions cease. Nor are they involuntary motions, like the actions of the heart and of the apparatus for digestion. They are subject to control by some power other than Vital Force or any Force self-generated. They obey commands. Although often acting without conscious volition, they recognise a director.

The WILL is the name we have given to that controlling power. What is it?

Definitions innumerable have been attempted. Philosophers have wearied themselves with endeavours to describe the nature and operations of the Will. But, although its existence is not disputed, there is endless diversity of opinion as to its source, its seat, and the manner of its action. Its recognition is especially inconvenient to the Materialists, who hold Mind to be nothing more than a secretion from matter, precisely as gastric juice is a secretion of the stomach. The Philosophy of Materialism offers a not impossible theory of the action of the various faculties of the Mind, and

there are phenomena, to be examined hereafter, which certainly point to such a conclusion. But Materialism fails to account for the control that is exercised over these various Faculties of the Mind by something whose existence all agree in recognising. The brain is manifestly a servant, not a master, for, in a condition of health it obeys commands and is kept in certain state of discipline by a power out of itself and greater than its own. It is certain that this control is not that of one Faculty ruling another Faculty. *Combativeness* is not commanded by *Benevolence*, nor *Music* by *Mirth*. Our own consciousness informs us that the operations in the machinery of our Minds are directed by some power other than the Faculties that are directed. The Faculties often act automatically, as in dreaming, when the power of the Will is for a time suspended. There are instances of *Unconscious Cerebration*, which will be considered hereafter, and which is named now as a portion of the evidence that will be brought to support the contention that the Will—that Power which controls and commands the machinery of the Mind—is *not* the machine we call the Mind, but something other than the Mind.

Cogent evidence of this relationship, which is not identity, is found in the fact that the Mind and the Will do not always work together. The Mind often acts without the Will and the Will often commands and the Mind fails to obey. The connection between them is usually severed in sleep and often when we are awake. Some confusion has been created through failure to distinguish clearly between *the motive* and *the Will*. It is true that we are not masters of our motives. Thoughts arise in the Mind, we know not whence coming, nor why, and perhaps prompt to action. But these motives are not *the Will*, as some have supposed.

They may set in motion a dozen faculties and the Will may remain perfectly passive. But if something upon which the faculties are thus engaged kindles in us a desire for action, forthwith the Will responds and commands the Mental Faculties to work in some special direction or to some wished-for end, and directs the nerve system to take such action of the body as THE WILL commands.

For the Will commands both the Machinery of the Mind and the actions of the body; it controls both the brain and the nerves. Therefore THE WILL is neither the brain nor the nerves, but a power above both.

Where does it dwell?

Our consciousness tells us that the seat of THE WILL is somewhere in the head. When we will a thing, we know that the command does not come from the spinal cord; we *feel* that the operation is performed somewhere in the skull. The brain hemispheres, as the organ of the Mental Faculties, are not the probable seat of the Will that commands them. May it not be at least a reasonable suggestion that the mechanism by which the Will works is the collective mass of ganglia at the base of the brain, situate precisely at the point of junction between the brain and the body on one side, and between every part of the brain at the other, a position which enables it instantly to command the operations of both brain and body, to receive the impulses of the Emotions and the judgment of the Intellect, and transmit them for bodily action to the nerves with which it is in direct contact through the spinal cord.

But what is the WILL? Is it not OURSELVES? Is it not that which gives us the sense of *individuality*—of *personality*,—of that *oneness* which, for lack of some better English phrase, is termed *the Ego*—which is the entity

we intend to describe when we say "I." This Will is *mine*. *I* exercise it. I know it to be limited in its range, but within its kingdom it is sole sovereign.

What more may be inferred from the existence of THE WILL as the servant of the "I" remains to be considered hereafter.

CHAPTER XXX.

THE SOUL—ITS DWELLING AND ITS DESTINY.

We have positive knowledge of *Body* and *Mind* in Man. We are as certain as we can be of anything that Man has a Body, admirably constructed, moved by a nerve system that obeys a power we call the WILL, and which power is directed by INTELLIGENCE.

Here, then, we have a perfect machine—a Body of wonderful structure, moved by a central WILL, and controlled by an intelligent MIND. Before our eyes stands this Body. We can see and measure the machinery by which this Mind controls this Body. We see and know that this machinery of the Mind lives, grows, declines and perishes with the Body.

Is this *all?* Have we here the *whole* Man? Is what we thus see and measure *everything?* Is there nothing more of us than muscle, bone, nerve, and brain? Is the *thing that directs* the machinery the product of the machine?

WHAT AM I?

Must we say, "A material mortal structure merely, that grows to maturity, lives for a little time, dies, and is dissipated?"

PHYSIOLOGY answers "Aye!"

PSYCHOLOGY answers "No!"

Psychology says there is something more in man than this material structure—something we cannot per-

ceive by our senses or grasp with our instruments, but the proof of whose existence must be sought in *manifestation.*

The task upon which we are now to enter is to inquire if Psychology has any and what *evidence* to support its assertion; if there be any and what *scientific* proof of the existence in Man of SOMETHING OTHER THAN MIND AND BODY; for, without a full examination of this important subject, very imperfect would be any answer to the question, "WHAT AM I?"

CHAPTER XXXI.

SOUL—SPIRIT—ANIMA.

WHAT *name* shall be given to that which is the subject of this chapter? What one word will convey to the Reader a distinct conception of *the thing* intended to be brought under his consideration in the following pages? The choice of a designation is not unimportant, for already in the majority of minds some ideas, more or less vague, are associated with each of these names. Each suggests to the Reader some conception which his own Mind has already formed, and which is probably very unlike the idea the writer had designed to convey. Few words are more frequent in conversation and in books than "SOUL." But ask the most intelligent and reflecting of those who use it to describe in plain words *what it is* they call a "SOUL"—what definite *idea* of "a SOUL" they have—what form, material, qualities, they intend by that name, and they will be compelled to confess that, in very truth, the word "SOUL" is to them little more than an unmeaning phrase, and that they have a very vague notion indeed—if any at all—of the *thing* they are talking about.

If it be so with the most intelligent and thoughtful, what must be the blankness of conception in the minds of the ignorant and unreflecting?

Not so, however. As always, the thoughtless and the uninformed find no difficulty in attaching an idea to the word. "Of course," they say, "I know what the Soul

is; everybody knows *that* who knows anything. The Soul is—is—is something in us that lives after we die."

Ask their notions of the nature of this something, of its structure, its dwelling-place in the body, its functions there, its material, its shape, by what process it is severed from the flesh, where it goes, what they imagine to be the manner of its existence in its new life, what are the new conditions and new natural laws to which it must then be subjected, what are its capacities and its occupations, where is its abode and what its ultimate destiny? Not the unreflecting only, but the vast majority of those who are accustomed to think, will then admit that these questions of overwhelming interest to them had never or rarely occurred to their Minds, although not doubting in the least the fact that they *have* a Soul.

It is a startling truth that few of these momentous questions have ever been seriously considered even by the most educated. Why? Because their attention has not been directed to them as questions to be practically and scientifically examined. Stranger still it is that such an inquiry has not been eagerly courted. Who is there, knowing that next year he may go to dwell in a distant land, who would not make anxious inquiry for information concerning the country, the climate, the conditions of existence and the nature of his abode there, and if there be any and what means of communication with the friends he will leave behind him. Nevertheless, there is scarcely one among us who, although knowing that his Soul *must* depart from its present dwelling in a few years, and *may* be summoned to its new abode to-morrow, has ever given thought to the question what, viewed by the light of science, must and will be the probable conditions of its existence without the body.

Is it that we fear to *think,* or that we do not firmly *believe*? Is it that with us it is *assent* only, not *conviction*? Do we believe confidently and clearly, as we believe in the rising of the sun to-morrow; or is it only a dreamy, hazy notion of something very far off, very doubtful, and very uncertain?

In times past, where the existence of the Soul was recognised, Imagination invented a futurity for it, every people painting that future according to its own notions of pleasure and pain. The differences in these pictures proved them to be productions of fancy not founded on any fact. They were drawn in utter disregard alike of the known laws of nature and the teachings of reason and of science.

But this is not an age of faith. We are not content to dream. We demand facts. We have learned many of Nature's laws, and we require that all knowledge shall be pursued in accordance with those laws. The structure, qualities, and functions of Soul and the conditions of its existence—that is to say—its Physiology—must be investigated with the same reference to reason and science as those of body.

But *has* the question been so treated?

On the contrary, the diversities of individual conception of the conditions of a future state are as conflicting now as ever they have been. If any twenty educated persons who believe in the existence of Soul were required to write each his own ideas of its present and future dwelling place, of its structure, its qualities, its powers, pleasures, and pains, it might be safely predicted that there would be as great a diversity of description as of persons. It would be found that each had depicted for it a future which was nothing more than the present amplified and beautified, its bliss and its woe

being precisely that which the speaker regards as pleasure or dreads as pain.

The conclusion from this is that the subject has not been examined with reference to scientific law.

Why this neglect of a matter of such surpassing interest? Years are expended in experiment and discussion upon the chemical composition of a stone; but the composition of ourselves is treated with contemptuous neglect, as if a matter of no moment. The lips acknowledge the being of a SOUL as well as of a body, but while the mortal body is laboriously studied, the immortal Soul is never examined. This treatment of it seems to betray a want of confidence in its reality. Science says that, from its nature, Soul is out of her province, for she cannot subject it to the knife, the crucible, and the microscope. True; but is no other proof admissible in Science than that which instruments supply? Is our capacity for knowledge limited to things palpable to our senses? Nay more, is it certain that the senses themselves supply *no* evidence of the existence of something in us other than that material structure which the Physiologist manipulates? May there not be found in Man something positive and substantial, from which we may fairly and reasonably arrive at the conclusion, or at the least form a probable anticipation, that we are not wholly material; that we are more than protoplasm; that Theology teaches a substantial truth, to be demonstrated by Science, and not merely a dogma that Science looks upon as a dream; that even in Science itself we may hope to find, scientifically shown, a reasonable probability that we possess a Soul, or, I should rather say that *We are Souls*.

I admit that nothing short of such reasonable and scientific proof should completely satisfy the inquiring

Mind. But what truth should be so eagerly desired and sought; what other has so profound a personal interest for us as the question of questions

HAVE we a SOUL?

It is necessary to remind the reader that this inquiry is designed to be purely *scientific*. It purposely avoids all reference to the question in its *theological* aspect. It is addressed mainly to those who reject the authority of the Theologian; to those who accept the existence of Soul as a dogma, but have not that firm and clear faith in it which never feels a qualm of doubt creeping over it, as well as to those who accept the theological assertion fully and sincerely, but who desire some probable knowledge of the *nature* of the Soul they firmly believe themselves to possess, some definite conception of its mode of existence here and the conditions of its existence hereafter so far as Science can trace them by applying to the investigation the known laws of nature. Theology, which affirms the existence of the Soul and proclaims its immortality, does not attempt to teach us anything whatever about its structure and qualities, save that it exists in the present and will live in the future; but of what it is, how it is, and what and how it is to be, it reveals almost nothing.

Is there any Reader who would not express himself after this fashion? "I have a passionate longing to know more of this immortal Spirit of mine. I am not content with the vague conception I have of it. I desire something more definite and distinct. I cannot accept a mere phrase. A name does not satisfy me. I am not the wiser for authoritative assurance that I have a Soul, unless a definite idea is conveyed to me by that term. I turn that word over and over in my Mind and try to comprehend its meaning. I ask myself what

definite image that name summons before my Mind's eye. I can discover none—neither shape, nor substance, nor qualities — no distinct idea which, when invoked by the word or coming involuntarily into the thought, I can contemplate as clearly as I can think of my body. More eagerly still do I desire to be assured that I have a Soul, not as a matter of faith alone, but as positive *knowledge*, as certain and definite as my knowledge that I have a body. I am impatient to ascertain what *evidence* founded on fact, and what argument based upon the laws of Nature and Science, Reason can produce to me of the probable future of that Soul—if it has an existence in that future, if it retains there a consciousness of its past existence here, and what under the new conditions of its being are its probable powers and capacities."

Doubtless thousands of thinking men and women are at this moment experiencing this desire and thirsting for this knowledge; not questioning the theological Authority that affirms it, but anxious, in a matter of such supreme importance to themselves, to confirm assertion by *proof*, to convert a name into a thing, and to change a shapeless shadow into a cognizable substance. The number of such eager inquirers cannot be measured by outward expressions. Like children in a churchyard at night shouting, "Who's afraid," many try to assume a confidence they do not feel. The doubting and failing in faith, anxious to have doubt removed and faith confirmed, turn to Science and say, "Tell me, you whose lives have been devoted to the investigation of Nature's facts and the laws of Divinity as exhibited in His works, tell me, *have I a Soul?*"

And what says MODERN SCIENCE in answer to this earnest questioning?

"I have looked for the Soul, but I cannot find it. All that I can discover with the most powerful microscope is, that your body is built of particles of matter, combined in various groupings and forming various organic structures requisite to the completeness of the human being. Life appears to be the product of organism, the result of a certain combination of matter; for when that combination is severed Life ceases and the structure is dissolved into its elements. Viewed scientifically, Death is not the departure of something from the body, but simply the cessation of vitality by the cesser of the conditions under which vitality exists. I discover no difference between the act of death in a man, a sheep, a fish, a flea, or a mollusc; and after death the same process restores the bodies of all alike to the same elements out of which they were all constructed. You ask me if Mind is not the Soul? I answer that there is no evidence of it, but, on the contrary, all the evidence points to the opposite conclusion. Mind is dependant upon the structure of the brain. A diseased brain makes a diseased mind. A well formed brain is attended with intellectual capacity in proportion to its size and quality. If you paralyse the brain with a blow, you for a time extinguish the Mind. Destroy a part of the brain, and you destroy an equivalent portion of the Mind. Arrest the motion of the fibres of the brain by congestion of the blood vessels, as in drowning; there is temporary death, and Life may be restored by making the heart pump again, thus relieving the congested blood vessels and removing the obstruction to brain action; upon which the Mind revives too. Mind, we Scientists say, is a secretion from matter, and every act of Mind uses up a portion of matter. When the Mind is paralysed by concussion or congestion, there is absolute insensibility

and there is no appearance in the senseless body of the presence of any other power. Only the ceasing of the heart's action marks the passage from life to death. There is no visible intimation of the severance of the Soul from the Body at the moment of death, and the act of death in a man differs in no discoverable particular from the act of death in the lower animals. Our foremost physiologist, Huxley, finds only 'protoplasm' as the ultimate base of the human structure, and Dr. Carpenter explains some of the most mysterious actions of the Mind by a theory of 'Unconscious Cerebration.' Tyndall alone faintly acknowledges the possibility of the existence of other laws than those which govern the material world; but even he can find no better basis for his conjecture than an operation of the Imagination, a faculty which he contends might be fairly enlisted in the service of Science. So far as his investigations into Nature have advanced, he can discover nothing but matter made perceptible to our senses by certain 'modes of motion' which those senses are constructed to perceive. Even he does not acknowledge that there may be other modes of motion which the senses cannot perceive in their normal condition, but which may be perceptible in abnormal conditions. Science can find no Soul; no place in the structure where a Soul could dwell; nothing in Mind, in Life, or in Death, upon which to base even a probability that there is anything in us other than organic structure, performing organic functions and governed by organic laws."

Distracted between the divergent teachings of Science and of Authority; the one pointing to *fact*, and the other appealing to *faith;* the latter proclaiming the existence of a Soul, the former as dogmatically asserting "I can find no trace of it," and even Authority itself

adventuring no definition of a Soul, either as to form, substance, dwelling-place in the body, relationship to the material structure, or the conditions of its existence in the future, it is not surprising that painful doubts should prevail, nor that thousands of thinking Minds find their faith failing them. They try *not* to think; they strive to thrust out the intruding thought; not a few take refuge in Authority from the agony of uncertainty, and surrender their liberty of judgment, because its exercise is a toil and a pain. Multitudes, who endeavour to persuade themselves that they are believers still, because they close their eyes and their ears, nevertheless are conscious that their faith in the Soul and its immortality is not so fixed as it was before the Materialists of Science had whispered doubts. Their confidence is not the same firm and perfect belief as that with which they accept the existence of the sun, their own bodily being, or the certainty of death. Hence in cultivated society, everywhere throughout Europe and America, there is a vast stratum of unbelief. If not openly confessed, it crops out continually, betrayed by insinuation and often by more expressive silence. It pervades the press, not, indeed, in the form of plain avowal of scepticism, but in a shape far more insidious, therefore the more dangerous. Every opportunity is eagerly seized to give publicity and prominence to facts and arguments that appear to sustain the doctrines of Materialism, and to laud its preachers and teachers. Whatever tends to *their* refutation is repressed or ridiculed; books are misinterpreted, writers are abused, letters are refused a place even in answer to falsehood or misrepresentation, if the writer's argument goes to establish the existence of the Soul. Of this a striking instance was exhibited on the occasion of the recent

experiments by Mr. CROOKES, F.R.S., establishing the existence of a Psychic Force, and the report of the Dialectical Society completely confirming the results of his more scientific investigation. The Press, with rare exceptions, misstated the conclusions drawn by the Experimentalist, suppressed his experiments and all that portion of the report of the Society which set forth the trials and tests by which they were convinced of the existence of a Psychic or Soul Force after forty meetings, although almost every member had commenced the inquiry with a firm belief that he should detect a delusion or an imposture. The cause of this systematic misrepresentation was but too manifest. The existence of a Psychic Force, as exhibited by those experiments, went far to shake to its foundation the doctrine of Materialism, and to support by scientific proof the probability of a Soul in Man. Therefore the disciples of the Materialistic creed used their great power in the press to extinguish, so far as the *suppressio veri* and the *suggestio falsi* could do it, the scientific discoveries that threatened the stability of their dogma. It is now, as it ever was ; pride will not permit men to confess an error of opinion. They form hasty judgments on insufficient facts, or on no facts at all, and having asserted them positively, it is a point of honour not to admit that they could have erred. They *will not* be convinced; they close their eyes and ears resolutely against proofs; they look to the evidence on one side alone; they are blind to the evidence on the other side. They shut their eyes and say they *cannot* see, and they endeavour to discredit the evidence of all who differ from them by declaring them to be deluded fools or impudent impostors.

It is to these and such as these that I address myself. They who, happily for themselves, have accepted with

unswerving faith the teachings of Authority, who are satisfied to *believe*, and have no desire to *know*, need no other assurance of the Soul, its present and its future, and will doubtless hold the looking for scientific proofs of its existence as a superfluous labour. To them it is so, and they are happy in that confidence. "They that are well need not the physician, but they that are sick." It is for the sick at heart, for the minds that cannot accept as sufficient the mere assertion of any authority, but who crave for *proofs* before they can embrace a creed —for the multitudes whose faith has been shaken by the teachings of Modern Science and the prevalent opinions of our Scientists—openly proclaimed by many, privately acknowledged by most of them—that this investigation is invited. The province of Psychology is not to supersede Authority, but to inquire if the *teachings* of Authority may not be supported by the FACTS of Science, and if *proofs* of the Soul's existence may not be found in Nature, the denial of Science notwithstanding. I repeat that in this inquiry I purposely avoid all theological references, not because I doubt their authority, but because the very design of this treatise is to inquire if there be any and what evidence of the existence and immortality of the Soul, other than theological, that will give to those who dispute Authority, or do not entirely accept it, that for which they are yearning—*knowledge*—not merely belief founded on faith —but *knowledge*—such as they have of the realities of the world about them. Let all who *can* do so be content to accept the assertions of Authority and in that blessed confidence seek to know no further. But to all who do not or cannot be content with this, to all who doubt, to all whose faith is not firm, to all who desire to strengthen their confidence in the teachings of religion

by seeing if it may not be confirmed by Science, I say with respectful earnestness "Come and join with me in a humble, but honest and patient inquiry, whether the modern Materialists are right in their conclusions; or does not Science itself give us proofs of the existence of a Soul in Man, and afford us some glimpses of its dwelling here and of the conditions of its existence hereafter?"

I am not blind to the difficulty of the task. I know that it will be deemed presumptuous, and I am prepared for much misrepresentation, and perhaps abuse, for having ventured upon ground which two opposing parties will claim for their own and not improbably may unite for the expulsion of one whom both will look upon as a trespasser. I am conscious that at the best the performance must fall immensely into the rear of the design; that I am exploring a region as yet almost unexamined, and that I have little assistance to look for from previous labourers. Nevertheless I proceed with all humility, but without fear, sustained by the assurance that if anything like success should attend the investigation, invaluable benefits will flow from it to tens of thousands, to whom it will bring hope and happiness. If any scientific proof can be adduced to establish the probable existence of a Soul in Man a mighty impulse will be given to the hopes and aspirations of Humanity.

CHAPTER XXXII.

THE ARGUMENT.

When the anatomists and physiologists have reached the end of their investigation—when the microscope can exhibit no further resolution of the particles that compose the mortal frame—what, after all, is revealed to us? A structure admirably contrived for the performance of certain functions. The Physiologist gives us the most minute descriptions of the various parts of which this structure is composed,—of their several functions—what they are designed to do—and what changes take place in growth, in health, in disease, in decay, in death.

But, so far as he can with his most powerful instruments discover, he finds nothing more than this: He sees that this structure has what he calls *Life*—that is to say, it is maintained by some natural laws of which he is entirely ignorant, in direct opposition to the physical laws, its various parts performing their functions by a power of which he knows nothing whatever. It assimilates to its own substance other substances brought into certain relationships with it. Further, it has *Intelligence* and a *Will*. It acts and moves in obedience to a directing Force of which his most powerful lens fails to reveal to him the very slightest trace. This controlling Intelligence he tries to account for by terming it a secretion from the brain; this self-sustaining Life, that acts in opposition to the physical laws, is with him the result of a combination of protoplasms. How miserably unsatisfactory

is this! What a specious attempt to conceal ignorance under a show of science! In truth, they are phrases only, with no definite meaning attached to them by those who use them. They are designed to conceal the lack of knowledge, and too often they are accepted by the outside world as substantial verities.

What is this thing we call *Life*, that thus escapes the most searching examination of the Physiologist, whose presence he cannot deny, and yet of whose nature he is so profoundly ignorant?

Is it a definite something that has a concrete existence, either as a part of the corporeal substance or as distinct from it? Is it an ingredient of the structure, or an appendage to it, or merely, as the Materialists assert, a condition of the organism? These are some of the problems which Physiology has not solved, and never can solve, because its methods of investigation, admirable for the discovery of whatever the senses, aided by instruments, can detect, are altogether incompetent to the exploration of that which is invisible, intangible, unmensurable, imponderable, and swayed by laws differing wholly from, and often antagonistic to, the physical laws which alone his science recognizes. At the very point where Physiology ends the Science of Psychology begins. And it is right that they should be recognized as two distinct Sciences, and pursued by two different classes of investigators, for it is impossible to make any progress in Psychological Science without the most complete recognition of the fact that, in the study of Psychology, we shall deal with materials, with conditions, and with laws altogether different from those that are the foundation of Physiology, and that the course of argument as well as the manner of exploration requisite for the latter will be unlike those that guide the student of the former.

The Materialists acknowledge the existence of LIFE, although they can find it only in its operations. They cannot tell the time of its coming, but they can see its departure, and when it is gone they know that the lifeless thing before them is not the same as it was before—*something* has ceased in it.

So they acknowledge the existence of MIND. This, too, they look upon as a secretion from matter, or a condition of organization, or describe it by some other definition designed to express that it is not an entity in itself, but a quality of something else. Nevertheless, whatever their scientific contemplation of it, they do, in fact, think of it and speak of it, for all practical purposes, as something distinct from the body, though intimately allied with it and sharing its fortunes. "The Mind," they say truly, "is what the body is. As is the structure of the brain, so is the structure of the Mind. A blow that paralyses the brain extinguishes the Mind. Stimulate the brain by increasing the flow of the blood through it and you stimulate the Mind. An imperfect brain exhibits a defective Mind; a misformed brain a deformed Mind; a feeble brain an imbecile Mind. Structure and intelligence are in this so manifestly associated that it is impossible for any but the wilfully blind not to see, or the resolutely prejudiced not to acknowledge, that Mind and Brain are identical, or so closely allied as to be inseparable. If you acknowledge the verity of Dr. Carpenter's theory of Unconscious Cerebration, and, however gullible in this respect he may be called by us, *you* accept his hallucination as a reality, it entirely confirms this assertion. The brain, he says, in certain conditions, acts spontaneously and unconsciously, thinks, feels, remembers, reasons, while we are wide awake, without any consciousness on our own part of these its operations, even when we are

thinking, speaking, and writing in relation to some totally different subject. Here you have the operations of Mind distinctly performed by the brain; that brain grows from an invisible speck, attains its maturity, dies, decays, and is dissipated. Simultaneously with it the Mind grows, decays, ceases. The operations of this brain attend all the operations of the Mind. When the fibres of the brain-mass move, the Mind works. Thought is action of the brain. "Paradise Lost" is the product of molecular motion. The molecules of a certain part of the brain bestir themselves or are bestirred. Forms which the external senses have transmitted to the brain through the nerves of sense are seized by these moving molecules, and reproduced in new combinations, and a picture is constructed by the faculty of Imagination, which is the name we have given to that Brain process."

Granting all this argument of the Materialists, which it is impossible to deny—admitting Mind to be a product of the material structure, or even, if the Scientists please, a condition of organization, that it is mortal like the body, and perishes with it;

Granting, also for sake of argument, that Life too is only a condition of organization, and not a distinct entity existing in certain organized bodies, and that Life passing away the body perishes and the Mind ceases with it, still there remains the vastly larger and more important, more interesting question, which Physiology cannot answer because it is beyond her province, *is there in us something other than Life and Mind, which exists distinct and apart from them,* closely allied with them, but not identical; bound to them by conditions as yet imperfectly understood because insufficiently explored; living with them, but not dying with them; to which the Mind is as the servant and the Body as the garment; a dis-

tinct, definite existence that passes away and lives as an individual being when the body dies, the brain decays, and the Mind ceases ?

That is the question of questions of the utmost moment to every human being, and of the highest interest to society.

What answer can be made to it ?

CHAPTER XXXIII.

CONSCIOUSNESS.

HAVE we *any* consciousness, however dim, that Life and the material Mind are not *ourselves?*

I venture to assert that there *is* such a consciousness. It is felt in all our contemplations of self and expressed in all our language and actions. Does any man think of *himself* as being constituted only of a Body directed by a material Mind that is but a part of that Body? Does not a *sense* of an individuality other than this cling to all his contemplations of self? Can he throw off this consciousness of a distinct personality even if he strives to do so? Is not his language inseparably moulded to this conception of himself? Does any sane man ever talk or write of his Mind or his Life as "Me?" Does he not always say "*my* Mind," "*your* Mind," "*my* Life," "*your* Life"—that is to say "the Mind—the Life—that belongs to *me*," "the Life—the Mind—that belongs to *you*." The "*me*"—the "*you*"—to which that Mind and that Life belong are thus contemplated as something other than the Mind of which the brain is the organ. Even the Insane exhibit the same consciousness of a substantive individuality. The Lunatic who dreams that he is a king believes that "*he*" has become a monarch, and not that "*he*" is other than *himself*. The Mind may be diseased, so that its every idea shall be disordered and its every act irrational, but the patient's *self*-consciousness remains unimpaired; he recognizes his

individuality; he knows that it is *he* who is saying and doing; he is unconscious only of the unfitness and absurdity of what he says and does.

So far, then, as the evidence of our *consciousness* extends, it goes to prove that we have a sense of personality, and that the individual being whom we intend when we think of self, or say "I," is something other than that thing, composed of parts and subject to aberrations, to decay, and to extinction, which we think of and speak of as "*my* Mind," or "*my* Life."

But what do we learn from an investigation of the operations of the Mind, as recognized by Science? Do we find there any confirmation of our own consciousness of an individuality distinct from Mind, or from Body, or from both?

To answer this question perfectly it would be necessary to go into an exhaustive description of the process by which the Intelligence is informed and acts, tracing its operations from the instant of an impression made upon the external Sense, throughout its passage along the nerves to the brain, its suggestive action there, and the combination of mental faculties engaged upon it, until it finds expression in present speech or action, or is stored up in the memory for future uses. Such a survey would require a large volume for its description and therefore is impracticable here. But for the purposes of this argument it will suffice to view the process at the point of contact with the brain, when receiving the impressions—say, of a star—sent to it by the sense of sight. Is that the end of its journey? Is this delivery of the impression to the brain the delivery of the message to *me?* Am "*I*" the brain? Is the brain "*me*," and is what the brain receives received by "*me?*"

To answer this, it is necessary to call in aid the

authority of Materialism itself. Dr. CARPENTER'S theory of "UNCONSCIOUS CEREBRATION" was invented to explain by brain action many phenomena the existence of which it is impossible to deny, but which certainly appear to point to conclusions extremely inconvenient to the votaries of Materialism. The weapon is really a boomerang in his hand—it recoils upon himself. It was designed to extinguish what is called by the Materialists the "superstition" of a Soul. I venture to adopt it and propose to use it to prove the existence of the Soul and for challenging Materialism in its stronghold.

It is, perhaps, necessary to explain to the unlearned reader that by the phrase "*Unconscious Cerebration*" Dr. Carpenter intends to assert that the brain often acts *quite unconsciously to ourselves*, even when we are wide awake and in full possession of our senses. That the brain operates frequently without the Will is known to everybody, as in the familiar instances of reverie and dream. But *Unconscious Cerebration* is more than that. We are conscious of our dreams, though the Will is powerless to control them. But in the condition asserted by Dr. CARPENTER, *the existence of which I entirely admit*, the brain works, not only without the Will, but without Consciousness. There is another important difference between the two conditions. When the Will only is suspended, as in dream, the brain is but partially at work; some of its faculties are at rest, and hence the incongruities of dreams and the strange unconsciousness by the dreaming Mind of their absurdity or impossibility. In *Unconscious Cerebration* the whole brain works precisely as in our waking and most conscious condition —reasons, compares, numbers, and so forth—the only difference being that we have no consciousness of what

it is doing. But the phenomena attending this condition of brain will come for more elaborate consideration hereafter. I only refer to the subject now as one of the proofs of the existence of something in Man other than the Life and the material Mind.

This theory of "*Unconscious Cerebration*," has been advanced triumphantly, not only as the solution of the strange phenomena of Somnambulism, Trance, and other allied abnormal mental conditions, but as being subversive of "the superstition" of Soul, by showing that certain remarkable powers exhibited by the Mind in certain physiological conditions, which were thought by many to indicate the existence in us of an Intelligence other than that of the slumbering brain, senseless nerves and paralysed Will, are nothing more than the action of the brain, awake and at work while the external senses are severed from it and consciousness is suspended.

Granting, for the sake of the argument, that Dr. CARPENTER is right in this—that his theory of *Unconscious Cerebration* explains the phenomena—I venture to claim the theory as cogent evidence for the existence of a Soul, instead of being a confirmation of the theory of Materialism. The very name given to it supports my contention. "UNCONSCIOUS *Cerebration*"—that is to say, the brain is performing the functions of Mind unconsciously. Granted! But to whom or to what is the brain *unconscious?* Not unconscious to itself, of course; *that* could not well be. When the brain is actually performing the functions of Mind, recalling ideas formerly impressed upon it, recombining them, reasoning upon them, and directing speech and action rightly and sensibly, the brain itself cannot be unconscious of its own acts. But if not the brain, *what*

is it that is asserted to be unconscious? *To what* or *to whom* is "the cerebration" unconscious? Does not the explanation given of the phenomenon and the very term employed to express it admit *that there is something other than the self-acting brain which is without consciousness of that action*—something which, in the normal state, *does* take cognizance of the action of *the brain*, but which in certain abnormal conditions is so far unhinged that the usual channel of communication between itself and the busy brain is for a time suspended, and the brain goes on working as before, but works unconsciously to that *something which is not the brain?*

Now this is all that at this stage of the inquiry I am desirous to establish. It suffices, for the purpose of my argument, that I deduce from the materialistic theory itself the probable existence of something in us other than brain or material Mind, something which we cannot see nor feel, but which the believers in Unconscious Cerebration recognise in fact though they disclaim it in words. What that something is will be for consideration presently.

CHAPTER XXXIV.

PRESUMPTIVE PROOFS.

CONTEMPLATING a Man as he appears to the *Senses*; taking to pieces the curious mechanism of which he is constructed; noting how his life begins and ends; marking the growth, decline, and cessation of his Intelligence; it must be frankly admitted, not only that his structure presents no evidence of the existence of anything in him other than that which so lives, decays, and dies, but that the reasonable presumption from all we can learn of him by examination of *structure* is that nothing more appertains to a Man than that which perishes in our very presence.

If, therefore, we would seek for proofs of the existence of the Soul, we must look for them in some other direction than *structure*. Anatomy will not disclose the Soul, if it exists, for the obvious reason that from its nature it is imperceptible to our senses and intangible by our instruments; and even if it were within the reach of the Senses, we could neither see nor feel it. The failure of Physiology to find it is therefore *no* proof of its non-existence. Nor is such failure any reproach to Physiology, whose business it is to describe the mechanism of the material structure alone and to deal only with that which is ponderable, mensurable, visible and tangible.

But if a Soul exists in the body and yet cannot be discovered by our Senses, how is its presence to be proved? Or does the very nature of Soul render it

incapable of proof? Is it and must it ever be merely a matter of faith and hope rather than of conviction? Can no knowledge of it *as a proved fact* ever be attainable by Science?

Or, taking into account the necessary conditions of Soul life, can we look in any direction with reasonable hope to find some evidence that we are not wholly dust and ashes and that death is not annihilation?

We must seek for such proofs, not in the *structure* of the machine, but in the *action* of the machine; and if ever Soul is to be found, it will be by a sagacious and laborious investigation, not of the machinery itself, but of its actions and of the Forces by which it is controlled. If we find any Forces of whose seat or source we are ignorant directing the operations of the Mind, and especially if those Forces appear to be independent of and uncontrolled by the known Physical Forces, it is to them we must look for the explanations Physiology cannot give. It is not contended for a moment that, if any such Forces be found, they are conclusive evidence of the existence of something in us other than the structure that is subject to the *Physical* Forces. The present contention is only that they who are inquiring if there be a Soul within them should dedicate themselves to the study of these *Mental Forces* by the same process of patient examination, ingenious experiment and careful test as are employed by the Physiologists in exploring the phenomena of material organization and the action of the Physical Forces. And they must pursue the inquiry with the same unswerving adhesion to the principles recognised by Science for research in other portions of her domain, but modified in accordance with the different conditions imposed by the differences in the nature of the subject under examination.

The inquiry will properly commence with the arguments arising from beliefs and mental conditions common to all mankind. I admit that such arguments are but of small value in themselves, but they assume importance by combination with others of more weight.

The *first* of them is already familiar to the Reader, but must be repeated here. Though trite, there is a truth in it. The general belief of all, or nearly all, mankind that there is a future existence for them of some sort is a fact not unimportant. However the conception may have come in the first instance, or if it be the result of inherited impressions, as the Darwinian theory would probably contend, we have it as a fact that, with rare exceptions, if any, peoples of all recorded times and countries—however separated from others—and savage as well as civilized—have believed that there was for them a life after death. Infinite have been the fancies with respect to the nature and conditions of that future life. The majority of conceptions of it have been to the last degree absurd or impossible; very few, indeed, have in them a shadow of reason or of probability. But be the notions of that Life to come wise or foolish, the truth remains, that there is, and in all recorded time has been, among all peoples, an almost universal belief in a future existence of some kind. That common consent may be accepted as an item in the sum of evidence in favour of the being of a Soul in Man.

It is said, with some force, that this prevalent belief cannot trace its foundation to any *facts*; that it is the product rather of aspiration than of inspiration; that it is more the child of *Hope*, born of an eager desire for immortality, than a positive conviction of the *Reason* that it is ours. But then comes the second question. Whence is that desire? There is not the slightest cause

to believe that such a sense exists in the animal world. If the Hope of immortality be peculiar to Man, is it not because Man possesses some special characteristic of which that Hope and longing are the expression? May not the fact of an universally implanted desire for a certain object be reasonably deemed to imply the existence of that object of desire? In all other parts of our mental as well as bodily frame, and indeed through all creation, we find structure and function adapted to positive wants and realities. *All* our Senses, Emotions, Sentiments, and Intellectual Faculties are given to us because there are surrounding conditions to which we are subject, and for our adaptation to which it is that these various faculties, mental and bodily, are constructed. If we find any faculty possessing powers apparently useless, or acting in a manner seemingly without an object, we may be assured that there is a corresponding condition somewhere in the external world for which it is constructed, which it is our business to find, and which we shall find if we look for it with due skill and diligence.

It may fairly be contended that this is the meaning of the admitted universal desire for life after death that is implanted in all minds and prevails throughout almost the entire of the human race. The universality of the desire may be reasonably held to imply the existence of the object of that desire. That all men eagerly seek for a future life, and most men believe that it is given to them, is an argument fairly admissible where positive evidence is so difficult to be attained.

A *third* argument may be drawn from the instinctive dread of annihilation felt by every mind that contemplates it. Extinction of self is difficult of reception, because, from the structure of thought, we are unable to conceive of such a condition. We cannot, by any effort

of imagination, picture ourselves to our own minds as not existing. We shrink with instinctive terror from the contemplation. There are few who would not say with Claudio:

> The weariest and most loathed worldly life,
> That age, ache, penury, and imprisonment
> Can lay on nature, is a Paradise
> To what we fear of death.

That fear is not of possible suffering. The shrinking dread which all feel, though few venture to express it, is not of death, but of the annihilation which the stoutest of heart and firmest of faith cannot altogether avoid contemplating as the *possible* result of death.

It has been contended that this dread of annihilation is implanted in us as an inducement to exertion for the preservation of our lives. But that purpose is more effectually accomplished by the instinctive dread of *death*, which belongs to the animal world in common with man, and with the like object. Animals dread death, but not annihilation. Man dreads both death *and* annihilation, and annihilation more than death itself. If the fear of death is implanted in us for the special purpose of the preservation of life, may we not reasonably conclude that there is a special purpose also in the instinctive shrinking from the very thought of annihilation? If annihilation be our lot, why was this terror of it implanted in us? Its existence in such case is contrary to all that we know of creation, where no sense of pain is gratuitously inflicted.

A fourth argument for the existence of a Soul is our *Self-consciousness*—the recognition of ourselves as individual beings, and the firm conviction we have that though composed of a body and a mind, and both body and mind constructed of many parts, we are yet *one*

whole. We do not recognize any part of the body as ourselves. We do not so contemplate any part of the Mind. Amputation of a limb, or of all our limbs, does not make us feel the less ourselves. Our personality has not been diminished. Nor does paralysis of any organ of the Mind affect us otherwise. Sever limb after limb from the body (if life were not extinguished by the process), and we should still be conscious that the individual "*we*" had not been dissevered nor diminished. So it would be with the Mind if its organ, the brain, could be pared away and the parts extracted one by one. We should not be conscious that we were less ourselves as the operation proceeded. Does not this unity of consciousness argue that there is in us something other than the Body and the material Mind—something which continues unharmed and undiminished when the material body and Mind are partially cut away.

A *fifth* argument arises from our conscious *Unity.* I feel that I am *one* being. I speak of my arm, not as a part of me, but as belonging to myself. I cannot conceive of "myself" as constructed of *parts.* I am compelled to think of my body and brain, not as being "myself," but as being merely the machine that "I" move, and whose motions "I" direct.

These are arguments, raising a strong probability of the existence of a Soul in Man, which present themselves upon the review of the structure of the Body and Mind to which the preceding chapters have been devoted. They are not *proofs,* nor do they pretend to be proofs; they are nothing more than *probabilities* reasonably to be presumed from the conditions of that structure. It may be frankly admitted, not only that they are not conclusive, but that objections may be raised to some of them and that all are far from giving us that positive demon-

stration which, on a subject so important, is so earnestly to be desired. But although each may be separately of small worth, together they may be powerfully brought in aid of the other more scientific investigation presently to be entered upon which is based, not upon argument or upon probabilities, but upon *evidence*.

By far the most important region of inquiry yet remains to be explored—a region that is happily capable of examination by something more than conjectural argument—a territory to be surveyed by the Senses, with the help of such instruments as Science employs in her researches, and to be pursued by the same methods as other branches of knowledge—the Region of FACT.

And the first question that will present itself to the Reader is this. If Man has a Soul, distinct from body, which lives after the body dies, is no proof to be found, at some time, in some place, among all the countless millions of Souls who have passed out of the flesh, of any Soul returning to report itself to the living either in visible or tangible shape, or by communication of facts known only to the dead, which would be evidence more cogent, perhaps, than any revelation to the Senses?

Again I must repeat that the terms of this treatise forbid reference to the Bible; the inquiry being here purposely limited to *scientific* evidence, which properly excludes Authority of all kinds and proceeds strictly upon *proof*. But if it were permitted to me to adduce the Sacred Record, this question would be answered instantly and conclusively. The Bible teems with instances of Soul manifesting itself to the human senses and holding communication with the living after it has "shuffled off this mortal coil."

But, apart from the evidence of the Scriptures, the stories that are reported of the reappearance of departed

Souls are legion. Collected, they would fill a large library. There are few who have not credible friends who will testify to facts they have personally known, or cases that have been reported to them by apparently good authority; assertions which, if true, would *prove* the existence of Soul and its life after the death of the body as conclusively as any fact in Science is proved. Few, indeed, of the phenomena of Science can exhibit such a mass of seemingly reliable testimony, so far as the character and intelligence of the witnesses are of value, as the asserted appearance of Spirits of the Dead. It is a tradition of every known people and the faith of every age and of every period of civilization.

But when this vast mass of testimony is reviewed with a critical eye—when this array of witnesses comes to be cross-examined—when the simplest rules of evidence are applied to the narratives—it is wonderful to see how the evidence collapses—how the witnesses break down—how the huge fabric crumbles away—and how small is the residuum that resists the application of the tests.

The cause of this collapse is sufficiently clear. It has been already referred to in a previous chapter, treating of the Evidence of the Senses (p. 132).

Our Senses are subject to self-deception. The Mind has no means, other than by the correction of the Senses, of positively knowing whether any ideas vividly impressed upon it are brought by the Senses, or are merely self-produced, and its instinctive tendency is to refer those ideas to external causes even though hatched within the brain. Thus there may be formed in the Mind the idea of a dead friend. In certain not rare conditions of health, this self-created image is as vivid in the Mind, or even more vivid, than is any actual picture of an external object brought by the Senses to the brain.

The Mind at once instinctively refers the mental picture to the optic nerve, and believes that, which is in fact only a self-produced idea, to be an actual painting upon the retina—and that impression will remain as a firm belief unless corrected by one of the other senses—as by trying to touch the object and finding nothing there,—or by the testimony of other witnesses present.

The evidence of any *one* person that he had seen a SOUL—or Spirit—is, therefore, of *no value*. The evidence of a hundred, or of a thousand, or of a million persons, that each of them, apart from the others, had seen a Spirit, would not carry the proof a step further, because of the extreme liability of the Sense of Sight to the hallucination described, and the impossibility of any witness ascertaining if the asserted vision was objective or subjective. But, if precisely the same form was seen by two persons at the same place at the same time, we have evidence, and very cogent evidence, of the actual existence of such an object, by reason of the extreme improbability that the identical hallucination should arise in two minds at the same moment. If three or more persons beheld the same object at the same time, the proof amounts almost to demonstration, for the chances against such a concurrence of mental actions are as infinity to one. So it is if the impression on one Sense is confirmed by impressions on the other senses, only that in this case the proof is not quite so cogent, because it is more probable that all the senses of one man should be simultaneously deceptive, than that two men should have the identical illusion in their minds at the same moment.

Observing these principles of Evidence, and applying them to the multitudinous reports of the appearance of Spirits with which the literature of all lands teems and

which may be heard at every fireside, what is the result?

We begin by excluding nineteen out of twenty as *hearsay*—tales told by somebody to somebody, and which can be traced to no authentic reporter. In Science, as in Law, the best evidence only can be accepted—the same kind of evidence alone that would be admissible in a Court of Justice, and permitted by a Judge to influence the verdict of a jury in a question of life and death. Nothing less than the testimony of a credible witness as to what he had himself seen, and that testimony sifted and tried by cross-examination, should suffice for the establishment of *any* truth in Science.

This great sweep made, it will be found that of the ghost stories that remain ninety-nine out of every hundred, at the least, are narratives of appearances seen by the witness alone, uncorroborated by any other spectator. For the reasons set forth above, all of these must likewise be eliminated.

The instances in which a Spirit is asserted to have been seen by two or more persons at the same moment, attested by the parties themselves and having upon the face of the narrative nothing that can be impeached for inconsistency, beyond the appearance itself, the witnesses being also credible persons, will by this process of exhaustion be reduced to a very small number indeed, and it is with these alone that Science can concern itself.

But although very few, they are advanced on sufficient authority to demand close and careful scrutiny, with a view to learn their true value; for if they are to be accepted as genuine they must be admitted to be decisive of the question at issue. If any one person who has ever lived can be *proved* beyond all reasonable doubt to have

seen the Spirit of another person then dead, the existence of the Soul and its life after the death of the body are *demonstrated*, and the question admits of no further discussion. It is determined for once and for ever in the affirmative.

But the first and most doubtful question is, *can* this be *proved?*

Whether *any* such conclusive Evidence can be found will be a subject for careful inquiry hereafter. For the present, I must ask the Reader to assume, as with the other arguments for the existence of the Soul, that there is *some* admissible testimony, although very slight indeed. The precise value of that doubtful testimony will be measured in its proper place.

We come now to the second series of facts that make the existence of Soul probable, and which differ from those last examined in this—that *they are derived from observation of the human machine in action.*

Perhaps Physiology will ask by what right I call this region unexplored. Has she not been toiling for long years with scalpel, and microscope, and chemicals, with unnumbered experiments and countless tests, and found in the body no trace of the Soul?

Anatomy and Physiology might continue their explorations for ever after this fashion without finding Soul or trace of Soul. Science has made search for it in vain. Soul eludes her grasp. She cannot distil it, precipitate it, fuse it. The Physical Forces are powerless over it. They cannot expand it into gas nor compress it into metal. Soul laughs at the force of gravitation. Heat does not dissipate it. Soul will not obey the laws of Electricity nor of Magnetism. It cannot be weighed, nor measured, nor expressed in a formula, nor exhibited to the Royal Society, nor used to illustrate a popular

lecture by Professor Tyndall at the Royal Institution.

True, again, that if Soul *is* it must be subject to law and exist under definite conditions, like all other beings. But, if it is to be found, it must not be looked for by the same instruments as Science employs for the investigation of matter, and the search must be pursued by other methods. Being invisible, impalpable, imponderable, imperceptible to any sense, its presence, if indeed it exists, can be discovered only by *manifestation*. Itself invisible, it can be seen alone in the results of its action. To learn if there be a Soul in Man, we must closely observe and carefully note the motions of the Human Mechanism, and especially those of the Machinery of the Mind, and strive to trace the connection between the actions we witness and the Power that prompted them. Collecting and collating the phenomena exhibited by both Mind and body in health and in disease, in normal and abnormal conditions, we can scarcely fail to find traces of any Force concerned in those phenomena other than the known Physical Forces or the Vital Force. If such a distinct Force be found, is there not the strongest probability that it is the manifestation in action of that SOUL after which we are seeking?

It is not my purpose to enter upon the exploration of this great region of FACT for the present. This will come for consideration in due course in the next volume, which will be devoted to the phenomena attending *the action* of the Human Machine, as this volume has been devoted to a sketch of its *construction*. I must now ask the Reader to favour me, for a time only, with a little of his faith and to accept provisionally my assurance that, when I shall have submitted to him the phenomena exhibited by the living MAN, and particularly in certain special con-

ditions of the organism, such as Sleep, Dream, Insanity, and Natural and Artificial Somnambulism, a mass of FACTS will be found that will, I hope and believe, bring home to him the conviction that, as a *fact* in Nature, proved as is any other fact (and not merely as a speculation, an argument, or a dogma), *there is a something in us other than the material brain—a Force distinct from either of the known Physical Forces, that is only seen in action and is governed by other laws than those that rule the material structure and the material world to whose conditions that structure is subjected.*

Assuming for the present, what I hope to *prove* hereafter, that there *is* a Soul in Man, it is necessary for the completion of this first division of the subject to inquire what, if there be such a Soul in us, is its dwelling-place, what are the conditions of its existence here, and what is the probable manner of its existence hereafter, tracing these in strict accordance with the known natural laws, to which SOUL must be subjected no less than body, and after it has quitted the body equally as during its abode in it.

To this interesting task let us now address ourselves.

CHAPTER XXXV.

THE NATURAL AND THE SUPERNATURAL.

It is impossible to enter upon the study of the great Science of Psychology with any chance of progress or profit without first clearing the Mind of some prejudices, deeply rooted and difficult to be eradicated, which, implanted in early youth, have been supported by the language of literature and confirmed by general acceptance. Such a prejudice is that to which attention was directed in an earlier chapter (*ante*, p. 12). The popular notion of *solidity* is a confident belief in that which does not exist in fact. Another fallacy is, the reality of colour and music as things existing in the external world and not as being, what in truth they are, merely sensations of our own Minds.

But the prejudice to which I desire now more particularly to invite the consideration of the Reader, with an entreaty that he will make an effort to banish it entirely from his Mind in his studies of the question What am I? is that term so often used and abused—the source of so many fallacies in argument and of so much confusion of thought—the *Supernatural*—a phrase which has about it that convenient vagueness which enables the loose or shallow thinker to impose an empty word for substantial wisdom. How large it looks and sounds, and how admirably it is opposed to the term "natural!" How glibly they pass together from the lips! But, tried by the Intelligence, what do they import? "What is the

Natural?" "Whatever is." "What is the *Supernatural?*" "Whatever is not Natural." By these unmeaning definitions the unreflecting Mind believes that it has solved the whole problem.

But the Psychologist must banish the term altogether, as being too indefinite for any purpose of Science. Phrases such as these are the *ignes fatui* of knowledge. They mislead thought. They impose names for things and substitute shadows for substances. What do you intend when you say that this is *natural?* What do you intend when you call that *supernatural?* Do you answer that the supernatural means something above the natural—beyond its range—out of its sphere? Granted. But to determine this you must first define "the natural." What then is "the natural?" Surely it is not limited to the range of your own knowledge. All is not *supernatural* that chances to be beyond the limited survey of your own intelligence or even beyond the limit of the knowledge Man has yet attained. See what the use of the term "the supernatural" involves. We believe that we have learned certain regular sequences of actions as occurring within the very petty circle of the boundless creation to which our small intelligence can penetrate, and seeing certain conditions of things attending or following on certain other conditions, we assume these sequences and conditions to be governed by a compelling Force, which we formulate and call a Law of Nature. The Scientists assume, not only that they have accurately learned the particular law, but that there can be no other unknown Law by which that Law may be modified or superseded, and then they dogmatically declare that whatever is within the range of their asserted Law is *Natural*, and that whatever is beyond its range is *Supernatural*.

But, in very truth, of the multitudinous Laws of Nature, and of the many Forces that exist even within the circle of our Intelligence, Science has learned but the merest fraction. We are as yet but upon the threshold of our knowledge of Nature and of Nature's Laws. It is only supreme vanity or purblind ignorance that can venture to say what is or is not "natural." Whatever *is* is *natural*. Nothing that *is* can be *supernatural*. The fact of existence is conclusive proof of naturalness.

Banish, then, the conception of "the supernatural" from your thoughts and the word from your vocabulary. It will only lead you astray. Do not assume that you know all about Nature, and all the Laws that govern her, and all the Forces that move her, and all the forms and conditions of being, so that you are entitled to say of this or of that "it is not *natural*," or of other things that they are "*supernatural*." In the Science of Psychology you will come continually upon phenomena which, because they differ from physical phenomena, and are not obedient to physical laws, nor cognisable under physical conditions, have been branded by Scientists as "supernatural," and the Truthseeker has been deterred from the investigation of them by shouting to him "Superstition! Beware!" Your course as an honest seeker after truth is clear. You must look to things and not to words. There is but one question for the honest student of Science; "Is it *a fact?*" Of this be assured, that no fact, however seemingly trifling, is worthless to Science. The frequent question, "What is the use of it?" must be answered by pointing to the apple of Newton, the kite of Franklin, the teakettle of Watts, and the dancing doll of Wheatstone. What a Universe of new Knowledge may not be opened by the finding of the smallest *fact*. When the knowledge of ourselves,

of our mental and spiritual structure, of our capacities here and hereafter, shall have been deemed, as soon it must be, a necessary part of education, the *Supernatural* will cease to be a word of fear even among old women. Then we may hope that it will at length be banished from the vocabulary of the Scientist and even from the cant of Materialism.

CHAPTER XXXVI.

WHAT THE SOUL IS.

Dim and vague are the conceptions of the Soul, even by those who most firmly believe in its existence. Go into any company and ask each one separately what are his notions of the material of which the Soul is constructed, of its shape, its powers, its dwelling-place here, the conditions of its existence hereafter, and you will be astonished to find how very indefinite are the ideas of even the best instructed and the most thoughtful. Apply the same question to yourself and you will discover that your own conceptions of your Soul are equally hazy, and that in fact you have never bethought yourself seriously upon the subject, or if at all, only in a dreamy and fanciful fashion.

Were this not so familiar a truth, it would appear incredible that civilized and educated men could treat with such careless indifference a subject the most important and interesting to themselves that could possibly engage their attention. Believing that in a few years, and possibly in a few days, we shall pass into a new condition of being, changed in substance if not in form, with new faculties adapted to a new sphere of existence, the presumption would have been that to these themes the thoughts of all of us would recur continually; that we should eagerly explore every path that gave the slightest prospect of intelligence of this new condition, and cordially welcome all endeavours to solve the great

problem of the hereafter. Seeing what time, and toil, and intelligence, are by so many minds devoted to the transformation of an insect or the dwelling of a mollusc, it might be supposed that the shape and seat of the Soul, its dwelling and its destiny, would excite a thousandfold keener curiosity and enlist a vastly larger number of investigators and a higher order of intellects. But the fact is otherwise. Nobody seems to speak or think of his Soul as a *present reality,* like his body—nor otherwise than as a mere abstract idea—a *nominis umbra*—a word to which no definite conceptions are attached. And wherefore? Is it not because there is *not* the same absolute belief in the existence of the Soul as in the existence of the body? Is it not because the Soul is with too many a *faith,* not a *belief,* an *assent* rather than a *conviction?* Wherefore? Because they have not looked for the evidence of its existence by the same process of investigating *facts* as that by which they have pursued other knowledge.

When once the thoughts are directed to the many questions that grow out of the recognition of the existence of the Soul *as a fact,* the overwhelming interest of the inquiries thence arising forthwith presents itself, and the instant emotion is astonishment that subjects so important should not long ago have forced themselves upon the attention of every mind that ever thinks at all.

The first that arises is,

What is the *material* of which the Soul is constructed?

I can imagine the surprise with which the Reader will peruse this question. Probably the problem had never crossed his thoughts. "Material!" he will exclaim, "Nonsense! The Soul is not made of matter at all—it is immaterial." What, I pray you, is your meaning when you say the Soul is immaterial? What is

immateriality? Doubtless the answer will be: "Something that is not matter—Spirit, of course—Spirit is not matter."

Are you sure of that? You forget that before you can affirm that Spirit is not matter you must determine what *matter* is and what *Spirit* is. Then, and not till then, you will be enabled to assert positively the difference between them. At present you have a very vague notion of either Spirit or matter. But it is easy to demonstrate that, if the Soul exists, it must be made of *some material*. If composed of nothing, it would *be* nothing. It can be conceived of only as having form. If it has form, it must be constructed of something more dense than the medium that surrounds it and in which it exists. Let us then endeavour clearly to comprehend and to realise to our contemplations the fact, that, if we have a Soul, that Soul is a substance. Doubtless it is a substance infinitely more refined than that of which our bodies are builded. It is certainly invisible and impalpable to our senses. But so are many substances which nevertheless we know to be about us and capable of condensation so as to become sensible to us. We have no positive knowledge of the structure of the Soul, but the probability is, that its substance is vastly more refined than the thinnest gas with which we are acquainted, insomuch that it could glide with ease through the coarser materials of this earth, and a wall of stone would offer no more impediment to its passage than does unvarnished paper to hydrogen gas.

To what extent matter is capable of being refined—that is to say—how small may be the atoms of which a substance is constructed—may be dimly conceived by this, that the matter of which a comet is composed, though filling thousands of millions of miles in space, if condensed to

the solidity of gold, would, it is said, be little bigger or heavier than a watch and might be carried in the pocket. So the Soul might be of material as rare as the matter of a comet, but still it would be *matter* and *substance*. If it be a substance, it is constructed, like the body, of atoms, and in all probability those atoms, like the atoms that form the body, do not touch one another. We can conceive of something still more refined than the substance of the Soul itself which might permeate it and pass through it, precisely as the finer atoms of the Soul permeate and possess the coarser molecules of the body.

The SOUL, then, scientifically viewed, is not a mere name, a vague conception of something that is really nothing because it is without form, substance, or qualities, and, therefore, in truth not a definite idea at all; it is a distinct entity, possessing substance and form, and therefore something of which the mind may have a definite conception.

Rightly then to conceive of Spirit, the first step is clearly to comprehend that it is not, and cannot be, *immaterial*—but only that it is composed of very refined matter—so refined that it is imperceptible to our bodily senses, which are adapted only to perceive certain forms of matter that affect ourselves.

The next question that suggests itself would properly be as to the Shape of the Soul. But as the solution of this depends upon the next following question, I must take the latter out of its order, and proceed at once to consider where the Soul dwells while it is linked with the body.

CHAPTER XXXVII.

THE DWELLING PLACE OF THE SOUL?

It is *in* the body—that is certain. If there be a Soul in Man, it must be existing somewhere, and that abode can only be looked for in the body of the Man.

But if in the body, whereabout in the body?

Ask the Anatomists. Their answer is, that they can find no place for it within the structure. In the whole frame there is not a vacant space in which a Soul, be it ever so compressed, could be supposed to be able to live and move. There is in very truth no tenement reserved for it within the body, if a special place for it there to inhabit be looked for. Philosophers and Physiologists, (in the times when the latter had not learned to shirk the difficulty by denying the existence of the Soul), have hazarded all kinds of conjectures as to its actual seat, locating it in the head, in the heart, in the backbone, in the pineal gland; they agreed only in this, that neither could produce the slightest evidence in support of his conjecture. Anatomists could not discover in either of these speculative dwelling-places a room so big as a marble for the Soul to dwell in, and Physiologists, finding uses in the animal economy for every part of the structure, in despair of any proof of a place where the Soul *could* reside, were led to deny its existence, and their denial has certainly been the main cause of that prevailing doubt of the being of a Soul which has spread from the circles of Science to the educated public, and produced

the struggle between the longing for immortality and the evidence of an eternal sleep which has disturbed the thoughtful and shaken the confidence of the faithful.

But in truth there is no cause for despair. If there be a Soul, and that Soul is composed of very refined matter, that is to say, of atoms infinitely smaller than the atoms or combinations of atoms that compose the body, there is no need to ask Anatomists and Physiologists to find for it a dwelling. They may not discover in all the frame a hole big enough for the Soul to lodge in; there may not be a space the size of a pin's head unoccupied; and yet the Soul may dwell in the body without being inconveniently cribbed, cabined and confined. If the body is, as we *know* that it is, constructed of atoms no two of which touch one another, it follows that there are interspaces between those atoms in which atoms smaller than themselves may be easily contained.

The SOUL, therefore, being composed of molecules infinitely finer than the molecules of the body—as fine possibly as those of the comet—could, with the utmost ease, permeate the body, infusing itself among all the atoms of which the body is built and thus occupy the whole frame.

And, if we have a Soul, this is doubtless the manner of its dwelling in us. *It does not reside in any particular part of the structure, but it occupies the whole body.*

It is no portion of the present inquiry, but the subject under discussion confirms the interesting and very important conclusion, suggested in an earlier chapter, that the Soul builds the body; that is to say, that the Soul is the individual Being—the Ego—the Man—and that it clothes itself with flesh by means of the Vital or Soul Force, the body being in fact the garment of the Soul. I have not even in thought followed out this suggestion to its conclusions, but it appears to me to be highly

probable that the process of creation is not, as is commonly imagined, the formation of a body and then a Soul sent into it, but the scheme is that of a Soul which constructs a body according to its own requirements, sustaining it in action while dwelling in it, and when it departs, the combining Force ceasing, the garment falls to pieces, and being restored to the dominion of the inorganic laws is resolved into the elements from which its material was first attracted by the Vital Force. This, however, is merely a speculation, which has crossed my Mind as seeming to grow out of the recognition of the fact that the Soul permeates and possesses the whole body and does not merely occupy some undiscovered part of it.

CHAPTER XXXVIII.

THE SHAPE OF THE SOUL?

HAS *this* question ever seriously presented itself to the Reader? Probably not, because of the vague and formless conception of Soul in the minds even of those who most firmly believe its existence. But, although shunned or neglected, it is a very important question; for unless it be plainly expressed and definitely answered, there can be nothing like *knowledge* of the Soul, but only a credulous faith in it. The Soul, like the body, must exist in space. If it exists at all, it must occupy a definite portion of space. It must have a boundary within the enveloping space, and the form of that boundary is the shape of the Soul. So likewise, as compared with the material occupying the space within which it exists, it must have a *substance*, that is to say, its material must be something more solid than the surrounding material that encloses it, and therefore that substance must be fashioned in some *shape*.

What is that shape?

If the Soul were found to be contained in any particular part of the body, if it had its dwelling-place in some unoccupied recess in the structure, it would be difficult to conceive even a probable solution of the question as to what is the shape of the Soul, for, being constructed of such refined matter, it must be capable of incalculable compressibility. But we have seen in a former chapter that the evidence points strongly to the conclusion that the Soul does not reside in any special

part of the body but occupies the whole structure, permeating with its finer atoms the coarser particles of which the body is builded. Admitting that Soul exists, there is no difficulty whatever in assigning to it the possession of the whole frame by transfusion through the entire organism, precisely as the particles of spirit are seen to permeate the atoms of which a glass of water is composed. The practical result of this is, that the shape of the Soul is that of the body which it permeates. Its form may be otherwise when parted from the flesh; but so long as it inhabits the body by permeation and possession of it and of every part of it, *the shape* of the Soul must be the shape of the body.

This is, of course, conjecture merely. It is offered only as the most reasonable solution of a perplexing problem. The intellect thirsts for something more than conjecture in a matter of such profound personal interest to every human being, and asks if there is not *some* evidence, however slight, to support this probable conjecture.

That was my own anxious desire. I had despaired of finding any, when chance threw in my way a little book whose title attracted my attention as being the very subject on which I was pondering. It was called "The Seat of the Soul," and was written by Mr. GILLINGHAM, a surgical machinist, living at Chard, in Somersetshire. The author is a self-taught man, a keen observer, a profound thinker, and a most ingenious inventor, but imperfectly educated. His business is the construction of artificial limbs, and he has achieved considerable provincial fame for his skill in supplying lost arms and legs. Thus he has possessed extraordinary opportunities for acquainting himself with the mental and bodily sensations of persons who have had the misfortune to be deprived of some of their limbs. Being of an inquisitive, as well

as ingenious, turn of mind, Mr. GILLINGHAM was, it seems, curious to learn what were the sensations attendant upon the deprivations it was his business partially to supply. He had early noticed the fact, familiar to everybody from hearsay, that after the loss of a limb the patient experiences many of the same sensations that attended its existence, insomuch that it is difficult to convince himself that the limb is really lost. After the leg is amputated, the patient feels pain in his toe, itching on the sole of his foot, cramp in his calves, and even the sensations of cold and heat. The lost foot will appear to share with the other the uncomfortable feeling of cold feet, and when the stump and the whole leg are presented together to the fire, the sense of warmth seems to be creeping into both *feet* together. The explanation offered of this phenomenon, and at present generally accepted, is that the nerves connecting the lost leg with the brain, which is the seat of sensation, have been so long accustomed to convey the actual sensations from the living limb, that after its severance those mutilated nerves continue to act by suggestion or by sympathy with the nerves of the other limb with which they had been accustomed to work in concert, and thus carry to the brain a repetition of their former action, although, in fact, only self-induced. The brain, consequently, receives the same impressions as before and instinctively transfers them to the same source, allocating them in the same position in the structure to which it was accustomed to refer them before the limb was lost. This appeared to be so reasonable an explanation of a circumstance very curious in itself that it has been received both by Physiologists and by the public as a truth too obvious to be questioned, and nobody cared to inquire if the explanation was sufficient for the facts, or if there were any facts inconsistent with it.

But Mr. GILLINGHAM appears to be a man who observes and thinks for himself, taking nothing upon trust which he has the means of investigating, so he resolved to question his patients about these strange sensations, with a view to ascertain if the facts sustained the popular hypothesis. He seems to have been first induced to this by being called upon to supply an artificial arm to a woman who had been *born with one arm only*. He was surprised to find that she experienced precisely the same sensations as persons whose arms had been amputated. Like them, she felt pain and cold in the fingers, hand, and arm she had never possessed,—sensations which could not be attributed to involuntary repetitions by the nerves of familiar conditions, for her nerves had never known those conditions. Pondering upon this remarkable fact, the idea flashed upon the thoughtful mind of the Machinist that possibly these perceptions of sensation, for which there was no visible cause, were conveyed to the brain by something in the nature of a nerve ether(*a*) extending beyond the actual nerve system. But this, although accounting for sensitiveness to actual impressions produced without positive contact, did not account for definite sensation in an imaginary hand and arm, and therefore Mr. GILLINGHAM sought some other explanation. He reflected that, when a man loses his limbs his Soul is not dismembered; he remains the same man; he has the same full consciousness of individuality after his legs are shot off as before his accident. How fares his Soul in such case? If, as the best opinion is, the Soul occupies the whole body, and does not, as the vulgar suppose, dwell in some one part of it, when a limb is amputated, how is the Soul affected? It is not probable that it contracts into the lesser space of the mutilated body. Certainly it is not excised. May it

(*a*) Dr. Richardson's nerve atmosphere.

not be, then, that the sensation of a hand and fingers by the woman born without an arm, as well as by the person whose arms have been cut off, are real impressions made on the Soul, which not having been severed in the woman exists where the arm should be, though not clothed in flesh, and that in the man the Soul continues to occupy the place previously possessed by the limb when it was completely clothed with flesh and no part of it had been mutilated.

Having started the idea, he resolved to pursue it, and he availed himself accordingly of his professional opportunities to inquire closely what were the sensations actually experienced by his patients, comparing them with his hypothesis, to learn how far it was supported or negatived by the facts. All that he could gather from them was confirmatory of his theory. From some he obtained the curious information that they had a consciousness of the existence of the lost leg or arm, although their eyes showed them nothing. If attention was distracted for a moment, the loss of the limb was not perceptible, and they acted precisely as if it had been whole and present. It was an *effort* of thought to convince themselves that the limb was *not* there. But a fact still more remarkable remains to be stated. Some assured him that if the stump of the leg was placed against a wall, they felt as if the leg below the stump was passing through the wall and exposed to wind and cold on the other side of the wall. So, if the amputated arm was placed on a table, the sensation was as if the arm had passed through the table. From these and other instances described in his little book, which presents profound and original thought expressed in the homely but forcible language of an illiterate observer, he draws the conclusion—or rather, it should be said, suggests the question—if it may not be that the Soul is

shaped like the body which it occupies and remains in its entirety when the body is severed, occupying the same space which the whole body occupied before a part of it was destroyed? He offers this as a suggestion merely; he does not affirm it as a truth; he desires nothing more than to induce others, who have opportunities for observation, to note the facts as he has done and state them publicly, with the convictions, whatever they may be, to which they shall have led the investigator. Of the accuracy of the facts thus asserted I know nothing, and can offer no opinion. I present them for what they may be worth.

If further experiment should confirm the observations of Mr. GILLINGHAM, the fact will go far to establish the presumption, which had already presented itself as the most probable—that the Soul occupies the entire body, and does not merely dwell in some portion of it, and consequently, that the shape of the Soul, so long at least as it occupies the body, is the same as that of the body it possesses—insomuch that if we could conceive of such a process as the decomposition and dissolution of the entire bodily structure, while yet occupied by the Soul, the Soul itself would remain, when stripped of all the material of the body, perfect in the human form, but composed of matter over which the Forces that controlled the perishable materials of the body have no power, and subjected to other Forces and other Laws to which its different structure is adapted.

Nor is it difficult to conceive that precisely such may be the condition of Death. The organic laws having ceased to control the physical laws, these latter instantly come into active operation, the dissolution of the bodily structure proceeds rapidly, and it returns to the elements from which it was attracted by the superior force of the organic laws. Life gone, the body perishing, the SOUL departs. Whither?

CHAPTER XXXIX.

THE CONDITION OF THE SOUL AFTER DEATH.

Before the question that closed the last chapter can be considered, it will be necessary to give some reflection to other conditions of the emancipated Soul, from which alone can any probable conjecture be formed as to its destiny.

It does not follow that because the Soul was in human shape when occupying the human body, it should preserve the same shape when it has quitted its abode. But, as it exists in space and occupies a portion of space, it must have *some* definite shape, and there is no reason why it should change its shape when it enters upon its new phase of existence.

But to such a conclusion two objections have been raised.

It has been said, if the Soul retains the shape of the body, how is it where the body has been deformed or imperfect? Has the hunchback a crooked Soul? Was Miss Biffen's Soul armless and legless? Has the amputated body an amputated Soul?

These questions, though savouring of comedy, and often put for the purpose of ridicule, are pertinent, and demand serious consideration and an answer, if any can be found. When first they occurred to myself, they appeared to be fatal to the speculation as to the shape of the Soul which had so much to recommend it in other respects. But

further and more profound reflection suggested an explanation, of whose value others will judge better than myself who has the natural partiality of a parent alike for the hypothesis and the explanation.

Deformity of body is not in the germ, but in its development. It is the result of physical causes. There is some accidental impediment either to the expansion of the nervous system or to the due exercise of the Nerve Force in some particular direction. The Soul may be, and probably is, subject to the defects of the structure it permeates; but at the moment of its release from the mis-shapen body it would, as being itself more refined and elastic, regain its proper form—that is to say, the normal shape, whatever that may be, of the perfect human Soul. So with the Soul of a child. It is difficult to suppose that it remains as a child after quitting the child's body. In such case, also, the reasonable and probable conjecture is that it attains, sooner or later, the mature condition of the disembodied Spirit, whatever that may be. And if Mr. GILLINGHAM'S observations are founded on fact, it will be apparent at once how it must be in the case of a mutilated body, whether by the deprivation of a limb from birth or by subsequent accident. The bodily limb is lost, but the perfect Soul is there, invisible and impalpable, making itself conscious to the patient under certain conditions in which it receives impressions from the material world directly and without the interposition of the organs of Sense.

Therefore, as the Soul must have some shape, and the reasonable probability is that, permeating the body, it is of the shape of the body; and as it is equally probable that, when released from the body, it preserves the same shape, with power possibly of mobility, of compression and of expansion; let us for a moment consider what other

conditions must belong to the Soul. Few, perhaps, even of those who believe in the existence of the Soul as a matter of *fact*, and not merely as a matter of faith, have ever troubled themselves to reflect what are the *conditions* under which the Soul, if it exists, *must* exist.

It must be *material*, that is to say, it must be composed of something, and that something must be matter existing in space, and therefore something other than space. It must be infinitely more refined than the perceptible substance we call matter. But still it is matter; and when we talk of Spirit we can conceive of it only as matter, although refined far beyond the perceptions of our Senses.

The material of which the Soul is constructed must be finer than the finest gas known to science. As the consequence of this, it is probable that the Soul is not subject to the Force of Gravitation, or at least that this Force is not exercised upon the Soul in the same manner as it operates upon the living body. Consequent upon this exemption from the law of gravity, the power of locomotion must be vastly greater than anything we can conceive. It is the force of gravity that chains our bodies to the surface of the earth on which we stand and makes motion labour. Could we be released from the ever present influence of that force, we should be able to scale the sky, to walk the water, to *flash*, as it were, from place to place. But vastly more than our bodies could thus accomplish must be within the capacity of the Soul, constructed of material infinitely more refined and elastic, lighter than the atmosphere and having no impediment in earth or air. Such a being could move in any direction at will. It could pass with the speed of thought from place to place, however distant.

Whether it could go beyond the atmosphere of this earth we cannot even guess, because we are ignorant how the space beyond it is occupied, but that which is deemed Spirit by us, by reason of its comparative rarity, may be there as is the densest rock to ourselves, because of the still greater rarity of the medium by which it would be encompassed. Or even if the Soul could be conceived as having free power of locomotion throughout our own solar system, it by no means follows that the same liberty of flight should belong to it in the great Universe without, of whose structure and of the material of whose interspaces we are wholly ignorant. We must be content to know this only, that if we have a Soul, it *must* be of such a structure as to be exempt from the Force of Gravitation, and that the consequence of such exemption is capacity for locomotion with inconceivable rapidity within the range of the earth's atmosphere and in any direction it wills to go.

There is another equally curious and equally certain faculty of the Soul, such as we know that it must possess, if it exists. It must have power to penetrate the most solid substances.

For, as already stated, what we call a solid is such only to our sensations. There is no actual solid in Nature. To the eye of Science, the most compact substance is only an agglomeration of atoms drawn and kept together by an attractive force, with spaces between them, certainly not in actual contact, and probably in continual motion among each other. We say of a substance that it is solid only because it impedes the action of our muscles. If the finger could pass through it by the separation of the atoms and the compression of them into a smaller space we should cease to call it a solid.

But the Soul, being composed of atoms infinitely more refined than those of any earthly substance, can certainly penetrate and pass through the most solid substance known to us with perfect ease and facility. It can permeate the whole mass, or glide through any part of it, as easily as water penetrates a sponge. No displacement of a single atom of the penetrated body would be necessary, and no greater effort would be required than for ourselves to pass through the softest summer air. The process, however, is different. The coarser and more compacted matter of the human body passes through air by displacement of the molecules that constitute the atmosphere; while the Soul would, or at least it *could*, pass through a wall of granite by gliding among the interspaces between the atoms that compose the stone, precisely as the particles of ether flow through the pores of a cork that wine cannot penetrate. If we have a Soul, it is as certain as any fact in Nature that, if it lingers upon the earth, or is permitted to revisit this world, it could come into a room with closed doors and stand in the midst with even more facility than the material body when living could have entered through the doorway. A wall would not offer so much resistance to the passage of a Soul as did the atmosphere to the passage of the body in which that Soul had dwelt.

By reason of this power of rapid and unlimited locomotion, and this capacity to penetrate the most solid substances, the Soul's relationship to Space must be very different from that of the body, which by the conditions of its structure is subject to the law of gravitation and surrounded by substances whose atoms are more closely compacted than its own, and which therefore on all sides gird it in and limit progression. As another consequence of the solid structure of the body, and of its

very restricted power of locomotion and penetration, its knowledge of the external world comes to it only through the Senses, which have been therefore called the windows of the Soul. The Intelligence within the body, be it an independent Soul, as I contend, or only a Mind secreted by the body, as the Materialists assert, obtains such knowledge as it has through the medium of an apparatus constructed especially for the purpose—and only thus.

The organ of Sight makes known the forms and colours of things within a certain limited range that permits of the rays of light passing from those objects to the little screen in the centre of the eye called the retina. But this sense can perceive only such objects as answer to the conditions of vision, and there is no certainty, but only a strong presumption, that the Intelligence perceives the things as they are, and that the representation of them by the sense is an exact semblance of the reality. So it is with the other senses, and, as the necessary consequence, the Intelligence is dependent upon the senses for the accuracy and extent of its information. It is certain that our senses reveal to us but the veriest fragment even of the creation immediately about us and within the range of the senses themselves. How much must there be around us which the eye cannot perceive, because the constituent particles are too small, or because they cannot reflect light, and of whose existence we are therefore profoundly ignorant! How must the atmosphere be laden with things imperceptible to our sense of touch, though incessantly striking upon us! How many delicate waves of sound are travelling through the air which the ear cannot catch, though they are continually beating against it! The loss of a single sense will convey to us some conception of the extent of the actual subjection of the Intelli-

gence to the Senses. From the limitation of knowledge consequent upon such a calamity, we may partially measure the result of the addition of a new sense, or of the emancipation of the Intelligence from its dependence upon all the Senses. What a vast world of new knowledge must flood the mind of a man, blind from birth, to whom the sense of sight is restored. What restored sight would be to him, the addition of a *new* sense would be to us who are in possession of all our senses. Even a slight extension of the power of any one of the existing senses would confer incalculable benefits. To take a single illustration from the sense of sight. As it is constructed, some substances impede vision and are called *opaque*, and other substances offer no obstacle to it, or only a slight one, and are called *transparent*. The difference is caused by this only. The rays of light pass more or less freely through the latter, and cannot pass through the former, and the eye is constructed to receive only the impressions made by rays of light. But if the structure of the eye or of the optic nerve were changed to so slight a degree as to be sensitive to the impressions of the magnetic or electric wave, as well as to the waves of light—what would be the consequence? Perhaps the question has never presented itself to the Reader, but it is very curious and interesting. *This* would follow. *Everything would be transparent to us* —there would be *no opacity*. The electric and magnetic waves pass through all known substances, and as transparency is caused by the passage of the waves of light through the body we call transparent, so transparency would result from the passage of the magnetic wave, and nothing would then be opaque to us.

What would be the consequence of such a change? All things being transparent, there would be no limitation

to vision except the diminution of the object by distance. Solid bodies would not impede our sight, and we should see the other side of the world as easily as we now see so much of its surface as immediately surrounds us.

And if such great effects would result from so slight a modification of a single bodily sense as would be necessary in order to cause the magnetic force to make the same impression upon the sense of vision as do the waves of light, we may imagine what would be the consequence of the addition of but one *new* sense to those we already possess. What would be the influx of strange and undreamed of Knowledge, and what new beauties and wonders would be opened to us! Our senses being very limited in their range, we actually perceive but a fragment of the creation that encompasses us, even within the circle of those senses.

And so also we may form some dim and distant conception of what might be the result of emancipation from the restraining limits of perception through the senses. Suppose, for instance, that instead of restricting the sense of sight to the information brought by the limited powers of the eye, the Intelligence could perceive external objects without the aid of the eye—what infinite variety of novelty would be presented to it. The reason why the Mind cannot perceive the entire of the creation that compasses the eye about is that it is limited in its *range* of vision. Its power of perception is also restricted by conditions, resulting from its construction, which prevent it from perceiving more than a very small fraction even of that which is encircling it on the surface of this earth—not to speak of the marvels that would be revealed in the heaven, if perception could be obtained otherwise than through the imperfect medium of the Sense of Sight to which we are now restricted.

But, when the Soul is parted from the body, it must be necessarily emancipated from subjection to the Senses. Its perceptions are no longer limited to the compass of the eye, the ear, the touch. The impressions that in the flesh could come to it only in the manner and to the extent permitted by the bodily senses, in its disembodied life come to it either directly or through some medium infinitely more sensitive and powerful than were the bodily organs of the Senses. It is manifest, on a moment's thought, that perception by the disembodied Soul must be by a process very different from that through which knowledge was obtained when it could be procured only through material organs. We cannot even conjecture *how* this power of direct perception may be accomplished, but we may safely predicate some of its conditions. It will be far more extended in its range, because infinitely smaller waves of light and sound will be perceptible than were perceived before. Much that is not visible to the eye, and therefore of whose existence about us we are not now conscious, will be apparent to the larger capacities then possessed. Indeed it is impossible to assign a limit to the power of perception which must necessarily be enjoyed by an emancipated Soul, nor what a Universe of new knowledge and wonder must be opened to it.

Thus, with greatly extended power of locomotion and of perception, exempt from the law of gravitation, and perhaps with the conditions of *Space* and *Time* very different from mortal conceptions of them, it is manifest that the Soul, released from the body, must have a vastly wider range of knowledge than it could possibly procure when in the flesh. But it does not therefore follow that its knowledge is *un*limited. It is vastly larger than we can hope to attain in this life; but to whatever extent

it may be expanded, Science would say that its information is probably small as compared with that which is to be known. If the Soul is a refined body, (and it must be that or nothing) we may be assured that it is subjected to natural *laws*, and can exist and act only in accordance with the *conditions* by which it is encompassed.

And this is precisely what might be predicated by the Law of Progression. We advance towards the perfection of DEITY by stages. When the Soul passes from the body, it enters on a new sphere of existence, with expanded powers and capacities. Why should it not advance thence again to another sphere of being—and so continually through the ages—ever approaching nigher to God, ever increasing in knowledge, ever advancing in intelligence, with new senses continually developed; but that progress hastened or impeded according to the use or abuse of the faculties with which it is gifted in each successive sphere of its existence.

These anticipations of Immortality are strictly in accordance with the laws which Science shows us to be governing the world in which we are now dwelling and we may fairly deduce from them the prospect of an existence in the future for the Spirit that has been emancipated from the "muddy vesture of decay" that here had "so grossly hedged her in."

Is not such a destiny, for the period that must precede the final judgment that awaits us, more reasonable and probable in itself, and more in accordance with the teachings of Theology, than the long sleep anticipated by some, or the long Purgatory asserted by others?

CHAPTER XL.

THE OUTLOOK OF THE SOUL.

THE conclusion at which we arrived in the last chapter—that the Soul, released from the body and receiving intelligence directly, without the interposition of the senses, must have a vastly more extended means of knowledge than it could possess while intelligence came to it only through the media of the senses—suggests a question of very great importance.

Is it possible for the Soul, while dwelling in the body, to perceive external objects directly, by its own perceptive power, without the interposition of a bodily organ of sense to convey the impression?

Does it so in fact?

There is no inherent impossibility or even improbability in the suggestion. We are so entirely ignorant of the relationship of Soul to body, how they are united and how one controls the other, that we cannot venture to predicate anything of the powers that may be possessed by the Soul in such circumstances. We must look for the answer to experience only. All we can say of it positively is that it is not impossible. Perhaps we might go one step further and say that, *primâ facie*, it is probable. Comparing Soul with body, and seeing the vast superiority of the former in capacity as in destiny, we should certainly have predicated that, upon occasions, the immaterial and immortal would vindicate its power by more or less emancipating itself from the conditions

imposed upon it by the material laws that govern the body to which it is tethered. There is no known Law of Nature that would prohibit a loosening of the links between the Soul and the body, seeing that they are wholly severed by the death of the body. There is no presumption against it. The question must be referred for solution to experience only. And what does experience say about it?

Can the Soul, in any circumstances, so far sever itself from its dependence upon the body as to be enabled to receive impressions—that is, to obtain perceptions of the external world—directly and without their being conveyed to it through the apparatus of the bodily senses?

Undoubtedly there are phenomena that appear, not only to admit of this explanation, but to be explicable on no other theory. I will briefly enumerate some of them. They will present themselves for full investigation when, in the second part of this Treatise, we proceed to examine the machinery in action whose construction has been the sole subject of the present volume.

Who has not many times received intimations, arising in his Mind he knows not how nor why, of persons coming or events occurring far beyond the range of his senses? The incident is so frequent that it has been embodied in a proverb. The memory suddenly flashes upon your Mind of some acquaintance whom you have not seen for many a day, whom you had almost forgotten, of whom you had not been thinking then, nor for years past, and soon afterwards he appears in person. What is the meaning of this? Neither eyes nor ears perceived his coming. Was it not that the Soul, certain unknown conditions having then occurred, was enabled to obtain perceptions, by its own natural powers, beyond the range of the senses? True, there was no special cause for the approach of

that person being notified to us. He brings no news; he came to us neither for good nor for harm; there was no motive for the invocation of an abnormal faculty. May it not be that the conditions necessary for such direct perception by the Soul without the mediation of the senses chanced to be then existing, and so the impression of the distant friend was conveyed directly, instead of being transmitted through the medium of the Sense, as it would have been had he come within the range of vision and the image of him had been carried to the brain by the optic nerve?

May not the phenomena of *Natural Somnambulism* be thus accounted for? The senses of the Somnambule are sealed in a sleep so profound that a pistol discharged at his ear does not startle him, nor a pinch, a cut, or a prick produce any flinching as of pain. With his eyes tightly closed and all his senses sealed, he performs with ease and accuracy the operations of waking consciousness. He walks over dangerous paths safely; writes correctly in regular lines at even spaces, observing even the dots and crossings of the letters; he reads, works, and does the bidding of a conscious intelligence, though without consciousness, and has the knowledge which the senses bring though the functions of the senses are suspended.

So it is in *Artificial Somnambulism.* The senses and consciousness of the patient are asleep; he has no Will; nor is there any memory afterwards of anything that occurs during the somnambulistic condition. His Mind, that most delicate instrument, no longer obedient to the Will, from whose influence it is for the time dissevered, may be subjected to the control of other Minds. The senses then ceasing to convey intelligence, and the mental faculties being in a very excited condition, those remarkable phenomena are exhibited which are now admitted by

medical Science to be substantially true, although they were not long ago vehemently denied and all who dared to assert belief in them were denounced as fools or rogues by the dogmatists of Science.

So likewise do the phenomena of *Psychic Force* illustrate the argument. That Force is directed and controlled by Intelligence, and the overwhelming weight of evidence indicates the Intelligence to be that of the Psychic. This Intelligence is never so marked as when the Psychic is in the state of *Trance*—which state closely resembles, if it be not identical with, the state of Somnambulism both Natural and Artificial.

All of these abnormal conditions have the common feature of a suspension of the connection between the Senses and the Mind, or between the Mind and the Soul. The condition is attended, not with a diminution of information and intelligence, as might have been anticipated from the fact that the Mind in its normal state has no knowledge of the external world save that brought to it by the Senses, but with a positive increase of both, and, in many cases, a very extraordinary increase.

What is the reasonable conclusion from this? That in these conditions the intelligence comes from some other source than through the Senses. The *brain* is constructed to perceive external objects through the apparatus of the senses alone, and then only in the shapes in which they are presented by that apparatus. When the apparatus is disordered, the information it conveys is imperfect; when sense is paralysed and the communication severed between the nerves and the brain, this power to inform the brain is entirely suspended.

How in such case does the knowledge come?

Is it not the reasonable and probable presumption that the Soul, which in the normal state of healthy

structure and action is informed by the brain, which is informed by the Senses, in an abnormal condition and when the links that bind it to the body are loosened and its communication with the outer world through the brain is cut off, is enabled to obtain *direct perceptions,* not merely within the limited range of the Senses, but within the wider circle of its own vastly larger capacities of perception?

May not *this,* or something of this nature, be the solution of the strange phenomena seen in Somnambulism and in Trance? It would at least explain completely that which is explicable upon no other theory yet advanced.

When the natural Somnambule reads, writes, and works with his eyes fast closed and in the dark, may it not be that his Soul perceives *directly,* without the intervention of the sealed up sense of sight?

When the patient in Somnambulism artificially produced becomes what has been called *clairvoyant,* reads where the sight cannot penetrate, and perceives objects and occurrences far beyond the range of vision, may it not be that his Soul, partially released from its normal condition of receipt of intelligence through the Senses alone, possesses the power of direct perception, under peculiar conditions, so that opacity and distance, which were obstacles to the Sense of Sight, cease to be obstacles to the Soul perceiving directly without the intervention of the eye?

If there be any truth in these conjectures, and if in certain unexplored conditions of the organization the Soul can so far free itself from its dependance upon the bodily organs as to receive, partially at least, perceptions by other media than the senses—a condition of whose existence there is very cogent evidence indeed—the

curious question at once suggests itself, has the Soul power under *any* circumstances partially to loosen the chain that links it to the body?

This theory would supply a sufficient explanation of all the phenomena, which no other theory yet advanced has done. I dismiss at once the ancient and popular notion that, in dream, the Soul quits the body and that many dreams are dramas really acted by the severed Soul. The phenomena of dream need no such hazardous solution, for they are sufficiently explained by Psychology, as we shall presently see. Physiology does not offer the very slightest rational explanation of the phenomena of Somnambulism. The nearest approach to a solution of them is Dr. Carpenter's theory of "Unconscious Cerebration," as a condition of the organism in which the brain carries on an independent intellectual existence, without consciousness by the individual, receiving the messages of the Senses and acting upon them rationally, without the Will or the knowledge of the patient.

But although this may explain some of the phenomena, it leaves still more unexplained. In Somnambulism, both Natural and Artificial, the senses are undoubtedly sealed up, and either carry no intelligence to the brain, or the brain does not carry that intelligence to the conscious Ego. The eyes are firmly closed and may be covered with any quantity of envelopes impervious to light. The ears are insensible to sound, as is proved by sudden shocks of noise, which make not the slightest impression. The nerves of sensation cease to feel, as is shown by insensibility to pain. Yet that external objects *are* perceived distinctly is proved by every action of the patient. Obstacles in his path are avoided, danger is shunned, minute work is performed, writing is read in the dark with closed eyes as easily as by the waking eye

in the light—in brief, there is conclusive proof that, although every sense is paralysed, the patient obtains perceptions even more accurately than when in his normal condition he receives them through the Senses. Beyond all question perceptions of external objects come to him. Certainly they do not come to him through the Senses. How then do they come? This first step in the investigation is an assured one, that, in certain conditions of the organism, the patient subject to those conditions *can perceive without the intervention of the Senses*, which, in our normal condition, are the only media of perception. This we know as a *fact*—but we are wholly ignorant how the peculiar condition is caused, or what are the physical changes that attend it.

Unconsciousness is a frequent, but not an universal, attendant on this condition. In the vast majority of cases the patient has no consciousness at the moment, and no memory afterwards, of what passes without him or within him, of what he says or of what he does. But sometimes, though rarely, when the patient is seemingly awake and in the possession of his Senses, perception extends beyond the range of the Senses and occurs under conditions in which the Senses could neither have received nor conveyed them.

What is this super-sensual power of perception? Where does it reside? Surely not in the brain, for the brain is constructed to receive impressions of external objects only by means of the apparatus of the senses. But if the brain be not the recipient of these abnormal perceptions, it must be something other than the brain, and is it not a rational and *scientific* conclusion, that the Intelligence which thus perceives is that Something, other than brain and mind, which we designate the Soul?

For the solution of the question if the Soul is ever

partially released from its alliance with the body during life, very little evidence is to be found. If consciousness were an invariable concomitant of the condition in which perception is obtained otherwise than through the media of the senses, it would afford a strong presumption of such a severance. *Trance* is a very peculiar condition. It is not sleep, and bears no resemblance to sleep, other than closed eyes and unconsciousness to outward impressions. The body is capable to act, and the brain controls the body intelligently; but the individual Will has ceased to control the brain; consciousness is lost and there is no memory of what has occurred in the Trance after consciousness is restored. Trance, then, seems to be a condition in which the communication between the body and the Soul is suspended. The Soul appears then to possess the power to perceive surrounding objects directly, without the aid of the senses and beyond their range. This seems to point to the conclusion that, during the existence of such a condition, in some unexplained manner, there is a partial loosening of the links that connect the Soul with the body, insomuch that it is enabled to obtain perceptions otherwise than through the vehicle of the bodily senses, which, when in their normal condition of relationship, the SOUL cannot do.

CHAPTER XLI.

THE PRE-EXISTENCE OF THE SOUL.

We stand between two eternities—the eternity of the past and the eternity of the future. We have arrived, by a process of strictly scientific argument, at the conclusion that we are constructed of a Soul, inhabiting the body by permeating the entire structure and not by a residence in some part of it, capable during life of more or less loosening of that alliance, insomuch that the Soul can sometimes receive impressions otherwise than through the media of the bodily senses; and that, upon the death of the body, the Soul quits the decaying tenement and, still a material being, but made of created matter infinitely refined as compared with the particles of the matter that composed the body, enters upon a new stage of existence, for which it is adapted by the different material of which it is constructed and the consequent change of functions, to live and act under new conditions and probably destined to an infinite progression of existences ever advancing towards the perfection of Deity.

That is the Eternity of the Future which Science seems to indicate for us and Reason approves as *probable*. It is permitted us to look forward and to catch some glimpses, dim though they be, of the life that is to come. But what of the Eternity past? Can we gaze into "the dark backward and abysm of time," and catch there the slightest intimation of what we have been, if we have indeed existed? It must be confessed that into the Eternity of the past we can see but very dimly, if we

can see at all. Yet the question is almost as large and as important as that which concerns the Eternity of the Future. Are we new creations, or have we existed through the ages? If we have a past, in what form of being, in what regions of the Universe? If we are newly created, and not merely newly born, it is difficult to escape the conclusion that we perish and have no new birth in a new form of existence. If we are to live through the future, it is almost certain that we must have lived through the past. Eternity before us implies an Eternity behind us. Progression from this present condition of existence to a better life almost compels the conclusion that we have progressed to this life from some inferior condition of existence. Where there is no end there can be no beginning.

If we have passed into this life from a life that has been before, the Mind cannot avoid inquiring if there is the slightest memory remaining of that past existence? Do any traces hang about us of the world whence we have come? Poets have indulged themselves with such a vision, and very beautiful it is, and boundless is the field it opens wherein imagination may disport itself. But Science can be content with *facts* alone. It looks at the least for a foundation of fact. By none has the doctrine been more distinctly or more eloquently, propounded than by Wordsworth, in his "Ode on the Prospect of Immortality."

> Our birth is but a sleep and a forgetting:
> The Soul that rises with us, our life's star,
> Hath had elsewhere its setting,
> And cometh from afar:
> Not in entire forgetfulness,
> And not in utter nakedness,
> But trailing clouds of glory do we come
> From God, who is our home.

Heaven lies about us in our infancy!
Shades of the prison house begin to close
Upon the growing boy,
But he beholds the light and whence it flows,
He sees it in his joy;
The Youth, who daily further from the East
Must travel, still is Nature's priest,
And by the vision splendid
Is on his way attended;
At length the man perceives it die away,
And fade into the light of common day.

Earth fills her lap with pleasures of her own;
Yearnings she hath in her own natural kind,
And, even with something of a Mother's mind,
And no unworthy aim,
The homely Nurse does all she can
To make her Foster-child, her inmate Man,
Forget the glories he hath known,
And that Imperial Palace whence he came.

O joy! that in our embers,
Is something that doth live,
That Nature yet remembers
What was so fugitive!
The thought of our past years in me doth breed
Perpetual benediction; not indeed
For that which is most worthy to be blest,
Delight and liberty, the simple creed
Of Childhood whether busy or at rest,
With new fledged hope still fluttering in his breast.
Not for these I raise,
The song of thanks and praise;
But for those obstinate questionings,
Of sense and outward things,
Fallings from us, vanishings;
Blank misgivings of a Creature,
Moving about in worlds not realized:
High instincts before which our mortal nature
Did tremble like a guilty thing surprised;
But for those first affections,
Those shadowy recollections

Which, be they what they may,
Are yet the fountain light of all our day;
Are yet the master light of all our seeing;
Uphold us, cherish, and have power to make
Our noisy years seem moments in the being
Of the eternal Silence; truths that wake
To perish never,
Which neither listlessness, nor mad endeavour,
Nor Man, nor Boy,
Nor all that is at enmity with joy
Can utterly abolish or destroy!
Hence, in a season of calm weather,
Though inland far we be,
Our souls have sight of that immortal sea
Which brought us hither,
Can in a moment travel thither,
And see the Children sport upon the shore
And hear the mighty waters rolling evermore.

Here we have Philosophy clothed in exquisite poetry. The Poet has by intuition arrived at the conclusion, which the Philosopher has attained by the slower process of reason, that the prospect of Immortality to come involves the admission of an Immortality in the past. Birth into this world, he says, is only "a sleep and a forgetting" of a world from which we have come. But he finds in this new birth not an entire forgetfulness. We bring with us memories of the past existence, dim and undefined, but not the less real; recollections that attend upon the first buddings of childhood, but gradually pass away as we grow to maturity, until they are wholly blotted out by the cares and occupations and later ideas of this world into which we are brought by the new birth. But, beautiful and poetical as is this fancy, is it more than fancy? Is there *any* foundation whatever for the assertion that very young children have visions of another world than this; that boys and girls, waking

or sleeping, have at any time flashes of memory that reveal to them even for a moment anything not in this world or not constructed by the imagination out of ideas supplied by this world? In very truth the visions of childhood are nothing more than the dreams woven by the unfettered fancy out of the material supplied by the senses, and which are wild and vague in precise proportion to the paucity of that material. "The man begins to see it die away and sink into the light of common day," only because age and experience have filled his mind with facts and fettered fancy with their hard realities.

A little poem that came into my possession many years ago, and the authorship of which I have been unable to trace, very beautifully embodies and expresses this conception of pre-existence:

To an Infant Smiling as it Awoke.

After the sleep of night as some still lake
  Displays the cloudless heaven in reflection,
And, dimpled by the breezes, seems to break
  Into a waking smile of recollection,
As if from its calm depths the morning light
Call'd up the pleasant dreams that gladden'd night—

So doth the laughing azure of those eyes
  Display a mental heaven of its own:
In that illumined smile I recognise
  The sunlight of a sphere to us unknown;
Thou hast been dreaming of some previous bliss
In other worlds—for thou art new to this.

Hast thou been wafted to elysian bowers
  In some blest star, where thou hast pre-existed;
Inhaled the ecstatic fragrancy of flowers
  About the golden harps of seraphs twisted;
Or heard the nightingales of paradise
Hymn choral songs and joyous harmonies?

Perchance all breathing life is but an essence
Of the great Fountain Spirit in the sky,
And thou hast dream'd of that transcendant presence
Whence thou hast fall'n—a dew-drop from on high—
Destined to lose, as thou shalt mix with earth,
Those bright recallings of thy heavenly birth.

We deem thy mortal memory but begun;
But hast thou no remembrance of the past,
No lingering twilight of a former sun
Which o'er thy slumbering faculties hath cast
Shadows of unimaginable things
Too high, or deep, for human fathomings?

Perhaps, while reason's earliest fount is heightening,
Athwart thine eyes celestial sights are given,
As skies that open to let out the lightning
Display a transitory glimpse of heaven;
And thou art wrapt in visions all too bright
For aught but seraphim or infants' sight.

Emblem of heavenly purity and bliss!
Mysterious type, which none can understand!
Let me with reverence then approach to kiss
Limbs lately touch'd by the Creator's hand.
So awful art thou, that I feel more prone
To ask *thy* blessing than bestow mine own.

Very poetical is the idea that an infant's smile is a memory of a past existence, because it could have no impression of this one. But it is only a fanciful thought. There is no reason whatever to suppose that an infant's smile is caused by a dream. Even if it be so, it is the merest conjecture that the dream must have been of other worlds. If a dream, it was much more likely to be a dream about its food. Youth, maturity, and age might be appealed to for proof in this matter. Has any person a single recollection of a dream, or vision, at any time of his life, however young, which was of an exist-

ence other than this, of a world altogether different? Are not all dreams, even the wildest and the vaguest, merely shadows compounded of things in this world, exaggerated and combined monstrously, but having the same elements. Has a man, blind from birth, visions of a world unlike this one—for *his* blindness here would not affect his "shadowy recollections" of objects there?

I fear, therefore, we are compelled to this conclusion—that there is no memory of a former existence; that we emerge from the eternity of the past with entire forgetfulness of all that has preceded our present life.

But if the past is blotted from us, and there is no consciousness of it now, it is as if we had been newly created. Are we to gather from this, that though we are to live throughout the eternity of the future, we are to enter upon it from this life with the same oblivion of the past as that with which we have already entered upon the present existence? That is undoubtedly the problem that presses upon us, for, unless we are to have a conscious, continuous life in the future, and know ourselves there as ourselves, and others as we have known them here, what is our gain? If death is "a sleep and a forgetting," as the poet says of our birth; if we are to pass to the next world as we came into this, with oblivion of the past, or even with such dim and doubtful glimpses as the poets say we have of the world whence we have emerged, the prospect is not hopeful. May it not be that when we rise to another and higher stage of being, with enlarged powers and added senses, we may *regain the memory*, not of the last only, but of all former existences, and thus preserve the continuity of individual being.

I think we may fairly conclude from the facts that so it is. If we have a Soul, that Soul does not sleep in the grave with the decaying body, nor remain there when

the body is resolved into its elements and scattered through space. When the Soul quits the body, it must go to some new dwelling-place. It departs in the same form it had before. It suffers no immediate change. It has merely cast off its garment of flesh. It is still the same Being, with the same consciousness of identity, and it is difficult to imagine any after circumstances under which the Soul could lose the identity it preserved at the moment of passing from the body. If its individuality is continued then, what subsequent change can be contemplated that should destroy it?

And if there be for the Soul a continued conscious existence, the conclusion is inevitable, that it will carry into the next world the qualities it had in this. The passage from one stage of existence to the other must be momentary. It is not, as the poet says, "A sleep and a forgetting," a trance and then an awakening to a new world and a new life. Were it thus, it might well be that "the forgetting" should be perfect, and the Soul may live its new life in entire forgetfulness of the existence whence it has emerged—practically a new Being, with not even a dream of the past. But if the Soul does not sleep, but passes away from the body in a moment, what instant of time can be reasonably conjectured as that at which it can be supposed to lose its self-consciousness and the memory of the past? If a sleep and a forgetting does not take place at the moment of death, can we suppose that it occurs at the moment after death? But if not then, if once the Soul enters into its new life with the consciousness of its individuality and the recollection of its former life, not even a plausible argument can be adduced for its subsequent submission to this process of oblivion.

The conclusion is, therefore, *probable*, because reason-

able, that the Soul emerges from its existence in the body, clothed with the full memory of its deeds in the body, and in possession of its capacities for intelligence and emotion, not merely unimpaired, but greatly extended, with all the knowledge it has acquired in the present stage of its being as a foundation for that vastly wider range of intelligence which the improved conditions of its new existence must of necessity bring to it.

CHAPTER XLII.

THE DWELLING-PLACE OF THE SOUL.

WHERE does the Soul go when the body falls from it? The belief of a large section of the Christian world is that the Soul sleeps with the body; but the Roman Catholics hold that the Soul passes into Purgatory where

> The sins done in our days of Nature
> Are burnt and purged away.

Others, again, think that it flies straightway to heaven or hell. All, if closely questioned, will be found to have most hazy conceptions of what they intend by what they say.

The first conjecture is impossible, because the body does not sleep but is dissipated. Decomposition begins on the instant that life ends, and the particles that composed the structure of the body are dispersed, absorbed by plants which, in their turn, are eaten by animals, who are eaten by other human beings, and thus in the course of ages the selfsame particles go to the composition of a great number of men and women. Consequently it is impossible that the Soul and the Body can remain together. Nor can the identical body itself exist again, because the substances of which it was built will have gone to the construction of many other bodies. It is the Spiritual Body, of which the Apostle speaks, that survives the material body.

Nor does the Soul, as some have imagined, pass

straightway to its doom. Authority asserts the Day of Judgment as *to come.*

What then is the lot of the Soul in the interval? The world has existed many millions of years and we have good reason to conclude that man has existed upon it for countless generations. The people who died ages ago are awaiting the last day. Where are *their* Souls? What has been *their* abode? Where are they dwelling at this moment? *Wheresoever they are we shall be.* Their intermediate condition will be ours. In what region are now existing the multiplied millions of Souls that have been born into this world and departed from it? That is the problem which must present itself to every Mind that gives a moment's thought to Psychology.

The only solution that Science can suggest, and it will be found to square substantially, perhaps literally, with the teaching of Authority, is that of *Progression,* and it accords also with all that we see and know of the Divine Government of this world. According to the doctrine of Progression, the Soul does not pass directly from this life to a distant and final place of bliss or torment, with immediate judgment, but it throws off the garment of flesh that clothed it here and enters upon a new form of existence, for whose conditions it is adapted by reason of the more refined material of which it is constructed and by the new and vastly extended power which thence results to it of receiving impressions from, and therefore obtaining very much larger knowledge of, the Universe that surrounds it.

Where that sphere of existence lies we are profoundly ignorant. Conjecture has busied itself with imaginations, but without any solid foundation for them. This only we *know,* that there are vast interspaces between the worlds, so vast that the entire agglomerated substance of

all the worlds that compose the solar system, compared with the space in which they are floating, would be but as a grain of sand to the African desert. Consequently there is in these regions between the planets in our own system of worlds—to say nothing of the Universe without—ample space for the dwelling of all the Souls that have existed from the beginning of time, not on this earth only, but on all the planetary worlds that roll about the sun. All our researches into Nature reveal to us more and more the marvellous ubiquity of life. No sooner do we suppose that we have found its limits, than some instrument of greater power is discovered, and new worlds of life are disclosed to us. It is now something more than a theory that even crystals have the germs of life in them. It is scarcely conceivable that if life is so crowded upon this world wheresoever our coarse and limited senses can penetrate its structure, the huge spaces between the worlds should be without life. If they are, it is not in accordance with all that we witness elsewhere of the economy of Creation. It must be remembered that we have no right to affirm that living things do not exist about us because they are not perceptible to our senses, which are constructed to perceive only certain combinations of the particles of matter. It may well be that all space around us, and the very atmosphere in which we dwell, are thronged with beings invisible and impalpable to us. It is possible, it is not even improbable, that there may be something more than a Poet's fine frenzy in Milton's language;

> Millions of spiritual creatures walk the earth
> Unseen, both when we sleep and when we wake.

Not alone, then, in the air that wraps our globe, but in the spaces that lie between the centre Sun

and the furthest planet, and even in the planets themselves, are regions that *may be* the dwelling-places of all the Souls that ever have been, or ever will be, till Time shall be no more. And in this vast region they may continue to proceed by *progression* from one stage of being to another, ever advancing towards the perfection of Divinity, at a rate of progress determined by the conduct of the individual in each successive stage of his existence.

CHAPTER XLIII.

THE CONDITION OF THE SOUL.

And if the Soul passes from the life of this world to another life in a march of infinite progression, what may we reasonably conjecture to be its condition in the next stage of existence?

The Soul quits the body in shape the same, carrying with it the precise intelligence and character it had here. This at the first glance surprises us, because we are accustomed to contemplate the Soul (if ever we think about it at all) as some vague indefinite thing—a name and nothing more. But if we view it calmly and sensibly, as a fact and not as a fancy—we shall remember what the Soul is, if it is at all. *My Soul is merely myself.* It is "I" that go away from the body, just as I throw off a worn out garment,—it was "I," who thought, willed, felt pain and pleasure and was conscious of my own individuality—that "I" am the same personage I was yesterday. "I" am still myself, though I have quitted that body to which I was bound by links, imperceptible to me in this world-life, but now plainly discerned. I have new powers and new perceptions, because I am now constructed of much more refined particles than my body was made of; I am not subject to the laws of gravity, nor to the limited range of the organs of sense, nor to the notions of time consequent upon brain structure. But I am, nevertheless, a body, a shape, a definite being, existing in space, occupying a distinct portion of space, built of particles

of matter, but subject to new conditions in accordance with my new qualities, and governed by other natural laws than those that controlled the coarser frame from which I have emerged. I am Spirit now. But Spirit is only very fine matter, and my Spirit body in this new life, fine as it is compared with its Earth body, may be as coarse, in comparison with the still more refined material into which it may pass hereafter, as was the earthly body compared with the Spirit body. That which seems to me so natural now appeared so strange and improbable to me in my former existence, because I did not sufficiently comprehend creation; because I measured everything by my own standard, and denied what my senses could not perceive, forgetting that there is an infinity of creation infinitely smaller than anything my sight could see, as there is a boundless Universe of infinitely larger things.

Keeping these considerations steadily in view, it will be easy to comprehend how the change may be from existence in the body to existence without the body, but with a more refined structure, having extended capacities and new powers, with memories of the past, the accumulated intelligence of the state that has ended, a progressive march from this life to the new life, and thence onward, stage by stage, through a mighty chain of being, the last link of which is GOD.

CHAPTER XLIV.

THE MYSTERY.

In the honest pursuit of Scientific Truth it is forbidden to conceal difficulties and doubts. Seeing how very little we really know of Nature—of how much even of that which is about us we know positively nothing—how wholly ignorant we are even of our own structure, there is no shame in confessing ignorance of anything that belongs to Psychology or Physiology.

I cannot, therefore, attempt to disguise from the Reader or from myself a difficulty that is urged with some force by the Materialists in opposition to the theory that endows Man with a Soul—or, I should rather say, that holds *Man to be a Soul clothed in flesh.* "If you have a Soul" they say triumphantly, "when did that Soul take possession of your body? Was it in the germ? If so, every germ has a Soul, and as only one germ in a hundred thousand expands into a man, what becomes of the Souls of all the rest of the wasted germs? If the Soul be not in the germ, at what period of growth does it enter the body? Before birth or after birth? And whence does it come? And by what process does it take possession of its new tenement?"

I candidly confess that this is a mystery which I cannot solve. At most we can do little more than indulge in guesses at truth. Whatever explanation is adventured, it can be nothing more than a fanciful conjecture. On this point, so profound is the mystery that

Authority itself does not attempt to withdraw the veil. Theology, that proclaims the fact that man is a living Soul, does not inform us, or even suggest to us, when and how that Soul enters the body of the Man. In such circumstances almost any conjecture may be permitted to the curious inquirer.

The only reasonable suggestion I have heard seems sufficiently wild and vague. It supposes the Universe to be entirely possessed by Soul—that it is, in fact, what we call Spirit, and that what we call matter is only that portion of the great world of Spirit which is manifest to our Senses, because our Senses are specially constructed to perceive it. According to this theory, there is really no distinction *in Nature* between Spirit and matter; the apparent difference is merely in our own perceptive powers. If our senses could be extended, so as to enable us to perceive things about us that are now imperceptible, we should add so much the more to the sum of that which we call matter, because it is perceptible to us, but which in fact is not matter but Spirit, or at least what we had before called Spirit, because it was then imperceptible to us. Thus does this theory practically maintain that matter, as we understand it, is such only in relation to ourselves—it *is Spirit in a form perceptible to our Senses*; and if the functions of those Senses were to be changed or modified, that which we now call Spirit might appear as matter, or that which now seems to be matter might be resolved into Spirit. Like Time, and Space, and Colour, and Sound, materiality is not a quality actually existing in the object, but merely a sensation in ourselves, which we so call,—an impression upon our own Minds to which we have given that name.

Another scarcely less ingenious theory, is that the

material Universe is encompassed with Spirit pervading it everywhere, not individualized, but in aggregation, as the atmosphere enwraps the earth. That this Spirit substance (if so seeming a contradiction in terms may be permitted) penetrates all matter, and moulds it to all shapes. That in organized beings it becomes a distinct individuality, and operates through the Vital Force that moves all organized structure. That this Spirit possesses the germ, grows with it to maturity, and is released from it on the ceasing of organic life. That precisely as the material atoms pass from mineral to vegetable and from vegetable to animal structure, so the Spirit advances from being a mere protoplasm of Spirit (if the metaphor will be allowed) by the same process of expansion and progression, to have first a separate being, then a development in one stage of existence, then advancement to another stage, and so onward. Thus it is conjectured that the portion of Spirit which becomes a Man is born with him, grows with him, is in fact, *himself*—in a condition in which he is perceptible to the senses of other men, and therefore is to them a material being. The Spirit, thus matured, does not return into the mass, but, when the body falls off from it, preserves its individuality, and is that Soul to the contemplation of which the previous chapters have been devoted.

I submit these conjectures to the reader in default of any positive knowledge. All that can be said of them is that they are not impossible, and some argument might be used to show them to be even probable. For my own part, having no evidence whatever upon the subject, I can venture upon no opinion. They certainly supply an answer to the Materialists, if there be truth in them—but that is precisely the question to be solved. Readers must

accept them as being little more than pleasing fancies, at least until patient investigation by the Science of Psychology shall have thrown some better light than we have yet enjoyed upon this, the obscurest region of Natural Philosophy.

CHAPTER XLV.

CONCLUSIONS.

We have now concluded the survey of the Human Structure, viewed merely as a machine. Of the body, nothing more than a mere outline has been attempted, for any detailed description would have occupied more space than can be given to this entire treatise. But that portion of the Mechanism which is devoted to the functions of Mind has received a more elaborate review, because it is at this point that the province of Psychology properly begins.

Much space has been given also to the subject of Soul, or Spirit, (which name soever may be preferred) not only because of its intrinsic importance, but because that also is entirely and solely within the domain of the Science to which this work is designed to be an Introduction.

Much of the subject matter contained in the preceding pages has been unavoidably difficult, abstruse, and uninteresting; but it was necessary to a clear comprehension of the more interesting themes that are to come.

Having now a definite and, I hope, a tolerably clear, comprehension in his mind of the general mechanism of the Human Being, the Reader will be enabled more easily to pursue the investigation into the phenomena exhibited by that Being in action, to which the second and concluding volume will be devoted. He will next be invited to view the Mechanism in motion which he has been contemplating at rest. He will see how the various parts of it act and react upon each other; how

the mind influences the body and the body the mind, and how the Soul (if its existence be deemed to be established, or at least accepted as probable) influences both mind and body. He will discover that his investigation must be conducted under other conditions than such as attend upon the analysis of a metal or a muscle. The subjects to which his examination will be directed being imponderable, intangible, and imperceptible to his ordinary senses, he can obtain knowledge of them, and of their conditions and qualities, only by observation of their action upon the surrounding matter. Like magnetism, heat, and the other imponderables, they are perceptible only, and therefore can be studied only, in their *manifestations*. But thus, if we carefully collect a sufficient number of facts, established by the best evidence, we may attain accurate knowledge of the operating agent as certainly as by any manipulations of material substances in the laboratory; we can learn their properties, their powers, and the conditions of their being.

The subjects that will thus present themselves for consideration are some of the most profound, and at the same time most curious and perplexing, that could be opened to the Mind, and all will acknowledge their high interest and importance to every human being. For reasons, perhaps, not far to seek, they have hitherto been treated with a strange neglect. The study of them has been decried and discredited by two parties of opponents. The Scientists have sought to scare inquirers by the cry of "Superstition," because there, if anywhere, was to be found the sling and the stone that could slay Materialism. On the other side, Authority formerly sought to frighten by a warning against trespass upon Holy Ground, because it deemed, wrongly, that to apply Science to the question of the

Soul, its existence, its dwelling, and its destiny was to deny the validity of its own mission. The time has come when the pretensions of any party to prohibit inquiry can no longer be recognized. Anathema cannot be permitted to rest on *any* branch of knowledge. Wherever there is something to be known, it is our right and our duty to make search for it. There is no dangerous truth nor desirable ignorance. There is *no* boundary to the explorations of Science. No subject may now be tabooed. Nothing that *is* is really insignificant or trifling. Nothing is unworthy of being known. A new fact of *any* kind, however seemingly small, is a substantial addition to the sum of our knowledge. Petty as it appears, it may be the pioneer to a whole territory of new learning.

Scientists may sneer at Psychology as being a visionary science, based upon mere assumption and dealing with that whose very existence is problematical. But its subject matter is as real as that with which they deal. Even were it not so, the more important it would be that the study of it should be pursued, with an honest endeavour to ascertain if the foundation on which it is erected be sound or baseless—that if, after due investigation, it be found to be false, the world may cease from a vain labour; but that, if it be proved a truth, MAN may have the blessed assurance that, as a *fact*, and not merely as a *faith*, he has a SOUL and inherits an IMMORTALITY.

END OF VOLUME I.