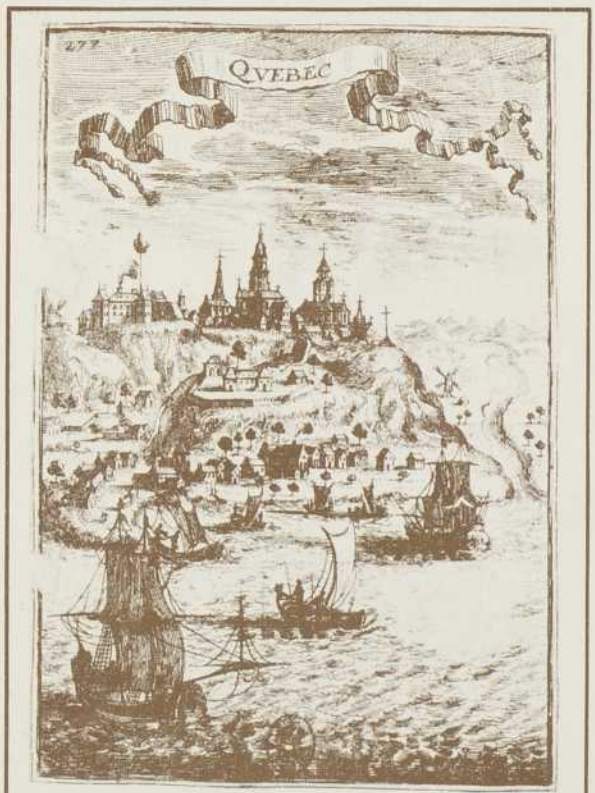
THE PERSON OF EVOLUTION

by

W. D. LIGHTHALL, LL.D.



Annotated by W.D.L

THE PERSON OF EVOLUTION

The Outer Consciousness
The Outer Knowledge
The Directive Power

—

STUDIES OF INSTINCT
AS CONTRIBUTIONS TO A
PHILOSOPHY OF EVOLUTION

by

W. D. LIGHTHALL, LL.D. (McGill)
Author of *"The Outer Consciousness"*,
"A New Utilitarianism", *etc.*

(Annotated Copy.)

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DEDICATED

In Appreciation of the late JOHN CLARK MURRAY, LL.D., Professor of Mental and Moral Philosophy at McGill University, and the late SIR WILLIAM OSLER, Regius Professor of Medicine at Oxford,
by their grateful student
THE AUTHOR

THE PERSON *of* EVOLUTION

by

W. D. Lighthall, K.C., LL.D.

MACMILLAN
Toronto London New York

"*The* PERSON *of* EVOLUTION"

by

W. D. Lighthall, K.C., LL.D., McGill

◈ ◈ ◈

This book will be welcomed by a vast and increasing number of men and women who have imagined that, when forced to give up belief in the "personal god" as defined in ancient creeds, they must also perforce give up belief in any creative and controlling "person" surpassing the limitations of humanity, and in any continuance of their own personality after death.

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Preface

THIS BOOK is a statement of a theory of Consciousness, including Instinct, Mind, Teleology and Evolution, all of which it regards as but phases of one process.

Based upon the facts of modern evolutionary science,—as I understand them,—it finds therein reasons for placing the centre of our consciousness outside the human individual. It then draws a number of conclusions affecting ethics, the future life, the outer universe, and theology. It adopts a colonial view of consciousness, both individual and as a whole.

Many puzzling facts, from time to time, disturb the smooth thinking of the man of science. Some of the most haunting of these puzzles appertain to the so-called Unconscious, acting as if consciously. Others are psychological questions of the new "colonial" biology. Others concern the aptnesses of endocrine action. Others the origin of terrestrial life. The insistence of conscience too disturbs. And why sane men and women should prefer martyrdom. And why men persist in counting on another life. And the triumphs of will over "the random element". And how Evolution can be "progressive". And what makes the complex processes of digestion so much resemble—and surpass—the thinking of some great chemist. And what is the intelligence which, unknown to us, carries on the ceaseless co-partnership of the heart, the lungs, and the brain, in pumping, oxygenating, and drawing sustenance from, the subtle red life-liquid, with its

exact blending of salts, fibrins, albuminous and fatty repair supplies, oxygen-bearing corpuscles, soldier corpuscles, and regulating hormones. What, too, is the system of those heredity germ-cells, which, transcending the bounds of the individual in whom they are found, think for the *race*. All these puzzles have a common foundation. They are based on a real connection of the human individual consciousness with a larger Consciousness.

The man of one science notoriously fails to deal adequately with such puzzles, since they lead into interlocking fields of several sciences at once. Years ago, as a student of ethics, and also a medical student (which has a bearing on the biological point of view), I was struck by the psychological puzzle of martyrdom. The Utilitarian school, with its intellectual solutions on the basis of joys and pains, reflected by sympathy, appeared to me to give a reasonable account of most other moral acts,—but that an individual could deliberately annihilate himself for another evidently imported some element extraneous to the individual's own ordinary machinery of willing. Determined to accept no superficial "explanation" of the problem such as glib use of words like "volition" and "conation", I reduced acts of will to their simplest forms, noting their gradual shadings into, and intimate connections with habits, instincts, functions, reflexes, etc., and observing that these led to a world outside the consciousness of the individual. Thence I was brought to conclude, like Schopenhauer, that there is a unitary directive cause behind all these processes, and I included Evolution itself, regarded as one long act of willing. The characteristics that struck me most

forcibly were the independence of this outer Will, and its apparently highly conscious nature. Hence I ultimately termed it "The Outer Consciousness." Its independence being noted, its beneficence, its preference for joys over pains, its far-reaching directive power, and its consideration of others than the individual, also stood out as characteristics. I planned to study it and attempt an independent inductive description of it, but circumstances compelled me to lay the study aside for a number of years, until, not meeting with any theory on the same lines, I have recently tried to bring it up to date and into accord with the new biology and physics, which throw vast light on the subject. The result is this theory of the Person of Evolution, "the composite conscious creature of all terrestrial life" and (by extension of hypothesis) of the entire known universe,—the Ultimate Person of Evolution being God.

The present book is a development of studies of consciousness in evolution privately published in 1926, under the title of *"The Outer Consciousness"*. I now include several articles published in *The Philosophical Review* and other places and have revised the whole. What I have sought is comprehensiveness, unitary conception, and to follow the latest discussions of the best authorities on the several sciences. My propositions are but my own judgments on such debates after weighing the arguments adduced and contributing what seem to me pertinent points from other sciences. Then, uniting the results, I have sought to draw further advances flowing from them. If my language should appear dogmatic in places, it is not that I am not aware that nearly every one of the principal con-

clusions is the subject of strong differences of opinion. I have been accused of 'dodging' metaphysical problems, because I believe in first striving to settle the factual questions.*

I wish I could have undertaken a much larger book citing all the authorities at length. Among my chief conclusions of fact are: that life is *always and essentially* characterised by consciousness; that it has *always an affective motive;* that affective feeling (pleasure and pain) is the sole comprehensible basis of *value*: that the whole Evolution of life is *one conscious, willing,* process; that *the beginnings of terrestrial life* afford a key to interpretation of the outer universe; that *directivity* is a scientific fact.

W. D. LIGHTHALL.

Montreal, January, 1930.

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*Since penning the above words, I have been struck with a better recent expression of Alfred North Whitehead: Dr. Whitehead wrote regarding his Gifford Lectures "Process and Reality": "I have endeavoured in these lectures to compress the material derived from years of meditation. In putting out these results, four strong impressions dominate my mind: First, that the movement of historical, and philosophical, criticism of detached questions, which on the whole has dominated the last two centuries, has done its work, and requires to be supplemented by a more sustained effort of constructive thought. Secondly, that the true method of philosophical construction is to frame a scheme of ideas, the best that one can, and unflinchingly to explore the interpretation of experience in terms of that scheme. Thirdly, that all constructive thought, on the various special topics of scientific interest, is dominated by some such scheme, unacknowledged, but no less influential in building the imagination. The importance of philosophy lies in its sustained effort to make such schemes explicit, and thereby capable of criticism and improvement.

There remains the final reflection, how shallow, puny, and imperfect are efforts to sound the depths in the nature of things. In philosophical discussion, the merest hint of dogmatic certainty as to the finality of statement is an exhibition of folly."

THE PERSON OF EVOLUTION

CHAPTER I.

Is Superpersonality the Looked-for Principle?*

1. Brotherston's "Society an original fact".—2. Butler's "vaster being".—3. Galton's "cosmic mind".—4. Marshall's "higher consciousness.—5. Driesch.—6. Bergson's "vague and formless Being".—7. Vitalisms.—8. The Psychoanalyst "Censor".—9. J. S. Haldane's "new psychology".—10. Plea for Superpersonalism.

1. Many are to-day expecting some kind of a fundamental revolution in psychology. Is not the solution to be found in the direction of an organic *Superpersonality?* [I wrote these words in 1925 and a good deal has appeared since tending in the noted direction.]

In the *International Journal of Ethics of* October 1924 there appeared an article entitled "Society an Original Fact," by Professor Bruce Brotherston. The view he sets forth is that the "social organism" is "an original fact, that human nature is the nature of human society . . . that humanity first made its appearance as a social group . . . that in the truly primitive stage no individual was conscious of himself as an individual," that instead "there is always present in

*Reprinted from the Philosophical Review. Vol. XXXV.

primitive men a *superindividual* force, . . .that in this complete fulfilment of the normal social conscience the individual has found himself a part of an empirical reality reaching out beyond himself and including the human race; the limits of his own personality and of his own period of life are transcended. . . transcending the individual with age-long and world-wide causes." And that the workings of this social whole are not reasonably explainable as merely a construct of its parts.

2. This is one man's form of a conclusion to which an increasing number of thinkers today are insensibly tending from various starting points, and which explains so many psychological and biological puzzles that it may well be, as I believe it is, the next new potent seed-germ in the movement of scientific thought.

Samuel Butler, in *Life and Habit* (1883), wrote:

"It is possible then to avoid imagining that if we have within us so many tributary souls, so utterly different from the soul which they unite to form, that they neither can perceive us, nor we them, though it is in us that they live and move, and have their being, and though we are what we are, solely as the result of their coöperation,—is it possible to avoid imagining that we may be ourselves atoms undesignedly combining to form some vaster being, though we are utterly incapable of perceiving that any such being exists, or of realizing the scheme or scope of our own combination? And this too not a spiritual being, which without matter, or what we think matter of some sort, is as complete nonsense to us as though men bade us love and lean upon an intelligent vacuum, but a being with what is virtually flesh and blood and bones, with organs, senses, dimensions, in some way analogous to our own."

3. Francis Galton also gave labor to the question at an early stage of his scientific career. A review of Karl Pearson's *Life of Galton* made reference to his interest in a similar hypothesis, from which he seems to have been turned only by the superior call of his great work in heredity.

4. Another master of psycho-biology, Henry Rutgers Marshall, in *Instinct and Reason* (chapter II, p. 31) says: "If we assume that our preëminent consciousness is what it is because of the union in one system of what, but for this union, would have been inferior consciousnesses, why should we not also assume that our own preëminent consciousness may under certain conditions become attached to other consciousnesses, and together with them form a still higher type of consciousness?" He enlarges on the theme but checks himself as being "led afar into the dreamland of metaphysical suggestion, with which as psychologists we should have nothing to do," and of temptation "to carry this speculation much farther than would be appropriate in a work like this." Mr. Marshall has not changed his view since so writing, though much has happened in the development of data since his words were penned, in 1898. Following the leading biologists of that day, he fully adopted the colonial view of cell and organ life,—that the life of each is independent, but contributable to the common stream of consciousness of the body of which they are cells or organs. The thoughts of (1) a coalescence of our individual consciousness with others, and (2) of the formation of a "higher" consciousness were natural consequences. In chapter VII. he discusses "that argument by analogy which leads to the conclusion that the

social aggregates of individuals in whom social instincts appear must be themselves organic in their nature." He agrees to the possibility of such existence as a high "social consciousness," but asks "what reason have we to believe that our elemental thought can in any way grasp the content of this hypothetical social consciousness." Yet he "believes that social organization of a lower type exists."

5. One of the most striking views is contained in the *History of Vitalism* of Professor Driesch, formerly of Heidelberg, now of Leipzig. After an historical account of vitalism, ancient and modern,—including the new phase, Neo-vitalism, under which heading he places his own system,—he devotes a chapter to what he terms "The Problem of *Supra*-personal Individuality," and asks: "May we at least suppose philogeny" (descent) "to be a suprapersonal evolution?" He replies: "We may, but only for very general and undetermined reasons. We have no warranted system of biological species. . . . Of history we can say a little more, because we are in the midst of it . . . but we cannot and shall never be able to appreciate in clearness its evolutionary character. What could an embryonic cell, say of one of the germ layers, know about the 'evolutionary unity,' of which it is a part if we could endow it with the faculties of sensation and reasoning?" It would at highest "suppose," in a hypothetical manner, that such a unity exists. And we are in the place of the reasoning embryonic cell with regard to suprapersonal unity. "And yet there are some peculiar features in 'history,' or rather in the human community, that seem to give us some signs of supra-individual totality. The first

of these signs is the general biological fact of propagation. The second is what Wundt called "the heterogeny of purpose', *i.e.,* the fact that human action may have quite different effects than what the agent 'affected,' so to speak, in a creative manner. The third sign of suprapersonal personality is *morality,* or rather the fact of moral feeling in the widest sense of the word," *i.e.,* that the hypothesis of mankind being a suprapersonal unity may really explain morality. He fears that "apart from the signs of unity spoken of, we are not able to say anything more in detail about the evolutionary character of history."

Although he posits an "entelechy" derived from Aristotle, and is rather indefinite, I think it evident that by *'supra*personality,' Professor Driesch means *'super*personality,' as we would understand it. It is, it is true, a limited superpersonality that he thus favors, but the implications for a wider view, covering the whole of evolution, are plain. *'Supra*personal' would seem to us to imply *'beyond* personality.' A general revision of the existing definitions of 'superpersonal,' 'superpersonality,' 'suprapersonal,' and 'suprapersonality' would seem to be due in the interests of exactitude. That of 'superpersonality' even in Baldwin's *Dictionary of Philosophy and Psychology,* could be improved. It does not mention *'supra*personality.' It ascribes 'superpersonality' to "God or the Absolute," and refers to F. H. Bradley's *Appearance and Reality.* But Bradley refused to identify God with the Absolute, and calls the latter superpersonal. The composite conscious creature of all terrestrial life posited by the writers first mentioned, is neither the Absolute nor God in any sense.

6. Henri Bergson, in his aspect of an acute, though discursive Neo-vitalist, and on whom as such has fallen much of the mantle of Schopenhauer, drops certain observations from time to time, which seem scarcely in accord with his main theories, but rather indicate approaches to superpersonality. It is true that, as expressed by his friend, H. Wildon Carr, in the preface to the translation of *L'Énergie Spirituelle,* he holds that "a dynamic concept of psychical reality has replaced the older concept of mind, which identified it with awareness or consciousness, . . . the principle that the great factor in evolution is a kind of unconsciousness." But that view, descended from Schopenhauer and Hartmann, is contradicted by almost the next words:—"mind is not a phenomenon which flares up out of nothing and relapses into nothing." And it is especially incompatible with the nature of affective feeling so largely involved in the process. Later, he says (p. 33) that "it is to social life that evolution leads, as though the need of it was felt from the beginning." And "the more we become accustomed to *the idea of a consciousness overflowing the organism* the more natural we find it to suppose that the soul survives the body" (p. 97). And "it is as if *a vague and formless being* whom we may call, as we will, a man or *superman, had sought to realize himself.*"[1]

7. Where Vitalists display tendencies to superpersonalism the indication is a strong one that natural science points that way, for their strong point, in their newest forms, is their alliance with scientific methods. On the other hand they have a great weakness, since

[1] *L'Évolution Créatrice,* translated by H. Wildon Carr, p. 280.

 (A friend)

all Vitalists, starting as they do from 'mind-stuffs,' 'entelechies,' 'unconsciousnesses,' 'unconscious physical states' and other low-consciousness bases, can only be expected to explain with difficulty the higher reaches of consciousness. "It is of the essence of vitalism," writes Dr. Fraser Harris, "to explain life in terms of the less known."

8. Another source of indications in favor of superpersonality is the Psychoanalysts. Though occupied so largely with practical aspects of the subconscious and so-called 'unconscious,' and though prone at times, like Dr. Freud, to interpretations decidedly open to demurrer, they have contributed much to an insight into the strange components and genetic origins of both the normal and the abnormal mind,—of what in fact may be styled the consciousness of the protoplasmic race. And they have done more than thus help to take us back to our immortality of descent, the unbrokenness and width of our ancient life: for the doctrine of the Censor, or Guide, is distinctly superpersonal. So is that of "the collective unconscious," —the "Something-akin-to-consciousness-of-which-the-doer-is-unaware-and-which-determines-behavior, and determines also thoughts and feelings."[2]

9. A similar sense of a felt want may be inferred from the growing protests of many biologists against the mechanistic view of life as inadequate to explain the versatilities of living substances. Professor J. S. Haldane of Oxford, a leader in such protests, has spoken of "the error of the old conception of people as mere units existing independently of one another. The

[2]Eden and Cedar Paul, Preface to Baudoin's *Studies in Psychoanalysis,* 1923.

new psychology—the psychology of the future—teaches us that they really exist as the manifestations of a spiritual reality which pervades them and all around them. This is diametrically opposed to the mechanistic theology which was the counterpart of the mechanistic science, but is of the very essence of true religion. An isolated individual organism is merely a scientific abstraction; and we are already learning to realize this. The man of the future will understand it and shape his conduct by this new conception of the biological behavior of individual human organisms to other human organisms and the rest of their environment. But when we look beyond mere biology to psychology, which is the branch of knowledge dealing with conscious behavior, we see that we bring in the most intimate sense of our environment, and that the environment is in reality a spiritual one."[3]

10. We have thus the following elements of support for superpersonality is a subject worthy of present study:

1. The serious attention given to it independently by Galton, Marshall, Butler, Driesch, and other men distinguished in evolutionary thought.

2. Inferences to be drawn from expressions of Bergson and his school of philosophy.

3. Inferences from the Psychoanalysts,—especially doctrines of the Censor, the Guide, and 'the collective unconscious.'

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[3] *London Chronicle,* interview, 1925. Professor Haldane's *"Mechanism, Life and Personality"* (Murray, 1914), sets forth his own theory. Later (1929) he published his notable book *The Sciences and Philosophy,* on the same subject.

4. Inferences from the humanistic protests of eminent present day biologists, based upon the marvellous peculiarities of living substances.

Other inferences might be added from the broad operations of instinct.

The question which is the point of this chapter may now be put: *Whether these elements do not indicate that a juncture is arrived at which justifies the treatment of superpersonality as a scientific hypothesis?* Ought it not now to be taken from the station hitherto assigned it in "the dreamland of conjecture" and given fuller scrutiny? Are we not too narrowly interpreting life, morality, human nature, natural science, from the point of view of the traditional individual? Is he not larger and greater and more wonderful? How can self-sacrifice and martyrdom for others be explained from the point of view of that individual? Or the adjustments for our happiness provided by the 'unconscious' functions of the body? Or those concerned in the preservation of the race? Are not these, and many other mysteries, solved by a larger, superpersonal movement?

CHAPTER II.

General Characteristics of the Outer Consciousness

11. Instinct, in the broadest sense. Man's Inner Consciousness and the OUTER.—13, 14, 15. Coloniality.—15. Characteristics of the Outer.—18. Its intelligence.—20. Its care for vast numbers.—22. Its energy.—23. Its limitations. Its control of the inner.—24. Its independence.—29. Recapitulation.—30. A biological entity.

11. The clear inner consciousness within man (and in the line of living beings to whom he is related) is comparatively easy for us to understand. It is the result of a focussing of the mechanism through which consciousness appears in us. On the edges of the focus is the less clear stage which has been called the marginal consciousness. Here was the place of "les petites perceptions" of Leibnitz. Then "below the threshold" is the *subconscious,* so used by F. W. H. Myers. Schopenhauer had attributed some of its manifestations to Will in Nature. Hartmann attributed them to what he called The Unconscious. Psychologists now treat them as confined to the individual. The concept of the present book attributes them all to a source outside the individual.

An acute account of the older views is Levine's *The Unconscious,* London 1923. He finds them all "vague and unsatisfactory", until the advent of his master Freud, who laid a broader basis of observed facts. My theory, appealing to the mind of Darwinian Evolution, is based on the broadest of observed

fact bases. In us there are continually being manifested the signs of this consciousness other than that of the individual, the source of which is constantly working for him, but also for purposes which are not his. Many of these purposes are even unknown to him, except in so far as he may ultimately learn how to observe and study their action. Of such are the beneficent operations of the heart, lungs, kidneys, glands, and other organs; the reflex actions; the sexual activities; the instincts of maternity, of the herd and society, eating, drinking, smell, beauty, the attraction to pleasant things, aversion from painful. Some of the authors on instinct would quarrel with these terms, but the classification is not essential, since they all come back to one principle. Most striking of all is that complex instinct Altruism which, like the sexual, the maternal, and the herd instincts, urges men to martyrdom for others than themselves.

12. The problem is not altered by the fact that all these manifestations have been built up to complicated forms in the course of evolution; since they were not only arranged originally, but have been constantly adjusted, and are still being so. For all the instincts and reflexes are one at base, proceeding from the same urge, which Schopenhauer dreamt of as The will, but which the progress of biology has enabled us to call Evolution, and which I hold is *one living entity* through all the course of life on earth. Hence I group all instincts and reflexes as "Instinct in the broadest sense." Now in them are being pursued ends that are only explicable in terms of affective feeling (happiness and pain), which is a form of consciousness, hence their source and maintainer is evidently con-

scious. Its conduct is intelligent, and like that of the separate instincts, is based on the same principles as what we know as reasoning. It is purposive, because it pursues ends which we can recognize as purposes. But since it operates for many, and not solely for one individual, and co-operates with forces in the world outside him, it is fair to name this consciousness The Outer Consciousness, as distinguished from the clear consciousness within the individual.

13. It is true that parts of this Outer Consciousness appear on the inner horizon of the individual from time to time, usually marginally and sometimes even within the focus of the clear consciousness, but it proceeds on its way like an outsider, as far as the individual's ordinary vision and control are concerned. It watches him like a friend in the darkness, and not only him but all life. When it emerges, it is so closely associated with the individual self as to raise the question of a larger Self. How is this passage between the Outer field and the individual accomplished and to what does it extend?

Light is thrown upon that question by the compound nature of consciousness. The consciousness of every man, and of all complex living beings, is *colonial* in its composition, that is to say it is a flow of coalesced conscious states derived from the trillions of component cell- and nerve-organisms of which his body is made up—each living its own life. This view necessitates the general conclusion that one consciousness *can be* coalesced with another. Many have held some form of the idea. One is stated by Huxley in his "Physiology," on "The coalescence of sensations with one another and with other states of consciousness." But

by coalescence I mean something more than what psychologists call "fusion". A law of Coalescence of Consciousness, might perhaps be formulated as follows: *Every conscious unit has a faculty of coalescing its consciousness with, and of decoalescing it from, that of any other conscious unit or group, under certain conditions.* This principle is apparently a result of the unity of all consciousness at a general source.

William James, in *A Pluralistic Universe,* (pp. 176-7) says the *"assumption that conscious experiences freely compound and separate themselves,* the same assumption by which absolutism explains the relation of our minds to the eternal mind, and the same by which empiricism explains the composition of the human mind out of subordinate mental elements, is not one which we ought to let pass without scrunity."

14. No one can contemplate the evolutionary history of life with its increasing aggregation of cells and departments in the evolving creatures and their cooperative nature, without recognizing the truth of the colonial conception in mental as well as physical organization.

15. From the *independent outlook* and *altruism* of the Outer Consciousness another conclusion arises. Man's coloniality is not confined to his make-up as an individual man. He is not only the head of a colony of lesser units; but it will be part of the present study to show that he is part of a larger colony. He is more: that larger colony is very possibly one of a hierarchy of greater and greater colonies, and in the end his consciousness is apparently part of that of the "infinite" Universe itself. This conclusion flows in part from the "universality" of the law of the altruis-

tic instinct with him; and which is one of the manifestations of the Outer Consciousness. I put the terms "infinite" and "universality" in quotation marks because I do not here pretend to deal with actual infinity and universality.

16. We are now prepared to examine and describe this entirely new thing, the Outer Consciousness, as we regard it. It is *independent* of the individual; it is *reasoning;* it is *purposive;* it is colonial; it has a general *likeness to the inner consciousness of the individual man in its methods of work.* The process of our instincts and functions is not merely akin to reasoning: it *is* reasoning. It is not unconscious action: it seems unconscious to us only until we reflect on the full nature and scope of its operations. And as said before, since it persistently effects results which can only be ultimately understood in terms of Feeling, it cannot be really unconscious. From its own point of view it is an *inner* consciousness. Its appearance of unconsciousness to us is only derived from the point of view of our own consciousness and body, and we must get away from this individual standpoint. The Outer Consciousness is much more exact and systematic than ordinary dreaming, for example, for its actions are not wandering, but are clearly shaped along definite laws of purpose. Nevertheless it has several resemblances to the dreaming state. Dreaming is largely a (to us disconnected) review of the distant past experiences of our ancestry, providing an arsenal of suggestions derived from these experiences and ready for connection with the current stream of our sensory experiences. Every dream is largely made up of memories, chiefly inherited and of vast antiquity. All animal life

below us is in a state of dream. And even when we are most awake we also dream, beneath the surface of our waking thought. Dreamlife is one of the spheres of the Outer Consciousness, apparently somewhat as it is one of the spheres of the inner—a borderland of both, and not fully expressing either. Into it enter the suggestions to us of the instincts and functions—creatures and instruments of that of which the Outer Consciousness is an expression.

17. As an example of the reasoning method of the latter, take the maternal instinct to care for the child. Put into simple language, it is as if the Outer Consciousness said: "This helpless, defenceless little creature will perish unless it receives certain kinds of care; it will suffer acutely: and in perishing, it will be deprived of a career of happy life." Sympathy is not the only device it uses to prevent these evils: the mother is provided with ingenious apparatus and urgings to serve the case. When an infant is deprived of its mother, the physician has resort to imitations of that apparatus—a rubber nipple, a glass teat, an artificially compounded milk. There is even a remarkable branch of this instinct among others than the mother, in the indulgence with which infants are regarded not only by men but by dogs and other animals. And at least one well-proved instance is known to me where a mother-bear saved an infant girl by leading her gently to a settlement; while wild male bears sometimes play with children. The whole literature of the instincts is full of striking likenesses to our own conscious reasoning. John Kidd says:—"Practically, ready adaptability of the means to the end is the only difference, and instinct is therefore

thought by us to be more blind than Reason." But if our Reason also be inspired by the Outer Consciousness, that objection is absorbed. All thinking is not a monopoly of the brain. The gray cortex matter is not the sole medium of thought. Nor even is the whole cerebrum, nor it, and the cerebellum. In the broad sense, the glands and the cells also think. In short, *all living substance thinks,* in a broad sense. It also feels; and its thinking is the servant of its feeling. (See Chapters III. and IV.)

To this view there is only one important hostile-looking class of theories of instinct, function, and reflex action: it is the mechanist explanation. According to it, they are but the operations of more or less excellent machines, and act automatically, like other machines. Descartes summarized it in his theory that all the lower animals are automata. Behaviorism is a generalization of that theory and extends it to humans. In extreme "behaviorist" theory, consciousness of any kind is deemed unnecessary to the subject of psychology! The mechanical view of "survival of the fittest," is one form of the theory. But the mechanical deduction from this great hypothesis is defective: it would explain only the survival of a sequence of unfeeling machines. *What it does not explain is the attainment —the persistent attainment—of pleasures and avoidance of pains accompanying these contrivances. It is this which proves purposing, instead of meaningless, action or symmetry.* All complete surveys of Instinct lead back to Evolution as its source. There it has its origin and its developments. Evolution itself is a purposive process, a form of willing. The Outer Consciousness is a great Directive Power, somewhat as

man is in part a lesser directive power. The reign of physical law really coincides with its field of action. The law of will and the law of Nature are aspects of the same synoptic process.

18. Granting to the Outer Consciousness the power of reasoning, subject to the subsidiary differences mentioned, it must be conceded that it is characterized sixthly by *wonderful intelligence*. The inventor of the human eye and ear and all the marvels of natural science must be of extraordinary powers. It is slow, it takes ages to adapt the instinctive machinery, but that does not lessen the persistent and marvellous adaptations it in time achieves. And even the sometimes more marvellous inventions of man are part of its evolutionary process.

19. The human frame as a combination is doubtless the greatest of these inventions. Among the most marvellous of its parts are the apparatus for regulation of special physiological needs. Besides those of autonomous repair of almost wholes, as in the inner germ-layer of the echinoderms, the reoutput of parts, as in limbs of crabs; the compensatory activities as in the case of the loss of one of the human kidneys, where the other undertakes the work of two,—there is the heat-regulating system of the body of man, and perhaps above all in marvellousness, that faculty of the kidneys of land animals whereby they keep constant the proportions of the various salts in the blood-fluid, maintaining them in the same proportions as the original salts in the ocean were in the particular geological Age when the ancestor of the particular animal in question left that ocean to become a creature of the land. This question owes its origin and elucidation to that great biochemist D. C. MacCallum, whose last message to the author was "Follow the Gleam!", referring to this book.

20. A seventh and very outstanding characteristic (mentioned above in pgh. 2) of the Outer Consciousness is *its care for vast numbers,* rather than for the individual. Impulses of race and laws of the fittest are among its methods, but it operates ultimately in the interest of the whole of life. Let us see what this means: Every living thing is imbued with the functions and instincts of self-preservation: in most, the perpetuation of the race often overrides the preservation of the individual. Thus in both space and time an unnumbered host are considered. And not only in the past and present the work of the Outer Consciousness leads on into the future, in which, especially, we can hope to only faintly guess its thoughts and plans. It lives within all this immense concourse, inspiring (subject to a qualification about to be mentioned) not only the welfare of all, but all their kinds of co-operation. Besides the swarming orders of life known to us, is that great range of minute creatures which are known to exist although too small for our strongest microscopes; and doubtless others too distant for our strongest telescopes; and those whose life we have not the senses nor the intellects to comprehend. For the history of thought teaches us that our great equipment, the human cerebrum, even with all its modern aids, is a painfully limited interpreter, incapable of following even a few mathematical factors very far into space. How far are we, after all from Aurignacian man in natural talent, apart from education, or even from the earlier chippers of rude artifacts? And how limited is even our education, granting all its wonders. If we could see more clearly, for example, would we cling to the notion that all consciousness is

limited to protoplasm? Does it not seem an absurd conclusion that a molten planet on cooling should produce, under very limited conditions of water and temperature, the sole conscious life in this apparently boundless universe of worlds and systems? At any rate, whatever be the full scope of life in the universe, it is certainly vast. This field of life with its stupendous numbers of living units would seem to be the logical outlook of the Outer Consciousness, and its law to be *the preference of the mass to the individual, in affective sensibility.*

21. Is not the essential principle of the evolutionary *struggle* the conquest of the individual by the mass, of the cell-individual by the cell-combination, of the lesser by the more complex, of the one by the many, of the many by the universe? The moment that two nucleated cells joined their lives and fortunes into the first cell-colony, the directive power transcending the individual for the interest of the mass, was present. And if we go beyond the cell, into the theory of chromosomes and genes, who knows their internal working, but they too apparently obey the law. The logical hypothesis is that they, as intermediates, would point on to the same plan in the workings of the molecule, thence the atom, the proton, and electron, and that each in turn constitutionally also obeys this law.

22. It is scarcely necessary to remark that an eighth characteristic of the Outer Consciousness is *an enormous and sleepless energy,* for these are being constantly exerted in Evolution.

23. Yet (ninth) there are apparently *limits to its power.* Are not such shown in the constant struggle it makes to attain its ends, in the everlasting proces-

sion of its failures, in the horrible carnages and disasters in nature, the bestialities and social cannibalisms of men?

24. Of all the above-mentioned characteristics of the Outer Consciousness the most outstanding and significant is its *independence of the inner.* The newborn babe, for example, with its kit of organs and instincts, emerges fully formed from a world beyond control or knowledge by human intellect, and is entirely a product of the Outer Consciousness. The babe's will and knowledge, not being yet developed, have no part in its actions. When it turns to suckle, its course is dictated by a reasoning and an urge which are subliminal; when it cries from discomfort, the call for aid is that devised by its unknown counsellor; when it smiles at its mother, the art of that powerful appeal is not of its own creation.

23. But more,—the Outer Consciousness has arranged a correlation with the babe, of its whole milieu, it has endowed not only the infant to suckle, but the mother to feed, the family to foster, the air to be breathed, the light to reveal its path, the dark to help its rest. And it has given it beauty to attract its kin. Much of the adult remains in the condition of the babe until the end of life, and every night the realm beyond our dreams resumes its sway, while beneficent operations proceed.

This striking character of *independence* marks it as a conscious entity greater than any human or animal individuality, and should attract to it the most interested attention. It is associated with that other great characteristic, its directive power.

The Outer Consciousness, as we find it terrestically,

is certainly not the Perfect Ideal Supreme Being. Nor is the problem a question of any such Dualism as of Ormuzd against Ahriman. The problem of God, as Ultimate and Absolute, is a different one and remains to theology. And the metaphysical question also remains: What directs the directive power of the terrestrial Outer Consciousness?

We must make this important admission: The Law of Progress—or more exactly, the Law of the Striving for Happiness—is not an ideally perfect process.

25. But notwithstanding its limitations, it is much to be able to say that it is after all ~~a largely~~ an increasingly successful process, attaining at least most of its ends, and enlarging its goals, as time proceeds: but that is as far as we can go at present along the inductive line, our chosen method.

And we can understand by its success in progressing that it is *capable of the ultimate triumph* of happiness. This is indeed the gradually nearing goal of the Law of Progress,—the reigning rule of the Outer Consciousness. The Ideal fulfils the Real. It thus corrects its value.

26. What perhaps most interests man is *the relation of his inner consciousness to the Outer.* What a man thinks is his will and his clear discernment are often but the effects of his instincts and functions; just as a jury, listening to a skilled advocate, believes that it is forming its own judgment of the facts, and does not perceive the methods of the art of oratory. Even the clearest and best trained intellects are but following the rules of the Outer Consciousness. Not that it is not something to be clearly conscious of means and ends: and to be rapid and certain in adapta-

tion; and not that high cerebral action is merely mechanical: but that, in our clear consciousness the Outer Consciousness acts, as well as in our subconscious and functional departments. We are, in short, at our best, the plainest expressions to ourselves of the Outer. The rapid adjustments of means to ends by our cerebra are in essence the same as the slowly formed adaptations of the cerebellum, the ganglia and evolution, all instruments of the being with which we are dealing.

27. Every conscious individual then, is a projection of the Outer Consciousness, and is himself one of its local organs of feeling, thought and action. For unnumbered ages it has thrust out such feelers into all the places that life can live in or know; for unnumbered ages it will continue to do so. Man is like the spirit of a leaf: his life is in the tree.

28. By what theory are we to explain the method of this relation of the operations of the Outer Consciousness to those of the Inner? Dreamlife we have suggested is one of the spheres of the Outer Consciousness: even when most awake we also dream: the dreamlife suggestions push themselves up. When this dreaming—or, rather, the life behind the dreaming—rises fully to our surface we call it "day-dreaming"—visions largely composed of elements from past existence. Here the Outer Consciousness is often plainly in touch with the inner. Moreover each of our sensory states may be said to pass into this realm, thence from time to time to return to our inner consciousness in the shape of memory? I do not here discuss the theories of memory, but rest upon [illegible] view of the passage from one focus of consciousness to another. And so, too, with all the impressions of our

through Coalescence

racial past in the shape of *inherited memories,* such as fear of the dark or of precipices, or love of the beauty of water, the dawn and the sunset. Thus, out of the realm of the Outer Consciousness,—the conscious life of a man emerges and thrusts its head temporarily through dream into the light of clear day. It is but a small concentrated part, an emerged point, of that vaster individual,—an organ of it, having a short, but not totally dissociated, individuality of its own. During our lifetime, our clearer consciousness is to some extent decoalesced from the larger: soon it falls back through the dreamlife into the vaster Consciousness, recoalescing, and, resuming its larger activity. The Outer Consciousness, clear, everactive, comprehensive, will be ours when the leaf falls away and the hour of return comes, just as the babe was cared for when it was pushed up like a flower from the same realm. This is our theory, or perhaps I should call it picture, of the relation between the two consciousnesses.

29. What, then, in cumulative conclusions, is the Outer Consciousness? As far as we see it terrestrially it is no Absolute Divine Being, although the facts concerning it greatly broaden the basis of evidence of the Theistic Argument. It is *a biological entity—a vast composite, living, reasoning being, of which all lesser individuals are extensions.* In its enormous sphere seemingly it is occupied with the same aim as we—the universal attainment of happiness and flight from sorrow and agony. It aims at the same ideal as we—infinite happiness for all the entire knowable universe. It has the same striving as we to arrange those material forces in the midst of which it lives into such shapes that they may not obstruct its aims. It sees,

through us, as clearly as we do,—and outside of us, immensely more clearly than we do,—the field of action, its facts and conditions.

30. It has other things beyond what we have. So far as we can grasp its characteristics, it coalesces in varied groupings all existing consciousness. Its knowledge and insight are the knowledge and insight of all living beings, present and past. They are unwittingly its eyes and its watchmen, its arms and its artisans. Its life is the composite and never-ceasing life of them all, centralized and lived and felt and purposed and acted—one immense thought, feeling and movement. Its future is the continuation and development of that life. May I venture to name it, at this stage of the characterization, the Person of the Outer Consciousness. There are grave conditions to remember. Like the lesser biological entities, it perhaps has its trials and sorrows, its struggles, its happiness, its limitations of knowledge, its explorations of its sphere. In describing its consciousness we must have frank regard to the long red reign of "tooth and claw"—the regime of the wolf, the tiger and the crocodile. We have to explain how it is that the same consciousness and will govern both them and the highest and tenderest consciences of mankind. It takes much thought to reconcile the simultaneous contemplation of these so divergent-looking processes: yet it seems possible if we are willing to revise our human points of view of death, pain and consciousness and to rightly construct the childhood of the world and the possible composition of that other Mind, just as ours is a composite of higher and lower elements working in harmony. Perhaps, too, in long ages to come the Outer Conscious-

ness may have its coalescence in a conscious life still higher, carrying all of us with it, each in possession of its full tide of being. As our deeper self, it seemingly carries us onward by infinite stages to a still profounder Selfhood beyond our capability of imagination or comprehension.

CHAPTER III.

The Person of the Outer Consciousness

31. Its personality.—32. Differentiations.—33, 34. Fechner's Animated Globe.—35, 36. seq. The problem.—40. seq. Argument against vitalistic theories.—43. The directive power not resident in the individual.—46. Hypothetical behavior. Joy the clue to purpose. Organisation.—50. Pessimism.—56. Reconciliations in philosophy

31. The previous chapter led up to the provisional conclusion that the Outer Consciousness supposes a certain kind of biological entity for which we have coined a name. It has evidently a high and complex personality and we have consequently termed it "The Person of the Outer Consciousness". By "personality", I mean a totality of an organized life. And there cannot be life without consciousness, express or latent.

terrestrial 32. The concept of the Person of the Outer Consciousness, needs to be differentiated from several which have superficial similarities. It is not a concept of any universal Idealism, subjective, objective, nor monist, Greek, German nor English: not the Stoic Nature; not the First Cause, the Absolute, nor the Universal Father; not a pluralistic universe; not a Neo-Platonic personification of The One, nor of Logos, Wisdom, or what-not; not Schopenhauer's Will; nor Von Hartmann's Unconscious; no immanent Brahma; no Ormuzd, Tao, Demiurge, Weltgeist, Oversoul or entelechy; no Cosmic Consciousness; nor Mill's Limited God; nor Spencer's Unknowable Power; nor Arnold's Power Not Ourselves that Makes for

Righteousness; it is not transcendental, mystical, spiritualistic, intellectualistic, nor a creation of imagery or poetic license. Immanent probably it is, but perhaps finite, to us; and, like the starry system, a concrete subject of simple inductive scientific research. In its terrestrial form at least it is a biological entity. It is to be investigated *factually*. Its cosmic form will receive attention in a later chapter.

33. However, as dealing with a coalescing consciousness, the theory is related to those of all the numerous forms of indwelling Deity. Yet while related, none of them is arrived at by the same method, nor is exactly the same in result; and they go further afield. Some are related because the concepts of them, although not always so acknowledged, are really more or less founded on the same fundamental element,—*Instinct in the broad sense.* Forms of Instinct are often disguised as intuition, faith, commonsense, inspiration, and even Reason. One form of great importance is the complex variety called "the religious instinct."

34. William James expresses several thoughts somewhat similar to our theory, more especially in his high estimate of Fechner, who maintained, by a loose process of analogies, that the universe is everywhere conscious and organized in higher and higher circles of life, of which the nearest to us is our globe itself, which he maintains is a living creature, of which we and all things upon it are organs. James points out the interesting character of his views and considers them worth deep study. Fechner's notion of the planets as souls and bodies, and of our globe as the inclusive Oversoul of men, has a certain likeness to

the Person of the Outer Consciousness; but it differs somewhat as the creations of Jules Verne differ from the suggestions of the physical laboratory.

35. "Long ago the earth was called an animal, but a planet is a higher class of being than either men or animal; not only quantitatively greater, like a vaster and more awkward whale or elephant, but a being whose enormous size requires an altogether different plan of life. Our animal organization comes from our inferiority. Our need of moving to and fro, of stretching our limbs and bending our bodies, shows only our defect. What are our legs but crutches, by means of which, with restless efforts, we go hunting after the things we have not inside ourselves? But the earth is no such cripple. Why should she, who has within herself the things we so painfully pursue, have limbs analogous to ours? Shall she mimic a small part of herself? What need has she of arms, with nothing to reach for? of a neck, with no head to carry? of eyes or nose, when she finds her way through space, without either, and has the millions of eyes of all her animals to guide her movements on her surface, and all their noses to smell the flowers that grow? For, as we are ourselves a part of the earth, so our organs are her organs. She is, as it were, eye and ear over her whole extent—all that we see and hear in separation she sees and hears at once. She brings forth living beings of countless kinds upon her surface, and their multitudinous conscious relations with each other she takes up into her higher and more general conscious life. . . . Can there be consciousness, we ask, where there is no brain? . . . Must every higher communication between things be a literal brain-fibre and

go by that name? Cannot the earth-mind know otherwise the contents of our minds together?"

The above is scarcely a model of logical form. But, as James observes, "Fechner had vision." MacCallum also admires him.

36. To come down to an attempt at connected reasoning: The basic question regarding the Outer Consciousness: How can we describe a purposing power which seems to consciously understand joys and pains; —and especially those of the many as well as of the one,—summons up, first, the proposition that (a) it must itself be conscious, and (b) sufficiently clearly conscious to comprehend the import of the pleasure-pain results it seeks, and (c) have a consciousness which is common to the many, and (d) overlap, include, or coalesce with, the consciousness of each individual whose joy is sought or whose pain is avoided.

37. Viewing the universal relationship of terrestrial consciousness, can anyone who tastes a fragrant and delicious honey, or looks into the interior of a beautiful iris flower conclude otherwise than that all bees have that same taste and that same rapturous delight in that exquisite flower, and that he is himself in lineal link with the immemorial joy of the bee; or, if he reflects that the emotions are closely associated with the viscera, can from them put himself into something of the feelings of those lowly orders in whom the visceral ganglia constituted the sole centres of consciousness, and emotions the sole forms of organized feeling; and that he has even feelings in common with the white blood corpuscle in its movements through the circulation? And if all thus move by one law and one movement—that of communal

aesthetic reflex, if I may invent the term—are we not reasonable in attributing the common denomination of that communal reflex to one conscious purposive spirit guiding all the protoplasmic race?

The first proposition, then, is that all terrestrial life is really one being.

38. There is another proposition which is more remote, but which should be added afterwards as a separate hypothesis. It is: that *all Evolution, inorganic included,* is an action conducted on the same principle as every living organic act, namely *a movement of matter towards a result a concomitant of which is a joy, or away from a result a concomitant of which is pain.*

The second proposition, (from which the first is somewhat independent in logic) implies that the same purposes operates not only terrestrially but throughout the entire known universe. This second proposition is perhaps of less strength of proof than the first. But if the first were well established, its strength would be increased. This cosmic form of the Outer Consciousness will be the subject of another chapter.

39. The terrestrial enquiry seeks to adequately account for *the action and development* of all the complex factors as they actually exist in their highest developments among men, and at the same time in their whole range and action throughout the history and realm of all life?

40. Various systems of Vitalism attempt to adequately account for them by processes of *gradual integration* of simple elements of consciousness, from elementary forms to higher and higher? But can the highest of these complex factors be so accounted for?

Or is a highly conscious purposer necessary from the beginning? There are several objections to the Vitalistic kind of view, whether its first elements be propounded under such terms as "mindstuff," (Clifford) "unconscious will," (Schopenhauer) "entelechy," (Aristotle) "creative energy," (Bergson) or other of the many forms in which it has been advanced. The usual objections are forms of *Ex nihilo nihil fit.* But this is no reply to simple integration.

41. The reasonings that appeal to me against simple *gradual integration* theories are as follows:

Gradual integration in the course of the ages *would* account for a mere matter of a *complicated* result in the arrangement of matter-and-mind-elements. Because that would be a mere accumulation, attributable to chance.

It could even account for a result in ingenious-looking, *orderly* mechanisms. Because that is maintainable to be an orderliness immanent in the course of blind Nature itself. (Driesch rests on this kind of Order. So does the old Argument from Order, as distinct from the Argument from Design).

It could even account for such mechanisms being self-perpetuating and *self-reproducing.* They would be very great curios: but they might be the results of a kind of chance.

It could even account for the occurrence of perceptual and *cognitive* phenomena of consciousness occurring concomitatively with such mechanisms and of a complexity equal to theirs. Because that, too, might be (or be maintainable to be) forms of occurrence of *indifferent* types of consciousness, immanent in the order of blind Nature. All Gestalt concepts — shapes, patterns, 45 yield at most a morphology and thus have but a secondary, derivative value.

42. ~~But it~~ They *would not account for* the elaborately persistent tendency, throughout the long course of the process, to head toward and attain, results of *joy and anti-pain,* that magnetic-needle persistency to turn at every motion towards the North of joy. It is this class of facts which alone have *value* to us and alone constitute true evidence of purpose. Lotze and Alexander Bain express best this aspect of joy and pain as value-facts. (See sec. 158). The greater the elaboration the greater the number of chances against these results, and consequently the stronger the evidence of design in their successes, and the abler and clearer the designer. Eddington in *The Nature of the Physical World* (Chapter IV.) shows how vast the number of chances against such results in the course of blind nature. Our alternative is *design,* that is to say directive power, not the old anthropomorphic Argument from Design, but Evolutionary Design.

43. Here pardon a repetition. That persistent tendency to follow joy is independent of all individuals and cares for the many. The life of the single cell makes but small appeal to it. Its directive power prefers the mass to the individual. It can be said to prefer the twenty-six trillion cell man twenty-six trillion times as highly as one of his cells, if we judge by the relative numbers of born, who survive among single cells; and ultimately it calls the man to sacrifice himself for his nation or mankind. Can any mere integration of individual forces account for this first to last direction from beyond the individual and in favor of the mass?

44. An extension of the Vitalistic argument from the blind, lower element as the determining factor in

forming the higher, is the sociological hypothesis that *the human individual* is the prime factor in shaping human attainment. Ought not the above reasoning, however, to lead to the conclusion that he is not such a factor? The subject will be treated in Chapter X. Arguments pro and con regarding the human individual are discussed, up to a certain point, in Seth's "Principles of Ethics," but not the adverse reasons given above, nor certain others which resemble them in part.

45. Being therefore forced to dismiss all forms of the view that the evolution of human consciousness, with its affective character, is arrived at by simple gradual integration; and consequently having accepted the alternative theory of a conscious purposer adequate to the ends obtained, the next query is: What is the conduct of that purposer?

46. We may now propose for this purpose, still a further name,—the *Person of Evolution*,

Let us sketch out its history since the appearance of life, as we know it, on this globe. Wherever, in the course of its development into the line of living forms, we recognize the presence of consciousness, its every action presents the characteristics of a movement towards some objective (such as food) which *follows the joy-and-pain law.* This parallelism of objective movement with subjective feeling constitutes the universal type of living action and is the universal type of willing. All living action is willing, and all is by nature purposive. All other apparent purposes, however complicated and by whatever terms called, are in the final resort but forms of this typical act. Results show that the point of view of the Person of Evolu-

tion and not that of the individual, is that alone from which our *higher* purposes can be understood. For the living acts and purposes which the latter imply are acts of our larger life: and in them the impulses of many individuals outside of us, and of many individuals within us, are correlated. It is a special work of the Person of Evolution to correlate them and thus to arouse in us "our best instincts"—those from the viewpoint of its wider sentiency.

47. In the lowest forms of protoplasm, the Evolutionary Person, brilliant and purposive, strove against difficulties of material. Its aim was to work out such a mechanism as would permit in the end the attainment of perfect joy. Bare structure, bare permanence, bare order, bare Intellect, bare perception, had no value to it apart from affective feeling. According to our theory, it found in the ocean the components of that highly complex, unstable material,—protein,—which responded flexibly to its power of shaping the motions of matter,—a power the internal nature of which transcends our cognition. In that material, while it was still unorganized, the Person of Evolution was able to find and shape forms accompanied by a diffused, imperfect pleasure. Its method was trial and error. It tried all the various protoplasmic combinations as they occurred, and elected to continuance those that proved the best instruments of joy. Progressively it ultimately attained structures fit for a certain permanence of joy. These were the *organisms,* those electromagnetic machines automatically repairing destructions and giving easy courses to the entrant energy. Later, and doubtless long (but still calculable) ages after the deposit of our oceans and their oozes, the

Person of Evolution achieved the amœboid forms, "active lumps of jelly," in which the elementary consciousness and typical act of willing are now recognized, and which, by division, it sustained in that degree of permanent organization which we call *reproduction,* thus perpetuating and immensely increasing the desired forms. It achieved all these results slowly, not because blindly, but restricted by time and the intractability of matter. The nature of that intractability doubtless also transcends our cognition. So, in process of time, the Person indefatiguably achieved all the evolution of animate consciousness—as well as all the vast variety and procession of forms of matter with which its phenomena are associated. The history of its progress is written in palaeontology and comparative biology. From the throwing out of the simplest and faintest forms of low consciousness and the gradual shaping of them through successive adaptations of nervous systems and brains up to the presently developed apparatus of man, they are all products of its one persistent series of purposed acts, modelled on the same simple principle as the typical act of willing, and correlated together by the living viewpoint of the Outer Consciousness.

In the scale of living beings known to us biologically, each includes in its mental makeup the mental makeups of all its ancestors. Those ancestors still actually live within us, according to the principle of "biological immortality" whereby each of them has simply divided himself and passed on his divisions (except the sarcoplasm) alive to his descendants, with all the hidden memories and influences of the ancestral history. In that respect each of us is many hundreds

of millions of years old. We never escape the influences of the primeval, the far distant, the universal, and of relation to everything.

48. To the Person of Evolution the individual is an organ, a member of its community body, a kind of cell of its multicellular whole. It sees all and feels for and in each, but with wider vision. To it there is, in a sense, no such thing as a subordinate individual: all are one creature: the whole process of subdivision has never obliterated that unity nor dissolved the connection between each part. The disconnection of individuals is an illusion. *There is no such thing as a fully disconnected individual.* The visioned purpose of the Person of Evolution has been from the beginning a clear idea of perfect and continuing universal joy. As the Outer Will, it guides the amœba in its attraction to food, and in its reproduction by self division, the ant and the bee in all their coöperative community behaviour, it beckons the eel from its mysterious birthplace in the darkest deep of the Sargasso Sea, leads it in infancy across to the rivers of Europe, and in after years back again, with the strange sacrifice of the males; it directs the bear, the deer and the wolf in the wisdom of the wilds and the love of their young: it calls the buffalo bull to die for the herd, teaches the beaver how to fell trees and build dams and family dwellings, constructs their bodies as wonderfully as their minds, their communities as wonderfully as their bodies, and, effecting these ends still more marvellously in men, urges them also to the complex endeavors of civilization and culture, to the pelfless call of the patriot, to the scientists' passion of truth, and to the apparent self-destruction of the martyr. None of

these urges can be understood from the point of view of the individual: but they can be understood from that of one community being.

It was the Person of Evolution who invented the human eye, after devising and relegating to one side the various rudimentary and compound eyes and those of crabs, fishes, and birds. It was it also which purposed the human cerebrum, after building up the nervous systems of the invertebrates, the spinal ganglia, the medulla oblongata, the cerebellum, and the smaller cerebra of the dogs and Simians. It originated all communities, the matings and passion of all pairs, the interworking of all bodily cells, the complicated operations and instincts of insects, the customs of the herd, the pack and the family, the loyalties of the tribe, the nation, the empire and humanity. Reason itself proceeds from it, with all that Reason brings to us, and all it will bring. Reason is but the consciousness of wholes, and their implications,—the Outer Consciousness—human reason is that consciousness imperfectly present in us.

49. Here we must again at the risk of too much repetition, emphasize the significance of the affective. The outstanding mark of the power of the Person of Evolution is not the ingenuity of its forms, but the successes which it has achieved through them in advancing the diffusion and permanence of joy. From time to time it abandons and obliterates the forms.

50. Pessimistic criticism has constantly pointed to its failures and imperfections. These have been many and the Pessimists do well to cause them to be discussed. But there are two great answers to pessimism. One is that the essence of the act of will is at least a

power in some degree to escape evil and pursue joy: it is not a complete helplessness. The other is that, through the continuing form of this power progress is actually attained.

Pessimists cite new pains that arise at every stage of advancement towards apparent happiness. But they overlook, among other things, the achievements of the Person of Evolution in anæsthetic devices. Among these devices to combat pain are the low sensibility, and even insensibility, to pain of the lower animal forms; their absence of imagination and prevision; their great automatism; animal fatalism; coma preceding death; collapse; the quickness of their deaths.

In both men and animals, death in itself is the great anæsthetic. And to the Outer Consciousness death is but an incident, not an end. Sleep, in its various forms, is, next to death, the most universal anæsthetic.

In intellectual man, however, the supreme anæsthetics can be hope and faith. The joys of these, such as that of the mother in childbirth, coalescing in the common clearinghouse of the feelings, are able to conquer and neutralize the severest pains. Even philosophy can do much; but not so much as the "consolations of religion," where the highest hopes and faiths are the instinctive promises of the Person of Evolution.

51. For pains ordinarily consist of two parts:—the original, and its representation, the latter of which is often the only suffering. Habit, reason, courage, fatalism, suggestion and autosuggestion, are anæsthetics. We can neutralize most of our ills if we but

organize the anæsthetics. Nor must we omit the arts and materia of medicine and surgery.

52. In fine, judging by the advances continually made, we may legitimately hope to entirely overcome pain in the due course of Progress, which is itself the law of Evolution. In the "economy of Nature," the Person has often followed courses which to us sometimes seem open to imputations of ignorance, blindness, or subhuman helplessness, and are often made grounds of blame. Why did it not proceed directly and immediately to its ultimate aim? Why the lower and imperfect forms of living things? Why the vast losses and extinctions of the less fit? Why the horrible carnages? Why, if it were so conscious from the beginning, of the ends in view, did it not construct men and supermen at once, without passing through the experiments and the failures of so many ages? Is not the reason *because it could not,* because, like us, it was striving, exploring, pushing its way from step to step through the maze of elusive and intractable matter, both protoplasmic and azoic? finding its way and assuring its footing from physical combination to combination. This, at least terrestrially, was simply its nature, as we see it.× Also did it not have at least this partial justification, that it left orders, genera, species and varieties suited to countless habitats to which beings like man could not be adapted, and which provide it with innumerable organs of consciousness in what to us are inaccessible places. The lives of these in their several regions are all, like the gambolling water snakes in "The Ancient Mariner," those of creatures of joy. In themselves of small account as

× In the still larger 53view of the Ultimate Person of Evolution, He, from his heights of unlimited Attention, can see the whole future and the coming Better World.

individuals, their function is immense through the Person of Life.

53. As the mental outlook of the developed man is the chief key we have to the interpretation of its outlook let us try to imagine what would happen if the man's consciousness were widened to its sphere. In such a situation the man would experience a vast inclusive consciousness, highly organized and extended, while at the same time concentrated in a most brilliant centre, mobile and sleepless. There is a problem, however, which shows that some imperfection exists in the simultaneity either of its observations or of its ability to follow up. It is the problem why different minds differ so radically as they do both in instincts and in their application? Why should it inspire the prophets of Israel to denounce the offering of children to Moloch, and *at the same time* the priests and devotees of Moloch to thrust the infants into the flames on the knees of the frightful idol of Tyre and Carthage,—the horror of the ancient world? Its process of behavior is evidently therefore not one of *simultaneity* at all points. Sometimes it even has backwaters of apparent degeneracy to be explained. Its flood of Progress is uneven. Has it not many centres of Attention? and how is it that these are so slowly coördinated? At least however the devotees of Moloch were misled. They thought they were following holy voices. Perhaps the general explanation may be that it is the connections from the lesser beings to the greater that are imperfect in such cases. Those who obey the urge to listen to the holy voices will ultimately hear them. Imperfection is an inevitable stage in progress.

54. Under whatever conditions, nevertheless, of time and imperfection its consciousness appears to operate through a mighty organized system of mechanism, of which all living beings are organs. The past of all living beings would be present to it in memory more or less coördinated. The future would not be as clear to it as the past; but its progressing grasp of all the workings of the universe would bring before it an imaginative insight of the future beyond human powers to picture. In each living being, such as man, it would see laid bare all the inner life of each conscious unit, cell, ganglion, nerve, and other sentient contributor to the common life, and would appreciate and judge the feelings, relations and rights of each, and arrange their harmony.

55. We have not the means of specifically understanding its field of knowledge and purpose in the universe beyond that of protoplasmic beings. To attempt to do so is but speculation, though natural and having value. Not only would it possess the intimate knowledge and vision described, but the urge and power to act according to them. From this knowledge, do not some glimpses reach the individual man in such forms as flashes of genius and promptings of the Inner Light?* And at least from its will, come such messages to the man as impulses to public service and patriotic and religious martyrdom, as well as all his instinctive promptings.

56. To the Outer Consciousness, some of the problems of philosophy would appear in new lights. No longer would Freewill and Necessity seem to conflict, as they do from man's standpoint, for man's necessity would be his own deeper will. No longer would the

* The "valued" torches 55 the instinctive springs - of joy and sorrow.

principle of "instinct" require to be profoundly differentiated from "reason," nor real "faith" from either. "Practical reason," the "moral imperative," the "ought" and "moral intuition" would be explicable as "instincts" from the point of view of the ~~hyper-psych, *i.e.* of the~~ many not the individual. No longer would there exist any conflict between "moral sense" theories and those of altruistic joy-and-pain. Selfish and antisocial pleasures would be outweighed by the overwhelming co-ordinated joy of the larger organism. The poor attempts of the old Utilitarians to explain the action of the altruistic instinct by "attendant satisfactions," "sanctions," "the pleasures of sympathy," "admiration," and so forth, would have no raison d'être. That great philosopher and tremendous saint, Jesus, who said "he that saveth his life shall lose it," was also the profoundest psychologist.

57. Samuel Butler (1835-1902), arrived at conclusions which on some points are the same as those here expressed. Butler studied Darwin's works (during the latter's lifetime), together with those of Lamarck, Hartmann, Hering, Huxley, Ribot and Spencer, and evolved the ingenious theory of instinct which he set forth in his books *Life and Habit* and its successors *Evolution Old and New, Unconscious Memory,* and *Luck or Cunning?* The broad lines of his theory are stated by himself as follows:

(Resumé of *Life and Habit,* written by Butler in 1883.)

"The theory contained in this work turns upon four main propositions: Firstly, that there is a bona fide oneness of personality existing between parents and offspring up to the time that the offspring leaves the parent's body.

Secondly, that in virtue of this oneness of personality, the offspring will remember what has happened to the parent so long as the two were united in one person, subject of course to the limitations common to all memory. Thirdly, that the memory so obtained will, like all other memory, be dormant until the return of the associated ideas. Fourthly, that the structures and instincts which are due to the possession of this memory, will, like every other power of manufacture or habit due to memory, come, in the course of time, to be developed and acted upon without self-consciousness. The phenomena of heredity with its exceptions (such as reversion to a remote ancestor, and sports); the principle underlying longevity; the infecundity of hybrids; the phenomena of old age; the resumption of feral characteristics, and the fact that the reproduction system is generally the last thing to be developed, are then connected and shown to be explicable, and indeed to follow as of course under the joint operation of the four points contended for."

P. 340. "the variations whose accumulation results in species will be recognized as due to the wants and endeavors of the living forms in which they appear, instead of being ascribed to chance, or in other words, to unknown causes, as by Mr. Charles Darwin's system. The battle is one of greater importance than appears at first sight. It is a battle between teleology and non-teleology, between *the purposiveness* and the *non-purposiveness* of the organs in animal and vegetable bodies."

58. Similarities between Butler's thoughts and the present theory are (a) oneness of personality with ancestors, (b) hereditary memory as a basis of instinct, (c) coloniality of the individual, (d) participation by the individual in a larger colonial entity, (e) reference to a teleology. (These points do not imply contradictions to recent biological discoveries).

59. But, rightly or wrongly, Butler does not appear to see nor give any explanation of the connec-

tion between all personalities; he does not find any necessity for a law of coalescence of consciousness. His teleology is not one of feeling, but of order. His theory of development by fits of lower consciousness does not appear convincing. This view of instinct and evolution he arrived at by noting the biological continuity of the individual and his ancestors through the germplasm; and he thence identified habit with inherited experience preserved by what he calls "unconscious memory," (instinct, reflex action, organic evolution). Development is to him the effect of the individual constantly striving towards an end, the egg to become a chicken, and so forth.

60. On the other hand, the present theory was arrived at by noting that the plan which describes the most primitive act of willing is also that of the action of instinct, function, reflexes, habits, evolution, ethical conduct, and even intelligent conscious willing. And the element of the purposer is looked for elsewhere than in the limited sphere of individual striving. Both theories appeal to teleology. But which is the more consonant with the nature of purposing—a wholly, or largely, unconscious congeries of rudimentary purposers, or a single great clearly conscious one?

61. In one passage quoted in our Chapter I Butler nearly approaches our notion of the Outer Person, but he leaves it unpursued to its conclusion. We have quoted it only in part in Chapter I. The rest of the passage is as follows: "into some other part of which being, at the time of our great change, we must infallibly re-enter, starting clear anew, with bygones bygones and no more ache forever from either age or antecedents. Truly sufficient for the life is the evil

thereof. Any speculations of ours concerning the nature of such a being, must be futile and little valuable as those of a blood corpuscle might be expected to be concerning the nature of man."

62. It is this "vaster being" that Butler might have attempted to study. The similarities between his views and mine are purely accidental.

CHAPTER IV.

The Directive Power

63.—Philosophy of Evolution.—64. Is that of "living substance."—69. The Directive Power.—71. Its full scope.—76. The knowledge-in-Instinct.—79. Independence of the Directive Power.—79a. Its Ideal.

63. The most marvellous happening of the present generation is the unrolling of new phases of philosophy based on the bringing together of the vast mass of ascertained facts which had enabled Darwin and his associates to put the idea of the evolution of terrestrial life on a solid foundation. Through the enlargement of that basis of fact, since Darwin's day, the scenes and acts of the Æonian drama have been brought into increasing clearness. Principles have undergone clearing up: 'natural selection' has been found not to cover the higher aspects of the outcome; similar objection has been taken to Spencer's 'Survival of the Fittest'; the neglected theory of Lamarck that development takes place primarily through use, has been revived; Hering and Butler have been reheard regarding inherited effects of wish and endeavour; Lloyd-Morgan has developed Lewes' emergent evolution'; James Ward has struck a weak point in his plea for 'subjective selection' as an element; environment, heredity, will, entelechy, and behaviour have each presented its extreme case. 'Affective Selection' should be added.

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Through the whole has run the disputation inaptly called 'Mechanism vs. Vitalism,' more correctly perhaps 'Physicism vs. Conscious Guidance.' And this disputation seems to be terminating in some measure of agreement that the two principles are sides of a shield. What is the nature of the shield itself which holds the two sides together?

64. If, as I think, the course of all life is (and it is an old generalization) always directed with overwhelming and invariable persistency towards the attainment of joy and escape of pain for someone (either an individual or a larger whole), then in this simple plan of movement towards affective ends, resides the key to all questions of living. Study it deeply enough and it covers all the problems. A first principle of the new evolutionary philosophy is therefore that it is the philosophy of 'living substance.' 'Living substance' in the largest sense, is in fact the only window man has of insight into the nature of the universe. Under that larger conception of 'living substance' falls the entire system of animate nature: it includes the whole of the animal and plant kingdoms; all the protoplasmic structures from and even below, the amœbic forms up to the human body and forebrain; all conscious manifestations from, and even below, the most primitive tropes towards sun or soil, up to man's most exalted martyrdoms; all physiological contrivances; all reflexes, habits, functions, instincts, thinkings, feelings, willings, purposes; all struggles for existence; all facts of heredity and sociology; all affinities of man's mind with the outer universe; all religious proclivities and experiences; all imaginations, abnormalities and variations; all the historical and

comparative sciences; and every other manner or kind of science and philosophy. All things that hold or imply any rudiment of consciousness are phases of "living substance" and its actions.

65. Its scope, in this broad sense, also points on to the atomic constitution of the varied protein molecule, and to its chemical and electromagnetic origin by the action of sunlight energy combining carbon dioxide in water with nitrogen from the air, into the ionized amino-acid molecule chains which form the multifarious varieties of protein. (It is still for biochemists to describe more specifically the atmospheric and other conditions of the origin of protein.)

66. The principal characteristic of 'living substance' is, in this view, *the power to escape pain and attain joy* however imperfectly. On this power rests all purpose. It even affords clues to purposes far beyond the ordinary world of human willing, wherever beauty or joy are found. And thus the significance of affective facts indicates a means of consideration of the whole universe as living substance. This seems to me to be another of the beckoning problems of the new philosophy.

67. The contribution of this new thinking, inductively based on the new foundation of facts, ~~may perhaps~~ should in the end be synthesized with the contributions to reason from other sources, such as Idealism; Instinct as such; the Traditional Wisdom of religious thought, in which Instinct plays a part; and legitimate Mysticism, where instinct also plays a part, ~~-~~ but not Obscurantism

Some such synthesized systems already exist, for example, those of Dean Inge's mysticism, of J. Arthur Thomson's theism and of Lloyd-Morgan's emergent-

ism. But it is necessary that at least a section of scholars pursue the enquiry on a purely inductive basis without synthetic props. In all of these the foundations of knowledge are the same. Knowledge is instinctive in regard to inherited form and basally is intuitional.

68. Such a treatment results, as we consider, in evidence for an Outer Consciousness external to and wider than that of the individual; for it is hopeless to explain all the facts on the basis of individuals. To do so is to land in automatism and extend it to mankind. But though that Power possesses consciousness and personality, directivity is its first outstanding characteristic.

69. One of the greatest problems of the new evolutionary philosophy is *the directive power.* Besides the elements of action of any individual cell, *there is an element coördinating the conduct and shaping the common actions,* of cells, members, ganglia, bodily communities, animal colonies and herds, the family and social proclivities of mankind, and much more.

70. Maeterlinck in his *Life of the White Ant*—the chapter on "The Occult Power"—notes as most marvellous *"the occult provident government* and administration of the community," which in independent of the individual members. "So in the same way is our body an association, an agglomeration, a colony." He gives up further conclusions in a fit of agnosticism. Sir Arthur Keith has more courage. In his comparison of the evolution of man with the evolution of new types of motor cars in a factory, he notes that in *embryological processes* "there is neither manager, overseer, nor foreman, to direct and coördinate the

vast artisan armies . . . and yet there must be some method of coördination. . . . Each part is a living society, the embryo is a huge congeries of interdependent societies. *How are their respective needs regulated?* He hopes in time for a satisfactory answer by continued research. More recently Professor A. E. Douglas, of Harvard, writes similarly in the *Atlantic Monthly* regarding *human social groups* which he "likes to think of" as "superpersons." His theory is one of the many incomplete forms extending the 'Directive' reasoning to the field of sociology.

Similarly, F. Yeats-Brown, in reviewing Bugnion's *The Origin of Instinct* in the *Spectator's* Literary Supplement of March 24, 1928, says of the blind White Ant Soldiers—"What unseen, unknown, perhaps unknowable power directs their destinies? Are they separate creatures, or parts of a single entity, as the body of man is one, while his various functions have a certain independent volition? How is the courage of the soldiers transmitted from generation to generation? We do not yet know, and when we have found out we shall be nearer to an important secret of life."

71. All the scattered concepts are evidently steps to one more inclusive. It is obvious that the white ant community, the human embryological process and the human social process, taken together, cover very wide ground; for the first stands for not merely the white ants but all insect community instincts, the second for all embryological and physiological functions, the third for all social and herd instincts. It is impossible to escape extending the principle to all guidance in any kind of instinct, and in any kind of function; and to

all reflex actions, and thence to the tropes, and in fact to the whole course of evolution as a beneficial process, and to all human willing and advance, including moral and religious instinct and the guidance of intelligence itself. The outcome would appear to be a beneficent and intelligent Power operating far beyond, and independently of, any individual will.

What other scope has it? It is found in the earliest cell colonies. In single cells it does not perhaps at first sight seem to present any tendency to communal direction. Yet it at least follows what we have taken to be the fundamental law of life, movement towards a source of gratification and away from pain; which is also the fundamental formula of community action.

72. Here other pertinent aspects of the problem are: Does the same directive law govern the parts of the individual cell? And ultimately its proteid molecules? And their atoms? And the electrons of these? And is it present in the primitive organic synthesis by sunlight? These are questions for the future, but they have pertinence because they are in the direct line of the first appearance of living substance terrestrially.

73. Are there in the line still other processes partaking of an integrating nature? Human intelligent control of life destinies is one of them. It is now a truism that not even at his highest can Man escape his place as part of Nature; nor, may we not add, his qualities as a part of living substance. Anatomically, he is a lump of jelly—but how wonderful is jelly, when so completely organized! His individual will is a rill of the River of Evolution, an organ of the will of the Person of Evolution, his directive power a portion of the larger Directive Power. Analysis there-

fore of this typical act of will throws light on the larger. Man's typical act of will is a *concomitance* of (1) a series of conscious phenomena (desire or aversion, and joy or pain) with (2) a series of material phenomena (leading to conditions of joy or pain). The concomitance between the conscious and the material, in action, implies a bond between the two; and in that mysterious bond lies the source of directivity. It runs through all acts of will. It is part of a great world, which not being itself phenomenal is not directly knowable to us. It is the shield between the sides. Schopenhauer thought the bond must be the Thing-in-itself. It is out of this mysterious, omnipresent source that the Directive Power emanates. All directivities, individual, communal, and evolutionary, are parts of its one stream. Behind the phenomenal universe is the directive universe.

74. But human intelligent will is not the only such process. In the category of the directive nature are also the *habits.* Even if claimed as mere mechanical devices set by the will at some time, as a watch is set to go on without the intervention of further direction, the fact remains that they are originated and used by the Directive Power, for they serve its end.

Next the *instincts,* products of heredity, and so similar to intelligent will that they imply a conscious origin and background though not proceeding from the conscious will of any individual—they too are referable to the general Directive Power.

So are the bodily *functions* conducted below the threshold of individual consciousness. The extensive housekeeping silently carried on by the 'Abdominal Brain' is a striking example.

75. The *coördinative control* between the eye, the hand and the brain, which has done much for man, is one of the same class of operations. Eliot Smith has described the human optical part of it as "a new visual instrument . . . intimately related to the evolution of intelligence." This leads to a consideration of the *mechanisms of Attention,* which are essential to organized knowledge. C. A. Strong has an interesting article in *Mind* for April, 1928, "On the Relation of Appearance to Real Things," in which he describes the simple act of perception as having three aspects—intuition, intent, and animal faith. "Intent" is the reference to and selection of an object, as when a chick adjusts its optic and head muscles to perceive it. By "animal faith" we apprehend that it exists and believe in its reality. Strong draws his element of "animal faith" from Santayana.

76. But what should strike one from the point of view of Evolution is that the element of *"intent"* here is a construct having an ancient hereditary origin and slowly built up from lowly beginnings to what in man is perhaps his most marvellous endowment. Attention is the chief tool of human directivity and consequently a very notable ~~achievement~~ feature of the Directive Power.* Our subject therefore takes us further back than Strong—to the knowledge that is found in every instinct, and whence we are led back through reflexes and tropes to the dim electro-magnetic beginnings many ages ago. All these are directed to more and more perfect adjustment of the organism to the environment. The term I prefer for their wisdom—a wisdom of the Outer Consciousness—is *"the knowledge that is in Instinct."* Of this hereditary, accumu-

* Its Attention is vastly wider than ours, so it can see into the whole future, as we cannot, being limited to a small focussing process.

lated and superpersonal knowledge the ultimate basis is the same as that noted by Santayana. In that sense, all knowledge is ultimately intuitive. *Reflexes* and *tropes,* being but earlier forms of Instinct, lead into the worlds of chemistry and cosmic energy. They raise the query whether directivity has not—with life itself—its origin in the outer universe. Why indeed should the outer universe, apparently the source of terrestrial life, be itself a magnificent body without the other elements of life?—the mechanical mother of a living child! Various channels of directivity may now be taken up. Except the cerebral cortex, none are more notable than the *internal secretions.* The definition of Hogben may be taken. He uses the term in a sense restricted "to the production of substances which are liberated into the bloodstream by the specific activity of a particular structure (endocrine organ) and when set free in the circulation are capable of evoking responses in tissues remotely situated from the point of origin." The effects on conduct, growth and coördination, of adrenaline, thyroidine, pituitin, and other endocrine products, require but mention. They are remarkable instruments of direction.

77. With regard to *social institutions,* an old controversy reappears over the Organic Analogy theory, that society groups are not mere constructs of individuals, but have a separate existence akin to that of bodily colonies of cells. One of the principal objections has always been that there is no physical connection between the component individuals. But if the Directive Power does not proceed from the individual—as it assuredly does not—the objection disappears.

And, in fact, few cells within a body have any direct physical connection with most of the others.

78. The directive channels above enumerated are only a part of a long list. Since any cell in a living body can have direct contact connection with only a few others, the influences upon it and the demands of communal directivity must come through other cells, tissues, fluids, connective bands, etc. Nerves, muscles, the bloodstream, the lymphatic system, the blood corpuscles, both red and white, are only some of the means used by the Directive Power. From the vantage-points of heredity itself, uncounted ages distant from the individuals of the present, the possessor of this Power has protected, and provided for, the mighty host of its care. Even conversation, education, social institutions, ~~the General Will~~, moral, religious, political and other organizations, all involve the varied directivity. Frequently in deprecating the slow advances of moral attainment we overlook the fact that we are in the middle of a process not yet completed, and that the setting up of moral ideals is itself a great step in directivity.

79. Its independence of any particular medium is instanced by the fact, noted on good authority, that the brains of even the inferior mammals have increased over tenfold in size since their reptilian origin in the Mesozoic Age. An implication of this is that even though Man were blotted out, some branch of the inferior mammals could ultimately fill his place, should a line of apes or other higher mammals not do so, as they would be called to do. It implies too that the widespread notion that the course of human evolution is limited by present human powers is erroneous. But

a still greater implication is that the rise and development of life to its fullest seems to be inevitable in the Cosmic~~os~~. It suggests an infinite progress for the spirit. For the ages yet to come we may trust confidently in the Directive Power.

~~80~~. One of its most important aspects is its position in logic; since, once accepted, it imports into the discussion of the trends of the universe an element of greatest meaning and optimism.

~~81~~. With regard to its character, I shall only repeat that its source of action is inferentially a Personality, with an ultimate aim which is mirrored dimly in the ideal curve of the aspirations of the children of life—the general happiness of that Tree of Personality, the mighty universe, the original Living Substance.

Here we enter that vaster subject—the Cosmic Evolution. We need new concepts, new sciences, a new philosophy.

Vide Chapter VI.

CHAPTER V.

The Element of Knowledge in Instinct

80.—Recapitulatory.—81. Intelligence of Instinct in beaver.—82. The Wisdom of the Body.—83. U. Lombroso on Endocrine action.—84. Versatility of The Directive Power.—85. The beginning of terrestrial consciousness.—92.—Kant's analysis of Pure Reason.—95. Instinct a less evolved Intelligence.—96. Both have knowledge value.

80. In the last Chapter, the element of directivity was emphasized. Maeterlinck's wonder at "The occult and provident government" of the complex white and communities, and Sir Arthur Keith's at that of the still more complex human embryological process, were instanced. Directivity, it was maintained, implies the pursuit of a conscious element—that of *affective feeling.* But another conscious element, *the perceptual,* was also implied in the means used, especially in the mechanisms of Attention. Of the latter of these two primitive *"I knows",* a great branch is what I preferred to call *"The knowledge-that-is-in-Instinct".*

81. What are the ultimate components of that knowledge, and also of the process whereby they have been concentrated and organized? Consider some examples:

"Some years ago," says a competent observer, "I and a friend were exploring the beaver swamp at the mouth of a woodland river. We had lifted our canoe over the entrance dam and spent some time paddling about the central lake formed by this, and pushing up side channels and into beaver 'streets' cut through the

matted marshweeds where the round-domed houses were. In one place at the upper edge of the swamp, we came to the mouth of a stream about six or eight feet wide. The beavers had attempted to dam this. Instead of using their regular method of building with cross-logs, sticks, and plastered mud, they had here done something entirely different: they had felled a large tree by cutting its roots all around about four or five feet from the trunk. In doing this they had so directed their labor that the tree had fallen lengthways into the stream, with its upstanding "plate" of roots forming a complete dam across it. I examined the ends of many of the roots to see if I could be mistaken, and whether the tree had fallen naturally. There were tooth marks on them all. The tree was much too large a one to have been dragged into position after it had been felled. Careful planning of the whole work must have been done beforehand."

82. Take next a knowledge of high perfection, intricacy, and total independence of human conscious will, described by W. B. Cannon, Professor of Physiology at Harvard, in The New England Journal of Medicine for September, 1928. It is not less striking than the embryological process,—to which it is related:

"If we think for a moment that we are composed of most complex and delicately poised material, that agencies are at work at all times to break them down, that only a momentary check in the flow of oxygen to cells in the brain results in profound disturbances of their action, that when the intricate processes of the living creature cease, disintegration almost immediately sets in,—when we carefully consider these familiar facts, the astounding marvel of the stability of the organism begins to dawn upon us . . . If the water supply is short, the salivary

glands fail to keep the throat moist and a disagreeable sensation, thirst, consequently arises,—so insistent, so imperious and compelling that men will fight to quench it. Soon after water is taken, the salivary glands start their service again. . . . Another illustration is seen in the control of blood sugar. The normal level is about 100 mg. per 100 cc. of blood. If it rises above 170 mg. per cent, sugar is lost through the kidneys: if it falls to about 45 mg. per cent, convulsions occur. The importance of keeping the variations of this sugar percentage within bounds is obvious. How is that managed? If the level rises, as it does when carbohydrate food is eaten in abundance, the vagus nerves are stimulated, according to present evidence, and the islands of Lagerhans secrete into the blood stream their product insulin, which causes the extra sugar to be stored or more rapidly utilized. Thus the height to which the level rises is limited. If on the other hand, the percentage falls, at a critical point when there are about 70 mg. per cent, the sympathetic nerves are stimulated, and these nerves, in coöperation with the adrenal glands, liberate sugar from the liver. If this does not suffiice to protect against the danger of a too low sugar content in the blood, convulsion which ensues as the sugar level drops is accompanied by a maximal stimulation of the liver cells to discharge glucose. In this way the organism automatically restricts the range over which the percentage of sugar in the blood may shift. . . One more analogous instance we find in the stability of the body temperature. Another is that wherein protein is laid by in the liver and released in starvation. . . Fat storage in adipose tissue is called forth too in times of need. . . The calcium of the blood is managed in a similar way. It is stored in the minute spicules and trabeculae of the long bones. It appears that the parathyroid gland system, and possibly the thyroid also, are involved in the control of the calcium percentage of the blood and that usually it is kept at about 10 mg. per cent, (half or double this amount would be dangerous). So with stores of salts and water in the

blood. Other matters, such as the oxygen supply and the development of acid substances are regulated by modifying the rate at which certain continuous processes are going on.

Note that these are not processes which we manage ourselves. They are automatic adjustments. . . Analogous are the material defences of the body against external dangers. . . The very process of repair of internal organs is remarkable. . . All these intricate and marvellous responses to disturbances by external agencies follow in a natural and ingrained order, without preliminary instruction or discipline, as an exhibit of the inborn "Wisdom of the body." *

83. Deep thought has been given to a principal aspect of the subject by Professor Ugo Lombroso in a review entitled "Coördinazione Chimica e coördinazione nervosa" in *Scientia,* I-X—1928.

"During two decades the conception that the nervous system is the regulator and harmonizer of all the vital operations remained undisputed. In our days, on the contrary, a series of phenomena belonging to the life called vegetative are subtracted from the nerve domintion, thus limiting the operation of the nervous system to the processes of the life of relation. Under this new conception many physiological phenomena,—for example, the determination of the pancreatic and intestinal secretions, the development of the mammary gland, etc.,—phenomena whose characteristic is to be unperceived by our consciousness and withdrawn from our will, are determined and directed, not by the nervous system, but by chemical stimulants. That is to say, that such and such a glandular apparatus enters into action following excitation by a definite chemical substance, acting directly on the glandular epithelium; this substance being produced by the activity of a distant tissue and carried to the gland by the circulation of the blood. This theory, known as 'Chemical coördination,' acting by means of *hormones* (Stimulants) is opposed to 'nervous coördination,' which

* Afterwards Dr Cannon 74 published his ideas in his notable book The Wisdom of the Body. Carrel's "Man the Unknown" contains similar matter

is exercised by means of reflexes. Such a conception does not seem to accord with our anatomical knowledge: in fact these organs themselves are richly provided with a complicated nervous system; which having no other office than to direct and coördinate the functions of organs to which it is joined, its presence is already an argument in favor of its directive action.

"Leaving aside all *a priori* objections to this doctrine; considering the experimental arguments on which it is based, and particularly what concerns the determinism of the external pancreatic secretion, concerning which the doctrine of chemical coördination has been formulated: the exact knowledge of the modes of production of the external pancreatic secretion is due to Pawlov and his school, since the employment of the technique of conducting to the skin of the abdomen the segment of the duodenum where the principal canal of the pancreas joins it (whereas formerly a tube leading to the exterior, was introduced into this canal). Thus it was established that the pancreatic secretion develops according to fixed laws, in relation to the quantity and quality of the food, which on its side so acts as to determine the secretion of hydrochloric acid to the passage of which into the duodenum the pancreatic secretion corresponds. The secretion was to great as to weigh against the theory of simple chemical stimulation by hormones."

Later they found that in the vagus nerve there are both secreting fibres and fibres inhibiting secretion, the latter prevailing—making the question very difficult. Then it was established that the introduction of hydrochloric acid in the duodenum determined a secretion of pancreatic juice, but this was considered due to a nervous reflex.

Ultimately Bayliss and Starling made researches to check up on these experiments, by cutting off the nerve connections: the result was a still greater flow of pancreatic juice. Moreover they obtained from the

duodenal mucus a substance (*secretine*) which being injected produced a profuse flow of pancreatic juice. This seemed to settle the question in favor of the chemical argument. Other experiments seemed to afford some points in favor of the nerve argument.

Another favoring the hormone idea concerns the mammary glands and secretion of milk. Among the experiments here were those with "Siamese twins," natural and artificial (in rats). The results were again indecisive.

84. Lombroso, while inclining personally to the nerve argument, regards the whole matter dispassionately as one in which Nature seems to mock us by its complexities and mysteries. Yet how can blind forces, either chemical or nervous, skilfully direct? And what does he mean by the mocking "Nature"? My view is that neither the nerves nor the hormones determine the control, but that it is one out of the world-full of cases where the directive power uses one or both indifferently in order to accomplish its purposes; and that they both illustrate a hidden knowledge.

[This view is strengthened by a summary of still later discussions on the perplexities of the problem, by Professor H. D. Bhattachariyya of India in *Scientia* for December 1, 1929, under the title "Germ-cell Constitution and Specific Ontogeny."]

85. We may now try to answer our original question: "What are the ultimate components of this knowledge, and also of the process whereby they have been concentrated and organized?" Its evolutionary history is so intertwined with that of directivity that to some it might appear unnecessary to separate them. Yet it must be remembered that the whole school of

Behaviorists—and many others—contend that no consciousness nor knowledge whatever is a necessary part of the process—and in so saying they even overlook that widest of life processes, Evolution. Their contention is of course that all can be explained satisfactorily by the chain of physical causation and is absolutely automatic. Jacques Loeb spent his entire arduous career in proving by the most ingenious experiments that the chain of physical causation is complete in all living processes. In doing so he accomplished a valuable work. For it is true that the completeness of the chain of physical phenomena is absolute; some day we shall wonder how we ever came to question it. The proofs seem unanswerable that no living substance in action ever failed to display a complete chain of physical phenomena, or ever escaped any of the laws of chemistry or physics. Loeb and his congeners have however inferred that in establishing the completeness of the physical chain they have succeeded in excluding the chain of directive phenomena, —quite a different proposition. Directivity, implying consciousness and the application of knowledge to action, is a universal element of living action, causing outcomes which are characteristic of (terrestial) life from its beginning. But to understand this calls for a large revision of our homocentric and individual views of will and consciousness. We must recognize as real the consciousness diffused through the functional cells and tissues of the human body, that which attends the behavior of ants and bees, that which appears in the rebuilding of the torn echinoderm, that which overlaps the bounds of races and untold ages in the march of Evolution. By the knowledge in Instinct, I do not

stop to say how far or in what way that knowledge and its reasonings are clearly present to the individual animal in whom it is manifested, nor in what exact regards it can be compared to the same operations in man, or in the thoughts of that rare anomaly the trained self-conscious psychologist. But it is evident that it has references to consciousness related to ordinary human thinking and is based on what we recognize for ourselves as knowledge. The fact that the beaver is born an adaptive engineer does not make of him a mere machine any more than that a human engineer born with an inherited genius for mechanics is a mere machine. William M. Wheeler, in his *"Social Life Among the Insects"* (p. 45) maintains that "We observe in wasps a high degree of modifiability of behavior and an extraordinary development of memory." Elsewhere (p. 57) he says ironically "I have just committed the unpardonable sin of humanizing the wasp."

86. The elements of the beaver's knowledge resemble those of the human engineer in that (a) they display acquaintance with the properties of streams, ponds, ice and trees, and skill in tree-felling, construction of dams, high and low, construction of storied dwellings with underwater porches, provision of food-stores, and communal coöperation; (b) ingenuity of application to varying circumstances.

The outstanding differences are only:

(*a*) the beaver's operations are comparatively simple, (although beyond the unaided thought of an uneducated man);

(*b*) they are limited to a small range of life;

(*c*) the capacity appears very early in life.

87. The examples of "the wisdom of the body" and the work of the endocrines, carry us into what at first sight seems a different world. We now ask more seriously whether consciousness can have any part in it. Our old stock ideas of psychology are even shocked by such a suggestion: chemicals and nerve reflexes are not what we have been taught to look to for evidences of psychic phenomena. Here we must adapt ourselves to a new psychology and use new methods of scrutiny. The first thing to admit is that "the wisdom of the body" has reference to consciousness facts, is aimed at them, and without them has no meaning. We must seek to find where and what this consciousness is,—which certainly is not the focussed consciousness of our older psychology—and to judge of it by itself and not by the latter. It is no more mysterious than the subconscious: but it has to be another concept and a very much wider one, and to include the subconscious; for the field of the latter is the hidden mind of the individual, but the whole facts lead far beyond the individual.

88. We have mentioned the beaver. When the thinking of the body is aiming to maintain and restore the health-equilibrium of a human structure it has got off beyond the scope of the beaver, just as the beaver takes us off beyond the scope of the human individual consciousness. It is dealing with, and appealing to, a form of consciousness approaching cosmic scope, as the instinct of the beaver refers to one of limited hereditary scope.

The former inspires the whole movement of evolution of terrestrial life from its beginning. In fact, no

consciousness fact can be entirely interpreted without it.

89. No merely automatic or other unconscious process will explain the work of the endocrines and the other equilibrium adjustments of the body. Not only are they marked by a striking directivity and aimed at specific consciousness results, but they and these take their genetic rise at such primitive stages in the history of life that we are set face to face with the earliest conscious scenes of our evolution. What was our sentiency when the ancient sea salts first became elements of our blood stream? Or earlier, before any blood stream existed as such, when the pre-Cambrian sunlight, piercing dense vapors, electrified and warmed those colloid masses in the shallow bays that were we? Interpreting the remotest past by the less remote those colloid masses—vast and at first unstable—had already the rudiment of organization. They were already in units of amino-acid molecular chains. They were brought together into those great and complex molecules called proteins, and these again into colonies. Through each of them coursed the galvanic currents of the elementary life. And each unit vibrated in response to the impacts passed to it by its neighboring units and coming from the whole outer universe. The psychic side of those responses was the primal form of our terrestial consciousness, including the rudiments of pleasure and pain, the rudimentary perception, the rudimentary adaptation, the rudimentary experience, the rudimentary attention, the rudimentary knowledge. Where the impacts were too strong and rude for the forces of attraction, the protective shield of water failed, the amino-acid chains broke and dissolved and

"It was a genetic deposit from 80 the Outer Universe. Doubtless they have been numerous, in different forms, throughout the Cosmos, as itself a Living Being.

the rudimentary life "died". But where adjustment was sufficient to maintain the necessary equilibrium for continuance, we advanced a step towards surviving the next shock, and thus were launched towards permanent individual survival, and also permanent race survival. And with each step of this organized survival for permanence was associated a precious psychic phenomenon,—the attainment of joy, the first fact of Value, something outside the order of physical phenomena and even of perceptual phenomena. It marked the deeper nature of *living substance.* And with this significant fact went all the facts of directivity.

90. Among the adverse conditions, one was then absent. There were then *no living enemies,* no rivalry for food and life, no predatory destroyers, no wars, no pursuit, no prey. There may nevertheless have been some mild absorption of impaired units by the successful, some appropriation of neighboring units, some use and reincorporation of the dead by the living.

91. So to that gentlest and frailest juncture we apply our ultimate question: *What was the original "knowledge" before instinct was and before thought was?* Was it an indefinite and diffused entirely receptive consciousness, without complexity, and dependent on a cosmic Directive Power, of which it was the helpless infant? The old psychology, although requiring adjustment, has perhaps components to suggest. Were we not then at the very foundation and first terrestial appearance of the *Cogito ergo sum?* And ought it not rather, at that juncture, to read *Sum ergo cogito*—"I am conscious because I am,"—"I am living substance related in my very being to all the

[89a. Life, in the primordial terrestrial form is being chemically created every day on our globe. It cannot however progress in a separate line of evolution, being constantly absorbed by the other forms of more advanced life, such as plankton, vegetation, protista. The relations of the amino-acids are the earliest stage of Terrestrial life. The instincts which originate in the Terrestrial Evolution are less profound and fast-fixed than those of Space, Time, God and Conscience. They are newer, more temporary, and imperfect adaptations. The others come from a far older memory of universal experiences in previous Evolutions & phases of the Cosmos. Even laws of purpose, thought & evolutionary experiences. Our atmosphere — & seemingly all other atmospheres — is a device — in principle a step-down transformer of cosmic radiations from forms destructive for us to

mutations which our ancestors became adapted.

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outer universe". Certainly also in that knowledge were subjective *space* and *time* as well as a rudimentary *unity of apperception,* wherein the sensations of new impacts were brought into relation to former ones. Apparently *every really transcendental element* was there. And next we are brought up against the question of *coloniality*. Growth and mass action mean the addition together of units, and a common life and action, implying the communal activities of the Directive Power. And in that directed coalescence of consciousness we must count in (a) the unit knowledge derived from the mass, and (b) the beginning of mechanisms for enlargements of (a).

92. I turn to Kant's *Kritik of Pure Reason* for certain comparisons. He lived before the discussions on dual and multiple personality, knew nothing of coloniality, never dreamed of the subconscious, (still less, may I suggest, of a wider Outer Consciousness), to him the cell could have no lessons, the problems of the atom, the molecule and the colloid were nonexistent. To him the individual mind was a subjective unity, not capable of division as in multiple personality, nor of subliminal contributions, nor of any subjective connection with the ganglia and silent functions, still less with the mysteries of race and heredity as we know them.

93. Nevertheless he saw clearly that there was continual union of manifold sensations, and that "all union of representations requires unity of consciousness in the synthesis of them." And he called the Understanding "the faculty of cognitions", whereby "the manifold in a given intuition" was brought into union with the rest of consciousness. Now, in doing so, was he

not describing that which corresponds to the earlier (genetically), and more rudimentary process whereby the neighboring units of consciousness of a proteid colony are welded into a colonial consciousness and later focussed step by step into that advanced and complex form we call the human mind? Is not each step an operation of the Directive Power determining its advance, and is not the focussing that built-up device of the Directive Power—the Attention? And, recognizing Kant's analysis as the acute dissection of the human individual mind as he saw it introspectively, are not the most outstanding elements of it present in the knowledge of the original proteid colony? In the combined unity of consciousness, wherein each contributed sensation is brought into harmony with all the others there, are they not each *judged* in connection with the rest? So that the centralizing Understanding is not only a uniting but a judging faculty, assigning each sensation its proper place among all the rest that have brought in their messages from the environing universe? And in this "proper placing" of objective sensations, are they not assigned to their places in space and time? the building of the inner world to correspond with the outer. Space and time we find, too, in the hypothetical primitive protein situation: they also are parts of the first knowledge; and we still "instinctively" act on the assumption that space and time are real.

94. As "living substance" we have always had a primitive consciousness of *kinship with the external world*—an obscure but indispensable element of knowledge rooted among our first instincts: for we were then on the very borderline of transition from the outer

cosmos to our terrestial career. The elements of the knowledge we seek were then originally, let us say, the following:

(*a*) Sensations, in each amino-acid unit, of impacts from the rest of the universe;

(*b*) Unification of each of these sensations into a colonial consciousness, the germ of the present human unity of consciousness;

(*c*) The presence of the directive unifying power,—

(*d*) Its product Attention;

(*e*) Its product the storage process of Memory, which takes charge of what has been focussed, composed and allocated to its place in our conceptions;

(*f*) Certain categories, notably those of Greater and Less and Identity-Difference, interweft through all forms of consciousness.

The outcome, after all, is *some form of knowledge from experience.*

95. Terrestrially, these psychic elements developed *pari passu* with the evolving physical forms, from the amino-acid molecule to the amino-acid chain, thence to the protein molecule, the unwalled cell, the walled cell with nucleus, the cell colony, the invertebrate, the vertebrate, thence to the colonies of man, internal and external, in whose case education and records accelerate the organization of knowledge. In much the greater part of its growth it is an Outer Knowledge, depending little upon the individual. Instinct is a less evolved Intelligence. The instinctive process receives light and interpretation from the characteristics of Intelligence, and the interpretation of Intelligence reciprocally receives light from the characteristics of Instinct. Both

are evolved: both are imperfect manifestations of a far greater Intelligence and a more complete Knowledge.

96. What might be called an additional element is the *growth* in Knowledge which occurs in evolution, resulting in emergent manifestations that appear as new. The whole expansion of Knowledge is really a widening outlook back into the Cosmos from which we emerged in the beginning as a branch. We left it with a minute amount of clear knowledge: we have now attained a relatively vast increase. Yet we are far from having no use for past forms. We could not live fifteen minutes without them: and every day we find enlarged uses for them as we study them better.

97. In our pride of intellectual forms, we should keep in mind that there is deep knowledge in Instinct (including function); that warnings of "Common Sense" should never be lightly dismissed, that the trust of the infant and of all animals, in the order of things, is founded on a hidden reason, that the voice of conscience comes out of a larger world, and that "the wisdom of the body" and "the wisdom of the heart",—both products of ancient experience, have each a right to be put into relation with our latest learning.

CHAPTER VI.

The Cosmic Aspect of the Outer Consciousness

(Evolution of Life in the Universe)

98. New scientific acquisitions.—99. Consciousness in the outer universe.—100. Present outlook.—102. Objectors.—103. Our planets as homes of life.—104. The Directive Power an element.—105. The sun.—106. "Running down" of the universe.—108. General objectors.—109. Eddington's views.—111. Jeans.—113. Nature of life.—115, 116, 117. Arguments.—123. A conception of a Living Universe.

98. It is not only in evolutionary thought that the generation of our day has seen wonderful advances in earthly knowledge. It was ~~recently~~ presented by Hubbell with the new astronomical facts concerning other "island universes" than our own which have multiplied our conception of the size of the visible universe ~~several~~ hundreds of thousands of times. And twenty-one epochal recent discoveries in physical science were enumerated by R. A. Millikan in his article "Physics" in the thirteenth edition of *The Encyclopaedia Britannica.*

99. In the previous Chapter we instanced the physico-chemical studies which, through difficult analyses of the composition of protein, the raw material of protoplasm, have shown that terrestrial life arose by sun-energy operating on the ancient atmosphere and ocean. ~~Some~~ thousand million years ago,* through the operation of sunlight on carbon dioxide in seawater were

*Professor A. P. Coleman, the Canadian geologist, ~~makes the time far longer.~~

produced those amino-acid molecules, in long magnetized chains, which were the original simple constituents of the highly complex molecules of protein.* This sheds light, not only on the terrestrial story, *but also on man's relation to the outer universe.* A fascinating prospect follows, namely the possibility of finding ourselves on the scientific track of conscious life in that new field,—a dream of many but which has never before been within reach. If it be within reach, it is due to the biochemists.

100. In this quest, let us invoke the factual acquisitions of our age having a bearing on the subject:—

1. *The extent of the reign of consciousness.*— Chemists and biologists have recently filled in the essential gaps in the series between highly conscious forms and the lower living and inorganic worlds. Of such are numerous biological observations such as those of Bose, making plain the cousinship between the behavior, heredity and composition of plant cells and those of unicellular animals; others, such as the description by H. S. Jennings of the hunt of an injured amoeba by another amoeba; and the leader in *Nature* for September 14th, 1929, regards it as probable that "the dim analogues of psychical qualities" are present throughout. To these may be added the studies of colloids and of endocrine chemicals in processes of life; the synthetic production in the laboratory of thousands of substances formerly unproducible otherwise than by life; Loeb's successful artificial impregnations of ova,

*Mathews, Physiological Chemistry, 4th ed., pp. 137 seq., 269, 616, Chap. V., etc., J. G. Adami, Study of Evolution, pp. 219 seq., Stieglitz, in The Nature of the World and Man, Chap. VI., R. A. Gortner, art., "Biochemistry and The Problems of Organic Evolution", in Scientific Monthly, May, 1930.

even up to producing complete frogs; and the atomic chemistry of protein itself above-mentioned. Thus the highly conscious creatures are found to be physically in virtually unbroken descent from forms of carbon, hydrogen, oxygen, nitrogen, etc., formerly considered devoid of living connection. The question of energy is also to be considered. So we are carried back to the atom and its constituents and the beginnings of terrestrial life.

2. *The extent of the reign of Will.*—New studies in physiology and biology likewise show that consciousness *in action* goes back in unbroken line through acts of conscious will, habits, instincts, functions and reflexes, to tropes and electro-magnetic ionization, formerly also considered absolutely devoid of living, and especially of conscious, character.

3. *The evidential methods regarding Consciousness.*—We are no longer dependent on the old introspective limitations of consciousness and its study. Knowledge of the area occupied by it has been vastly extended by studies of, and inferences from, low-consciousness facts, marginal consciousness, hypnotism, dreams, and the so-called Unconscious.

4. *The Outer Consciousness.*—I naturally add, as an extension, my doctrine of the Outer Consciousness and consequent Person of Evolution. In its aspect of the Great Directive Power, its directivity is a willing analogous to human willing, *mutatis mutandis.* I have mentioned that it has a place in the logic of our problems. This logical use is very important.

5. *Morphology.*—We must also enter in our catalogue the whole growth and morphology of terrestrial life, since these are the external products of the evolu-

tionary spirit, and are marvellous evidences of invention, and of a long continuity and accretion of it.

101. *The following situation consequently is found at the beginning of terrestrial life on our globe*: (a) Rudimentary consciousness inferable; (b) Rudimentary will; (c) High directive knowledge operating over both of these; (d) Carbon, nitrogen, hydrogen, oxygen, etc., as the chemical elements of protein; (e) Sunlight energy. And all these start into the development of life known to us as terrestrial evolution. All these elements are derived from the Outer Universe. *In the Outer Universe then are found all the elements which attend the occurrence of terrestrial life.* We may practically say that *we see them coming from the outer universe.*

The process is colonial; it is also affective; experiential; purposive; idealistic. Does it not seem probable that these same elements, having this tendency to organize and to be organized into forms of life, must have exhibited such tendencies before?—the evolutionary tendencies.

102. Now what are the objections raised? It is not necessary to enumerate them all: certain of them are typical.

First, that *the physical conditions prevalent in the outer universe do not permit of life.* By this is meant that life *as we know it upon our globe* requires water, protein, and a temperature not far above the boiling point, nor far below the freezing point of water.

103. *But are the physical conditions in the outer universe* altogether as different as is claimed? The most recent figures indicate that certain living forms survive 474 degrees Fahrenheit above zero and 300 degrees below, a total range of not far from 800

degrees for even protein forms. In the starry heavens we only see the suns and vaster spots of light: What about the immense number of dark bodies in space? And are *the planets of our solar system* so hostile to life? Henry Norris Russell in *The Scientific American* for July, 1929, states that as the planets were probably all ejected from the sun at the same catastrophe, they all had then the same composition as the sun now shows, but much of the lighter elements were likely lost by the earth, which the stronger gravitation of the major planets, like Saturn and Jupiter, retained—hydrogen and helium. And he quotes Jeffreys, the eminent planetary authority, as showing that Jupiter has a heavy rocky core, roughly 57,000 miles in diameter covered by a layer of water, perhaps ice, 12,000 miles deep, with an atmosphere of small density 3500 miles thick; and that the core of Saturn is 32,000 miles thick, the ocean 11,000 miles, the atmosphere 8,000. Russell adds that "it is reasonable to suppose that a huge cold atmosphere of hydrogen, and perhaps helium too, overlies the surface of these planets."

104. Recalling our brief catalogue of the factors present in the situation at the beginning of terrestrial life, I do not see anything in Russell's description of the planets to banish the factor of the Directive Power. Whether it was or was not previously present and at work on our globe, it was to all appearance concerned in the organizing activity of that other factor,—the cosmic ~~solar~~ energy. Its great organizing power and knowledge can easily be conceived triumphing over adverse temperatures and other conditions of our planets, devising protections against their severer variations,

inventing adaptations of structure to their gases, to their special gravities and to their atomic changes. On this basis, protein is not essential to the lifeprocess: nor are water and its limited range of environment. So intricate have been the changes on the earth, so much success has been attained against adverse conditions, that these operations are not at all unthinkable for our planets, but on the contrary are matters of reasonable expectation. Again, if this hypothesis be fair for the planets of our solar system then it is fair for those of other systems. I know I am arguing an advanced case, but the history of thought is full of the "advanced cases" of one generation or decade which are the commonplaces of the next.

105. Let us now take up *our own sun.* It has been advanced that life is impossible in conditions like those of our sun because the very atoms of which terrestrial bodies are composed are there stripped of their electrons and virtually destroyed by the enormous heat. But in our catalogue there is at least, one thing that is not destroyed,—to wit—*energy itself.* Even if carbon, oxygen, and ultimately hydrogen were to be split up, energy at least, is to all appearance indestructible. And note that it is the one which is an aspect—the working aspect—of the Directive Power. The very energy which began and sustains the line of life on earth, came and still comes from this terrible sun, which is pretended to be the fierce enemy of life. Since our sun raises representatively all the adverse conditions in the outer universe I need not proceed further. The greatest concentrations of energy should inferentially be the greatest concentrations of life.

106. Secondly, it has been advanced by mathema-

tical physicists that *the known universe as a whole is "running down" to a lifeless equilibrium* by the inevitable advance of the "random element". Eddington sees a hope that "mind stuff" may set up a redeeming process of reorganization. This thought agrees in ultimate principle with that of the Directive Power of Evolution, based on the organizing element in the actual colonies of terrestrial conscious beings. But also, why should a "run down" equilibrium be associated with unconsciousness? Why not rather with perfect life? And this if it ever occurs, which is highly problematical, and also many billions of years distant? It is not a present or practical consideration.

107. In fact, the sole factor in our catalogue of the primal life which appears to be destructible is that of the chemical elements—and these are only changed in form,—changed by the extreme conditions of the outer universe to new forms of energy. These forms are then sent out to carry on new work in organizing and sustaining life, in our view.

Furthermore:—(1) The above objections avowedly rest on the bare appearances of chemistry and of physics as mathematically determined, and which do not, as Eddington says, fully express reality. They belong to the system of points in space-time, a measurable structure, a world of abstractions.

(2) They do not, and cannot, take any account of those pertinent constituents of life which came in the early amino-acid days from the outer universe and established that very life which we now know in its present advanced stage of intellectual and instinctive development.

2 a. What were the Solar rays doing with their marvellous height of life before our protein era — in the Sun itself, and in other planets, atmospheres, regions and substances? We can fairly assume their actions were purposive: and still continue so throughout all the Cosmos: of that, so do all Radiations. This is the Great Process of Cosmic Life — a boundless field for research.

(3) They are contrary to the unitary conception of the universe.

(4) They are based on theories which change every year and are exceedingly imperfect.

(5) They present a singular picture of our world and man as standing alone in the cosmos, which has a suspicious resemblance to a number of similar homocentric and geocentric points of view that have disappeared in the progress of scientific knowledge.

How much more ~~appearance of~~ reasonability there is in the conception of the whole cosmos as full of life and personality,—that of Plotinus, Paul and the later Hebrews, in the ancient world, and all the Christian philosophers of the new,—the conception of a Living One "in whom we live and move and have our being."

108. Thirdly, there is another order of objections of less factual importance. It is based on an exaggerated agnosticism, arising from mental inertia. A certain body of current thinking, most honest and careful in regard to detail, takes a conservative position against every new hypothesis. It has opposed the notion of consciousness being resident in the earliest forms of terrestrial life at all. It even holds that consciousness is only associated with "the higher parts of the nervous system." In some forms it contends that the notion is "contrary to, or incapable of proof". When driven from these positions by advances in discovery, it posits that consciousness is a comparatively recent phenomenon, restricted to man and to orders not far away from him, say to insects and perhaps lower metazoa, but not extending to amoebae, paramecia, nor any of the unicellular nor plant forms. This is a narrow view for today's facts. Naturally,

those who make fetishes of these objections regard with point-blank aversion *all* hypotheses proposing search for evidences of life in the outer universe.

109. The following are the weighed conclusions of Eddington, from the standpoint of physics,—condensed from *The Nature of the Physical World,* 1928, Chapter VIII., "Man's Place in the Universe."

(After describing the immensity of the known universe, in size and age). "Does this prodigality of matter, of space, of time, find its culmination in Man? . . . I will here put together the present astronomical evidence as to the habitability of other worlds. . . It is idle to guess the forms that life might take in conditions differing from those of our planet." (Here I venture to disagree). ". . . I shall assume that the required conditions of habitability are not unlike those on earth. and that if such conditions obtain, life will automatically make its appearance." Of our planets, only Venus and Mars seem at all eligible. Venus, so far as known, would be well adapted for life similar to ours. . . It may perhaps be inferred that it is a world which is all ocean,—where fishes are supreme. . . . Mars is the only planet whose surface can be seen and studied, and it tempts us to consider the possibilities of life in more detail . . . air and water are both present but scanty. The Martian atmosphere is thinner than our own, *but perhaps adequate.* It has been proved to contain oxygen. There is no ocean: the surface markings represent, not sea and land, but red desert and *darker ground, which is perhaps moist and fertile."* The pole has a deposit of snow in winter, indubitable clouds are in the atmosphere which is "decidedly chilly." "If we accept the present deter-

minations as definitive, we should have some doubt as to whether life could endure the conditions. . . To-day it would seem that Martian natural history is not altogether beyond the limits of serious science. At least the surface of Mars shows a seasonal change as we might well imagine the forest clad earth would show to an outside onlooker. . . A rather strong case for vegetation seems to be made out. If vegetable life must be admitted, can we exclude animal life?"

"I do not say that the whole purpose of the creation has been staked on the one planet where we live: and in the long run we cannot deem ourselves the only race that has been, or will be, gifted with the mystery of consciousness.

"'But I feel inclined to claim that *at the present time* our race is supreme: and not one of the profusion of stars in their myriad clusters, looks down on scenes comparable to those which are passing beneath the rays of the sun."

110. Heartily welcoming this valuable opinion on the known physical facts, I must recall that Eddington confines himself to the physical aspect. From that point of view they are very favorable to our theory. And we claim that the psychological material we have adduced enables us to use them in support of a far more advanced position of hypothesis.

111. Sir James Jeans, the Secretary of the Royal Society, in *The Universe Around Us,* arrives at essentially similar conclusions to Eddington's. At some very far-off time, "the active life of the universe must cease"—*"short of postulating continuous action from outside the universe"*. Yet some "two hundred million million years" ago *"in some way matter, which had not previously existed, came, or was brought into*

being." (The italics are mine: they argue for themselves). And Sir James is not dogmatic—"the ultimate realities of the universe are at present quite beyond the reach of science." But "by far the greater part of this matter of the universe is at a temperature of millions of degrees, so that its molecules are broken up into atoms, and the atoms are broken up, partially at least, into their constituent parts. Now the very concept of life implies duration in time; there can be no life where atoms change their make-up millions of times a second and no pair of atoms can ever stay joined together. It also implies a certain mobility in space, and these two implications restrict life to the small range of physical conditions in which the liquid state is possible"—which is only found in planets like ours. "Now planets are very rare." "Our terrestrial life must in all probability have originated on the earth itself."

"We can still only guess as to the meaning of this life which, to all appearances is so rare. Is it the final climax to which the whole creation moves. . .? Or is it a mere accidental . . . byproduct. . .? Or . . . something of the nature of a disease. . .? Or *throwing humility aside, shall we venture to imagine that it is the only reality, which creates, instead of being created by, the colossal masses of the stars and nebulae and the almost inconceivably long vistas of astronomical time?*" ×

112. The concept to which we have been led by the problems of the present book—that of the Directive Power, coming living out of the outer universe itself, —gives our own answer among these alternatives:—

× In a later passage in Through Space and Time, Jeans finds some hope in the remarkable adaptability of life to difficult conditions on our globe. In my opinion this avenue has not yet been thoroughly explored either here or on Mars, Venus, Mercury & our other planets.

the difficulties raised by pure physics alone are resolved by the psychology of Evolution. Life cannot be limited to terrestrial conditions, nor depend on the construction of atoms. And the proposition that "some two hundred million million years" ago* *matter came into existence,* must mean that even if it is to "run down" to lifelessness in some far-off age, it will again *"come or be brought into being"* either by its own laws, or from out of the depths of that still more immense universe in which the known, and the curved Einsteinian universe, are but specks, yet where the Directive Power still reigns.

113. Leaving aside objections and looking for light to another side of our subject, let us now ask:— *What is the nature of individual life and death in general?*

The greater part of the life of a human individual, being carried on "below the threshold" of his consciousness, lies in the field of the Outer Consciousness. As this field is far larger and older than the individual, that cessation of the body which we call death, does not bring our life to a real end. It still goes on in the larger and older form. But do its consciousness and personal continuity disappear? The individual's life does not disappear when he loses a finger or a tooth.

114. The study of germ-plasm "immortality" and body (soma) mortality gives certain clues. Raymond Pearl has summarized the main facts in *The Biology of Death* as regards natural death. (apart from unnatural, by violence, accident or disease). His account

*Some favor a much shorter estimate.

of the investigations by biologists, (up to 1922) is as follows:—

"Natural death occurs normally and necessarily only in animals composed of many cells. Unicellular organisms are finally acknowledged to be immortal". He instances the minute swimming form *Paramœcium* which Woodruff had then cultivated for over 8500 generations without death. "Protozoa reproduce by simple division or fission . . . *one cannot say, after the fission, which is parent and which is offspring. One individual simply becomes two,* and in the process of becoming two, loses totally its own identity as an individual". (Does it not rather enlarge its identity?). "A different mode of reproduction is characteristic of higher multicellular animals. A new individual is started by the union of two particular cells of extraordinary possibilities, called *germ-cells.* After union, the fertilized ovum, or zygote, begins to divide, first into two cells, these again into four, and so on, until by a continuation of this process, the whole body is formed. As the animal develops by repeated cell division and differentiation, at the very early stage, the cells which are to be the germ-cells of the next generation are clearly recognizable by their structure and often are set aside in a definite location in the developing embryo."—The germ cells are immortal in the same sense that the protozoa are immortal: and the rest of the body, the soma, undergoes natural death.—The germ cells which the individual bears in his body at the time of his death die also. But this is purely accidental death, so far as concerns the germcells. Such of them as were, prior to the death of the soma, enabled to unite with other germcells, went on

living, just as does the dividing paramecium:—the soma eventually dies. Some of the germcells, prior to that event produce somas and germcells, and so on in a continuous cycle which has never yet ended since the appearance of multicellular organisms on the earth. Life can and does go on all the time without death. . . *Life itself is inherently continuous. All the essential tissues of the metazoon body are potentially immortal.*"

115. But natural death cannot be taken alone in surveying death as a whole. Over against natural death stands death by accidents, disease or enemies. In the lowest forms the mortality is of course enormous. The progeny of a pair of insects if unchecked, would cover the globe, of a single codfish would soon fill the sea. The chief device of the Directive Power for survival was at first the enormous multiplication rate. It has been replaced, in higher forms by complicated internal and external protective devices. Their general principle is a body of many coöperating parts, each with a cumulation of improvements. When the parts fail, the soma is sacrificed, but the race continues to the extent of the success of the germ-cells. In racial catastrophes—geology has seen many—masses of the germ cells also pass out. Mankind itself as such will pass out; it is an intermediate form. Will the Directive Power of terrestrial evolution then fail? No, not with its past history of inventiveness. It still has other terrestrial races to keep up the fire of life and progress. But what if changes should occur, of temperature or of shock, too great for all of them? Even then the Directive Power would be no further back than it has been. It came out of fire and vapor:

it passes through the great cold of space; these are not foreign to it.

116. Still another consideration:—*How far does dissolution of the body proceed?* Certainly there is great chemical change, the common interaction of parts and cells disappears; only the original atoms have any final stability. Indeed, for full final stability we must look to the electrons and protons of which these atoms are composed, unless science shall break *them* up and lead back further still. Is there any continuance of consciousness in these? A provisional answer may result from a related question: *Where is life seated before death?* To what extent in the body at all? It certainly is not linked absolutely to the matter composing the body at any particular moment, for it is constantly being replaced, yet life goes on. One inference is that consciousness appears when certain physical conditions are present, not hard to enumerate. The Directive Power, which arranges these conditions and regulates life, being independent, in time and space, of any individual body, we are again brought to the conclusion that the dissolution of the body should not dispose of the life of which the body was the partial instrument of manifestation. The body is analogous to an eddy—a temporary closed system against the environment, into which matter and free energy enter, take part in the work of the eddy, and then pass along. When the body ceases, the Directive Power, with its Outer Consciousness, remains and uses its other instruments. We physically parted from all those instruments at various times by cell-division, in which we became two and then four, and ultimately many. Does not this mean that every consciousness,—every

life,—is divisible, coalescent, decoalescent again, focussible and defocussible, but always part of the Outer Consciousness.* What then becomes of the individual consciousness in natural death? Does it not, as a part, simply retreat to its deeper self and, like energy, pass back to its original reservoir, which emitted and directs it, and from touch with which it has never been separated? The situation in the outer universe should have resemblances to the terrestrial along these lines.

117. In my previous treatment of the Cosmic Aspect, in my volume *The Outer Consciousness,* Chapter III, I mentioned other arguments which might be added here. One was that we have reason for expecting consciousness in the outer universe because the fact that we are able to perceive and think about contents of it show that there is some kind of identity between the object and my perception of it. ✕

118. A second is that the outer universe contributes largely to man's happiness and thus to the purpose of his living. And not only does the outer universe contribute to our joyousness of life but the great extent and many forms of its contribution lend the argument continual and cumulative force. When we consider the constant play upon us of beneficient forces and influences which proceed from space, such is their convincing array that astronomers are usually believers in an orderly government of the universe. Is

*A number of weighty thoughts on this matter are contained in H. S. Jenning's Chapter on "Biology and Selves" in his "The Biological Basis of Human Nature" (Chapter XIII.), where he favors the thought "that the human self is an entity existing independently of genes and gene combinations."

✕ See also Appendix III, pp. 240 seq.

not this profound impression of theirs rather produced by the beauty of that order than by the orderliness itself? In fact, the vastest wing of the argument from the joy bringing elements of the outer universe,—and strictly valid in accordance with our doctrine of the teleology of joy,—is in the wondrous BEAUTY of it. It is the infinite storehouse of beauty. It is full of light in all varieties and aspects. It is crammed with everchanging and multitudinous color. It is harmonious and rich in its forms, from the deep blue ether to the star-mists of the Milky Way. It has a powerful magic in its silence and supreme majesty.

119. In this respect,—of Beauty,—it has a share in our view of the teleology of the organic world. Why is it that the most ancient things of human experience are so beautiful? What makes them so, instead of their being ugly or at least indifferent? The sky, the moon, the stars, sunsets, dawns, in all their forms, water in all its forms, fire, in all its forms, trees, mosses? Flowers are chosen for their beauty by insects. So, doubtless, are women, children, men, by their kin. While evidently to other animals their own kin have similar attractions. Why are distant things beautiful? Why memories? Certainly all these have thus the teleological relation to joy. Why these mental tendencies to suppress the pains of the immediate and present environment? Finally, we may fairly ask whether the power of following joy has not been a power existing from "the Beginning", coeval and concomitant with the physical forces concerned in our willing; and whether that power exists concomitantly with all physical forces whatsoever,—in other words,

whether mechanical laws and the joyseeking law have not a common origin and plan from eternity?

120. But furthermore, is it not obvious that all these joys brought to us by the outer universe are in exactly the same position as those brought to us by the terrestrial Outer Consciousness,—such as the beauty of iris flowers,—in that they are too widespread to be intended for man alone. They are even far too wide for the whole protoplasmic race alone. Hence they raise a presumption that there is beneficent consciousness in the outer universe, and widespread benefitted consciousness as well.

121. For the next argument I am indebted to Professor Carveth Read, the learned author of "The Metaphysics of Nature."

"As to H,O,C,N, it does not follow that, because they have the character that best fits them for organization on this planet, they are therefore the sole conditions of consciousness, or even of organization. And if all elements have a common ground (ether or protyle) it is more reasonable to look to the activities of that as the concomitant of consciousness than to any special grouping of it; and if consciousness exists there, it may be supposed to exist in the activities of all the elements that have arisen from that common ground. It would, however, be more correct to say that consciousness accompanies the activities of that of which the elements, ether, protyle, are phenomena; for all phenomena have their Reality by existing in consciousness."

"Having got so far beyond the range of human sympathy as the level of plant-life, the principle of Continuity carries us further and points to some actuality even in organic Nature corresponding with animal consciousness, however vague and indifferentiated. Of course, we cannot imagine what it is like. The feeling of movement, energy, striving, which we commonly read into the oper-

ations of Nature, is with us a specialized sensation having its own organs, peripheral, afferent, central. There is a natural hesitation to ascribe consciousness, not only to things that have no nervous system (for this is not traceable lower than the Medusae), but even to those that have not the special form of matter from which nerve-fibres and ganglia develop, such as we suppose to exist in simple animals and plants. But perhaps ere long it may be shown that the differences between the organic and the inorganic are much less than we are now accustomed to assume."

122. It is with decided humility that one ventures to deal at all with the cosmic aspect of the subject. The vastness and wondrous complexity of the universe, the unmasterable nature of Infinity and Eternity, the comparatively small field of knowability as far as man is concerned, and perhaps most stupendous of all, the boundless richness of detail, cast over these theories a shade affording no encouragement to presumption. If human reasoning alone were all that is involved, the matter might be considered too large for it. It is only because the idea is that of the existence of a vaster reasoning, that there comes a sense of possible partial adequacy.

123. I had contemplated attempting a Chapter on "The Element of Knowledge in Evolution" on the plan of "The Knowledge in Instinct", but felt the task beyond me. Some one more competent ~~in epistemology may perhaps~~ can take it up. Regarding cosmic organization, the following may be offered as tentative suggestions on the analogies of the terrestrial:

(1) That before our terrestrial form of the Directive Power began to evolve the protoplasmic race, the same Energy was active under the cosmic conditions that existed previously. — in the realms of the higher Evolutionary Ideal.[104]

material accumulated in the sciences by Rutherford, Bohr, Moseley, Michelson, Compton, the Curies, Hubble and their like. Surely we can trace back into the cosmos the life-process before it entered the Terrestria, and find the original Cosmic Law by research. Give us living creatures of molten iron, of liquid air, of frozen helium, of substances as yet unknown to the microscope or the spectroscope implying directivity.

We are led much further by the later

- Insert p. 104a -

(9) That such action is universal and the same Power is continually at work throughout the known universe, evolving paths of joy; throwing out as its organs, conscious individuals to pursue them; and coalescing, decoalescing and focussing consciousnesses.

(10) That more particularly wherever, in the outer universe, conditions resembling our own exist, there a part of the Person of Evolution is at work, and races are evolved having consciousness more or less analogous to those of our own line; and bodily structures on plans more or less analogous to ours.

(11) That throughout space, and among the billions of existing worlds, there are probably many kinds of conscious beings some very far more evolved than ourselves, and some very unlike ours in bodily forms.

(12) That in time each such race encounters changes of conditions which cause it to disappear. But such disappearances are but transmutations into new forms.

(13) That at such times the Person of Evolution adapts its work to the new conditions, and immediately begins to evolve new forms.

(14) That there are many lesser fields of the Directive Power, perhaps as many billions as there are stellar bodies.

(15) That they are all connected with each other by links of common touch and a mutual structure and directivity, and pursue their work in harmonious cooperation; coloniality being a principle of their cooperation.

(16) That their spheres of operation are territorial but changeable.

(17) That comprising them all in one ultimate

coalescence is ~~a vast actual~~ the One Supreme Conscious Being, purposer of all their purposing, ~~but perhaps not yet Infinite nor Absolute~~: and consciously related to each and all of them, ~~as the terrestrial Person of Evolution is to each and all of our protoplasmic individuals;~~ He also being our Ancestor,—the Ultimate Person of Evolution.

individual person is a partially decoalesced aspect of Him. Each soul is part of the Soul of God. unless broken away.

(18) ~~That~~ the universe has therefore a vast consciousness-structure operating upon and through its physical structure, whose urge is towards the achievement of measureless happiness.

(19) ~~That~~ Instinct, Will and conscience are forms of that directive urge in Man.

~~(13) That it proceeds from the ultimate Person of~~ Evolution.

(20) ~~That~~ There is no such thing as extinction of conscious life. In "death" we merely cast off an organ —this body—and continue to live the eternal, deeper life.

124. But whatever be the exact views we may each select regarding these cosmical problems, it seems to me that the new biological and psychological light which carries us back to the beginning of the Terrestrial Colony, compels us to seek solutions of one kind or another. Hitherto we have regarded the Earth as our heritage; ought we not now to claim this vast and shining new outer universe as our original country, the realm of a boundless thought, feeling and progress, from which our present small share has been derived?

This is not Mysticism; it is an interpretation of the sciences. I leave to others its bearings on religion, that greatest of our instincts, the trope of our complete being towards a greater Directive Power and Evolution than the terrestrial.

CAPTER VII.

The Outer Consciousness in Ethics

125.—Altruistic action instinctive. J. S. Mill's "pleasure the sole good". G. E. Moore's "intuition".—131. Kant's "Practical Reason". Kindred to certain instincts.—135. The Outer point of view.—146. Its wide judgments on joys and persons.—148. Sidgwick. Moore's criticisms of.—152. Superpersonal solution.—110. Lotze on value of joy.

125. According to the foregoing account, the altruistic impulses are considered to be, like the instincts and functions, a part of the process of thinking and action of that wider self of which we are organs,—the Ultimate Person of Evolution. In the second Chapter we said: "Most striking of all is *that complex instinct Altruism,* which, like the sexual, the maternal, and the herd, instincts, urges men to martyrdom for others than themselves." (Sexual, maternal, and herd instincts are in fact its less evolved forms). How is this view of altruistic action compatible with the ordinary behavior of individuals, which is selfish? This question is in fact that which gave rise to the whole present theory; and the aim of nearly every theory of ethics is to offer some harmonious account of these two types of motive and arrive at a unitary view of willed action. To the Cyrenaics, the individual actor's pleasure was the sole criterion of good; yet all the profoundest thought of mankind has revolted from that criterion. Why? Because somehow the answer does not ring true to our judgment. Why does it not at

least ring satisfactorily to each individual for his own conduct, even if he object to it in others? In general, the various schools of intuitionalists tell us there is no use trying to understand why,—that "good" appeals to a special faculty in us which is above analysis,—that many different kinds of things are "good," that we simply *know* any particular good kind of thing to be good when it appears clearly before us, and that it is beyond our power to define that knowledge. George E. Moore is one of those thinkers, and the arguments for an unanalyzable "intuition" were never more acutely stated than in his "Principia Ethica." Finding some flaws in Mill's argument for the principle that "pleasure is the sole good," he arrives at the following inconclusive expressions: "I shall try to show you why my intuition denies it, just as his intuition affirms it. It *may* always be true notwithstanding neither intuition can *prove* whether it is true or not. *I am bound to be satisfied if I can present considerations capable of determining the intellect'* to reject it. *Now it may be said that this is a very unsatisfactory state of things. . . It is indeed."* This has the image of Instinct.

Much the same confession of inability to analyze the basis of value-judgments marked the argumentation of eminent analysts in the three separate Discussions of values,—ethical, æsthetic, and intellectual —at the Sixth International Congress of Philosophy in September 1926.

126. Was not the difficulty rather that both Moore and Mill were ~~skimming about on~~ examining the surface of an individual consciousness—their own—for solutions of a matter the roots of which lie beyond the surface. I venture to urge that these roots are to be found in our

Outer Consciousness. There our vaster mind has ever before it the whole coalesced personality of all terrestrial sentient beings. The Selfish of the human personality disappears in that coalescence with the wider Personality; it becomes indeed what we call the Unselfish; it changes its objective; it casts aside the mean, the small, the temporary, the socially destructive, the gross; it adopts the altruistic, the "universal", the "eternal", the true (which is desirable because of its eternal quality), the socially constructive, the ideal of Love, the ideal of perfect happiness for all sentient being. Sacrifice is the Supreme Cosmic Law, in the ethical field.

127. There is another form of Intuitionalism which raises a deeper objection than Moore's would make to our theory. It is the Intuitionalism of "the Practical Reason." Why, it might say, should it be necessary to posit an extra-human mind when the human mind itself contains all that is needed to explain the notions of "good" and "right"? Man's intellect can of itself impartially recognize the value of all existing persons and, applying the idea of universal justice, allot to each of them his share, his interest, his right.

128. But such an explanation does not afford a spring of action. There is no reason why justice, in itself, should touch us and make us act and feel impersonally. If that were all, the problem would remain where it was with the Cyrenaics. But fortunately, we are touched,—a spring of action rises from somewhere and carries us further than any simple contemplation of justice. This spring of action I conceive to be one sole spring of all action, the desire of a person for its own happiness And none such can primarily seek the

happiness of the many except the Spirit of the Many. None other can see justice at first hand. The notion of justice in the individual is derivative and instinctive.

129. The conclusion that an instinctive element is at work might seem less well-founded were it not that instinct enters so largely into kindred operations within us. We have mentioned the maternal, herd, and reproductive forms. These become still more striking as an argument concerning human conduct when we see them guiding the higher animals nearest to man, such as the apes, wolves, and the Newfoundland dog, with his propensities for life-saving and the protection of children. It is quite true that the process of the Outer Consciousness is very imperfect in the animal world in the matter of altruism. But it advances rapidly as its latest organs, individual human beings, become better and better trained and equipped to follow up these problems and to adjust their world to the truer expression of the larger being. And as the mind of that larger being, in other instincts and functions, works by reasoning which to us seems unconscious, so also it works in the case of altruism. It sees the many, not the local one,—and that one is itself a colonial unity of consciousness such as we. It wills, for the many; it supplies the required personal spring of action;—and then it wells up in us as the altruistic instinct, the so-called "inexplicable intuition."

130. What is the "many" thus seen by the Outer Person? Not merely a vague crowd: but the whole protoplasmic Race, existing and future, innumerable and extending up to an unknown which by us would be termed "infinite" and "infinitely" superior.

131. The various forms of Intuitionalism, although

insufficient, represent a very real aspect, in that they give a true picture of how right and wrong appear when they arise at the surface of our consciousness. But they do not give a complete explanation, and no theory based on what appears on the surface can supply a complete explanation or entirely dispose of happiness-theory The happiness-theories themselves also fall short. It is only the facts of the Outer Consciousness which seem to explain the anomaly. Yet both Intuitionalism and Utilitarianism significantly form excellent working hypotheses As for the intuitionalism of the Practical Reason of Kant and Thomas Whittaker, they only need to be moved back a step,—to the Outer mind in place of that of man.

132. Altruism, even in its most clearly reasoned forms, always retains at least a part of its instinctive basis: for it is always Outer Conscious in its *point of view.* Its *impulse* also is always Outer Conscious. And when its judgments are exercised, as they usually are, "below the threshold" of our consciousness, it is always totally instinctive.

133. By way of illustration of the process, let us imagine that a time has come when each of us shall have passed over to the Outer Conscious life, and when we shall look clearly from that standpoint at the questions now under discussion. We may then know, in their relative values, the components and organs of that great conscious colony of persons and shall see our former selves as each but one of them. We shall also then know better the stupendous depths and heights of the joy-and-pain scale, the stupendous values for which the moral cause stands, the inexpressible meaning of the struggle, the dreadfulness of loss,

the solemn bliss of universal achievement, and the momentousness of the universal striving. We shall feel with the profoundly intimatest touch of reality that inner unity which we can here but haltingly glimpse, through our dark and puny slits of senses, as a "community interest." What we here ineffectually try to descry as the common element of comparison, and the basis of judgments of one "good" with another, and of one "right" of a person against another, would be liquidated on the clearing-ground of their one consolidated consciousness.

134. On what basis would these comparisons be made? In our human ethics, constant disputes are proceeding over the difficulties of comparing different happinesses and pains by *quantity* and *quality*. Bentham's maxim that "the greatest happiness to the greatest number" is the standard is *not* too easy of application. For what is "quantity" of pleasure? And why not "quality"? And is number also not a factor? How are these to be defined?

[I use the term "pleasure" reluctantly, even though it is customary in ethics, because it has too many popular connotations with the narrow and gross. I would prefer to discard it and employ "joy" and "happiness." But its use is firmly established.]

Number can obviously only be applied with exactitude to equal units. Are all human units really of the same value? Hardly so, in this life. In case of a shipwreck what units should the fellow-passengers feel have the best right to be saved? May it not be those lives with a valuable future, such as the children, the married, the highly intelligent, the healthy, those of the best philanthropic tendencies? And as against

them, the aged, the feebleminded, the useless, the depraved, the criminal? How ought the choice to be made?

135. From the Outer point of view it would be simple? All are equal: the accidental qualities of this life are accidental trifles: but instinctive altruism would urge the strong to save the weak, the women, the children and the sick; and the superhuman philosophy of self-sacrifice would say "he that saveth his own life shall lose it."

136. "Rights of persons" suggest all animate forms of life. Until a few hundred years back the rights of animals have counted for as much or more in the minds of mankind than those of men themselves. All primitive religion was animalistic: and even the great religions of Egypt, Babylonia, India, China, were full of forms of it: in India to-day it extends to the smallest insect life. But evidently Nature is not absurdly afraid of terrestrial death. To the Outer Consciousness, "death" and "life" are part of one story.

137. But to return to quantity and quality and their comparison. *Intensity,* either simple or complex, is evidently one element of quantity. At its lowest, let us say we enjoy a weak taste of the flavor of a good orange. A stronger taste of the same orange is evidently preferable. An extraordinary taste may be better still. A delirium of a simple joy is yet a further advance in the scale of quantity. But when we are carried along for a moment by the delight of an exquisite perfume we may ask ourselves whether there is not more than simple intensity: whether the intensity is not added to by quality And this raises the problem

of what quality is and of its relation, if any, to quantity.

138. In the Utilitarian interpretation, "the greatest happiness of the greatest number," the element of number of persons is accepted as at least a major element, and for simple pleasures it offers a rough-and-ready arithmetical addition. Where the effects on individuals are different, the numerical calculation is less easy; yet it is something of a guide as far as it goes. Besides intensity and numbers, there is *duration* which may be regarded as quantity in time, for purposes of comparison. With it must be associated *repetition* and *degree of persistence.* Next comes *simultaneity* of several sensations in the same consciousness or consciousnesses; together with their variations of intensity, duration and repetition. And in practice, all kinds of pleasures and pains.

139. We now come to quality. Moore asserts that Mill (who contends for "the greatest happiness of the greatest number") makes a fatal admission in acknowledging that quality is to be considered as well as quantity; and that consequently happiness does not present an intelligible criterion of "good." The intellectual pleasures of art, music, knowledge, are to a well-informed man preferable to those of eating. Moore (Principia Ethica, pp. 77-78) says: "Now it is well known that Bentham rested his case for Hedonism on 'quantity of pleasure' alone. It was his maxim that 'quantity of pleasure being equal', pushpin is as good as poetry.'? And Mill apparently considers Bentham to have proved that nevertheless poetry is better than pushpin; that poetry does produce a greater quantity of pleasure. 'But,' says Mill, 'the Utilitarians might

have taken the other and as it may be called higher ground with entire consistency. Now we see from this that Mill acknowledges 'quality of pleasure' to be another or different ground for estimating pleasures than Bentham's 'quantity'," and that Mill fears "he might 'deserve to be called a pig'." Mill's test is 'the preference of most people who have tested both.' And Moore contends that Mill's test is just a judgment of an intuitional kind,—"a judgment utterly independent of all considerations as to whether one thing is more pleasant or more desirable than another. This is to admit that good is good and definable."

140. But is "quality" of good fundamentally different from "quantity"? In what does quality consist? We use such terms of quality as "finer," "higher," "nobler," "refined," as against "grosser," "lower," "baser," "coarse."

Introducing the ethical element more specifically, the altruistic—we use "virtuous," "holy," "unselfish" as against "vicious," "sinful," "selfish."

We ought first to distinguish between what affects the individual alone. In this category, what does "finer" mean?—the individual being supposed to be absolutely alone in the universe. Is poetry better than pushpin to him? (Of course bad poetry is worse than good pushpin: we must take standard samples under standard circumstances). Poetry is "finer" "more noble," "more refined." What does that mean? Is it not that more and broader avenues of consciousness are agreeably stirred by poetry? The pleasures of the latter are chiefly derived from represented images of activities (brought together through the poet's skill); while those of pushpin are direct sensations of fewer

and much smaller activities. On the stage of the small circle of pushpin consciousness they are as large as the far more numerous and varied activities represented by poetry. But the true stage is that of the Outer consciousness. In that freedom of the soul we live a vaster life and breathe a larger air: the smallness of the pushpin life is seen in its true perspective; we judge the situation by instinct.

141. So much for the field which concerns, or seems to concern, only the individual. If that self-centred level were all, the poet might still be open to the reproach of the gilded pig. But poetry, having opened the door of a larger world, meets there the impulses called "generous" as well as those of power and beauty. In that larger world rings the call of altruism, the impulse to chivalry and self-sacrifice,—elements in the most ennobling poetry and art.

There are mixtures which bring out the contrast. If poetry, or even pushpin, be mixed with what is wicked, anti-altruistic, malevolent,—snatching away the happiness of another to devour it oneself—especially if that other be weak or poor—then ugliness enters into and nullifies the total, and it cannot stand the larger view.

Do not these considerations show that *quality is a form of quantity,*—that it consists of quantities displayed and commingled in representation. And in the altruistic forms those represented joys are those of other persons.

142. In short, must we not, as said above, seek for a form of consciousness where all these contrasted bodies of elements can meet for comparison on one same basis. And is not that form the instinctive con-

sciousness behind our own—the mind of the larger Person?

143. I venture to advance another point,—that presentations and representations are the same thing only in different stages of emergence into our consciousness. They all have their base in the Outer Consciousness.

144. Perhaps the mind of the individual is sufficient for the simpler judgments which only affect himself,—though even then he acts as organ of the Person of Evolution, and should obey his instincts of self-preservation and preservation of the race.

145. In the consciousness of the Person of Evolution, uniting all subordinate personalities, by coalescence of consciousnesses, they each are seen as part of it, are weighed and the result makes its appearance in the human conscience. Since instinct is a form of reasoning, only that the reasoning is that of the Outer one, the product is really a reasoned judgment and not an indefinible intuition.

146. The reasoned making of ethical judgment is not always easy in practice. The facts have first to be made certain; they have to be separately weighed and then coordinated. Doubts often cloud the thinking. Hence guidance is sought from moral codes and guides, and these differ much in value. Yet ethical science is a precious acquisition of real service, and built upon a greater accumulation of experience, learning and analysis than any other science in the world. In its development and practical service some minds too possess or attain superior proficiency in ethical judgments, just as eminent jurists acquire notable ability in the related science of law, by a com-

bination of skill, acumen and diligence, together with the foundation of profound instinct. The process has a resemblance to physical weighing, where some experts can by practice and native skill, weigh familiar substances with amazing correctness by the hand or eye.

The rapid action of altruistic decisions in times of emergency is one of the marks of their instinctive origin: similar to the rush of the Newfoundland dog to save a drowning child, or of mothers among the higher animals to save their offspring. Even an infant will scream its disapproval at whoever hurts its mother. A dog will spring at whoever strikes its master.

147. The following passages from Moore* will make clear the requirements which the argument of this paper assumes to meet:

After combatting Mill, he quotes Sidgwick as follows:

"The passages in Methods of Ethics to which I shall now invite attention are to be found in I. IX. 4 and in III. XIV. 3-5. The first of these two passages runs as follows: 'I think that if we consider carefully such results as are commonly judged to be good, other than qualities of human beings, we can find nothing that on reflection appears to possess this quality of goodness out of relation to human existence, or at least to some consciousness or feeling,—*e.g.* beauty in external nature apart from contemplation of it by human beings. . . . . A man may devote himself to their production without any consideration of the persons who are to contemplate them. . . . . Still, as soon as the alternatives are clearly apprehended it will I think be generally held that beauty, knowledge, and other ideal goods, as well as all external material things, are only to be reasonably sought by men in so far as they conduce (1) to Happiness, or (2) to the

*Prin. Ethica. Chapter on "Hedonism." p. 81.

Perfection of Excellence of human existence. . . . . I say human, for most Utilitarians consider the pleasure and freedom from pain of the inferior animals to be included in the happiness which they take as the right and proper end of conduct. . . . . Nor again, can we include as a practical end the existence of beings above the human. . . . . I shall therefore confidently lay down that if there be any good other than happiness to be sought by man, as an ultimate practical end, it can only be the goodness, perfection or excellence of human existence. . . . . No one would consider it rational to aim at the production of beauty in external nature apart from any possible contemplation of it by human beings'."

148. Moore, pp. 83-4, takes exception to these propositions of Sidgwick, and holds a world of beauty to be better than one of foulness even if no one knew it to exist "because it is better in itself." He holds that "if this be admitted, it would then be our positive duty to make the world more beautiful." (Is he not here appealing to an instinct, in other words the Outer Consciousness?)

149. On page 85 he quotes Sidgwick III. XIV. §§ 4-5:

"I appeal to his" (the reader's) '*intuitive judgment* after due consideration of the question when fairly placed before it: and secondly, to a *comprehensive comparison of the ordinary judgments of mankind.* . . . . . But we may urge not only that all these elements of 'ideal good' are productive of pleasure in various ways: but also that they seem to obtain the commendation of Common Sense, roughly speaking in proportion to the degree of this productiveness. This seems obviously true of Beauty, and will hardly be denied in respect of any kind of ideal." (Sidgwick then applies the same arguments to Freedom, Knowledge, and Virtue.)

Moore disputes all this.

150. On page 101 he quotes Sidgwick further:

"the relation of Rational Egoism to Rational Benevolence is the profoundest problem of Ethics." (III.XIII.§5.n.1.) . . . "Even if a man admits the self-evidence of the principle of Rational Benevolence, he may still hold that his own happiness is an end which it is irrational for him to sacrifice to any other: and *that therefore harmony between the maxim of Prudence and the maxim of Rational Benevolence must be somehow demonstrated* if morality is to be made completely rational. This latter view is that which I myself hold." (Last chapter, §1). Then Sidgwick says "the inseparable connection between Utilitarian Duty and the greatest happiness of the individual who conforms to it cannot be satisfactorily demonstrated on empirical grounds (Ibid §3) . . . . . To assume the existence of such a Being as God, by the concensus of theologians is conceived to be would ensure the required reconciliation, since the Divine Sanctions of such a God, would of course suffice to make it always everyone's interest to promote universal happiness to the best of his knowledge."

Moore considers this a fallacy (p. 103): "That a single man's happiness should be the *sole good* and that also everybody's happiness should be the *sole good* is a contradiction which cannot be solved by the assumption that the same conduct will secure both."

151. The theory of the Ultimate Person of the Outer Consciousness, meets the difficulties raised by both these equally keen disputants.

It solves Sidgwick's "profoundest problem of ethics," it offers harmony between the maximum of Prudence and the maxim of Rational Benevolence; it rests upon a basis of experience deeper than that of human empiricism; it supplies a sufficient Being beyond man—although an intermediate one; it shows how "the single man's happiness" can be, and, is, the same

as "everybody's happiness," and how the same conduct secures both without any contradiction; it removes the arena from a superficial consciousness to a deeper; it is based solely on an analysis of the facts of thought and action and not on any unscientific method of pretension. It answers by one and the same solution the instinctive requirements of Bentham, Mill, Sidgwick and Moore. And is not every true ethicist such instinctively? This fact is very indicative.

152. It is not a purpose of the present sketch to specially analyze the conscience-instinct. Evidently such an analysis might have much to tell, being founded in a larger life and related to existences not confined to human interests and history. The Person of Evolution is not the fossil of a dead past. It is a living spirit today,— the Living Spirit of the Cosmic Evolution.

LOTZE ON THE VALUE OF JOY.

"Nothing else affirms itself so unconditionally and so immediately in respect of its value as Happiness. Only it has valid claim as the ultimate thing to be realized. Only in regard to it is the question absurd why it instead of unhappiness, must be the final purpose of the world. . . .

"The above-mentioned view is combated in vain from the side of ethical Rigorism, which, through its well-known undervaluation of all 'pleasure,' always, in the practical domain, regards nothing but disinterested obedience to the universal commands of duty as ethical; and therefore in the religious domain also would not, in any case, be disposed to acknowledge 'supreme blessedness' as the final purpose of the world,—perhaps not, even with any readiness, even as a tolerable consequence of that purpose. With respect to this point, we briefly remark as follows: if obedience or disobedience to an ethical law were to occasion not a trace of pleasure or pain to any

sensitive being in the world, whether God, angels or men—it would be utterly incomprehensible why it is just the obedience and not the disobedience to the law that must have an obligatory force, since, after all, the effects of the two modes of conduct consist only in the production of different states of facts, one of which would be as indifferent as the other In a word, it is impossible to understand what is to constitute the 'value' of any action if its results are not able to produce some 'Good' somewhere in the world, or to increase the sum of already existing 'Good' after.

"But while we designate Things, States and Events as 'Good,' it is, after all, only in so far as they are means for obtaining the only real and substantial good, and this latter always exists only in pleasure of some sensitive spirits completely apart from the realm of actuality.

"No Ethics can avoid having regard to a purpose that is final and in itself of absolute value. No matter to what extent many rigorous systems formulate their highest ethical laws, apparently without any such regard, still, in addition to the assurances that they are the highest laws, the conclusion must always be supplied: What, then, would be the result, if these laws were not obeyed?

"The foregoing assertions do not degrade morals. It is not meant by them that the direct endeavor after happiness—and that, too, after one's own happiness—should be the ethically praiseworthy motive of our action. On this point our conscience gives us sufficient instruction, since it interprets the endeavor as in itself considered indifferent and merely natural, but, on the contrary, interprets as ethically laudable only the endeavor to secure the happiness for others. Thus (as might be further proved) the command of benevolence is, among all ethical commands, really the fundamental one, and only upon the assumption of it do all the rest receive their obligatory value.

"On the other hand, in seeking a coherent view of the world, we have a speculative interest in the fact that the ethical commands, which we are able in practice to obey

without any future question as to their origin, are not wholly lacking in coherence with the arrangement of the world. That such arrangement therefore be reckoned to the account of the final repose of blessedness is a speculative claim which we set up in the interest, to a certain extent, of our reverence for the world, but not for the satisfaction of our own wishes for happiness. We are naturally unable to avoid including our own welfare also in this comprehensive final purpose.

"The foregoing are perhaps the incentives which, in religious thought, have led to this doctrine of blessedness. From these incentives are distinguished, and not to their advantage, at least, as regards the intention, the philosophical systems which only in a practical way set up claims upon our obedience to universal ethical law, but speculatively give us no enlightment with respect to the ultimate end to which properly this ceaseless expenditure of ethical energy is to lead.

"Certainly, the laudation alluded to above holds good only of the intention and not of the performance of this religious opinion. It is wrecked rather in the attempt actually to deduce of the present from the supreme purpose of blessedness.

"The first objection certainly might be disregarded, namely, why this purpose could be accomplished at all only as a result of a course of the world; and why it could not be accomplished as well from the very beginning.

"At the foundation of such a question there really lies the logical error of regarding the conception of blessedness or of pleasure in general in this universal sense of it as something realizable.

"But the pleasure that is without content can no more exist than a sensation of 'color in general,' which were neither green nor blue. 'Every pleasure' is rather an altogether determinate one, which is distinguished, as to its intensity and coloring, from others, and in both respects is determined by the nature of the content of which it is an enjoyment.

"Hence it may be made evident that we are utterably unable to form any real idea of a blessedness without content, although we can form the name of it; that it is capable of realization rather only upon the supposition that there are actual relations of some sort which constitute the object of enjoyment in this pleasure; and, finally, that even these relations cannot be as they will, but together must form an orderly arrangement of the world."—*Microcosmus.*

CHAPTER VIII.

The Teleology of the Outer Consciousness

154. Historical.—156. Hicks distinguishes 'eutaxiology" (order-teleology) from Design.—157. Teleology of Joy the sole true Argument for Design.—159. Significance of joy and pain.—160. Persistent joy the proof of purpose. —161. Application to evolutionary design.—164. Identity of evolutionary action with willing.—168. Argument from Order insufficient of itself.—171. All joys prove purpose.—172. James Lindsay's review.—173. Lankester's physicism.

153. In dealing with the various aspects of the Outer Consciousness taken up in the four preceding chapters—General, Personal, Cosmic, and Ethical,—it was evident that they are based upon a special teleology. The concept itself of the Outer Consciousness was arrived at by noting that the bodily functions and instincts, together with many other contrivances and operations within and without the individual are beneficent towards him, yet do not proceed from his own intelligence nor will. Hence they are attributed to a conscious intelligence and personality outside the individual, of such nature as would account for the same sort of beneficent operations for all other individuals. Now this teleology differs in certain aspects from the principles of all other developed coherent systems.

154. To the Greeks and Romans, teleology signified the consideration of "the admirable order of the cosmos and the contrivances of the human frame," (two very

different things), concluding to intelligent governance. Their range of scientific knowledge was too restricted to permit of extensive evidences, in a sphere based upon evidences.

The schoolmen of the Middle Ages, for the same reason, were still less definite. "Certain things without intelligence, as natural bodies," wrote Aquinas, "work toward a purpose."

Later "natural theologians"—and they became numerous—are typified by Isaac Newton, who was awed by "the wonderful uniformity in the planetary system"; by Derham, who rejoiced that "the great God could so admirably provide for the whole animal world everything serviceable to it"; and by Paley, who "took his stand on human anatomy," and said, "our business is with mechanism."

155. In 1883, an American professor, L. E. Hicks, now almost forgotten, in his work "Critique of Design-Arguments," pointed out that two different subjects of study were being confused under the notion of teleology —the Argument from Design or Purpose, and the Argument from Order in the Universe, to which latter he then gave the name "Eutaxiology." His own distinctions between the two arguments and their spheres were open to considerable criticism, but his main point —that there is a difference—has won its way. He says that formerly "natural theologians" advanced the theory that particular evidences of design suggested *ends* or purposes. But that modern science explained these examples as instances of the reign of law, exhibiting order or plan, in the evolutionary form. Hence the Argument from Order to a great Intelligence became prominent among Design-arguments. This was

why he proposed to call it "eutaxiology," or "the sum of reasonings from the Order of Nature respecting the existence of God." He exalts "eutaxiology" rather extravagantly at the expense of design-arguments proper, but makes some interesting and acute observations,—among them that "there has been the ambiguous use of common words, such as "design," and the distorted application of scholastic phrases, such as 'final cause' . . . . . The elements of eutaxiology have been more or less involved in the arguments of physico-theology from the earliest times to the latest. . . . . They made no analysis of the conceptions involved in teleology, no logical scrutiny of its validity, and its limitations." As regards the argument from Order, he says, "the eutaxiological inference would be strictly limited to Intelligence without volition," *i.e.*, it cannot prove benevolence or intention, but only a causing Intelligence.

156. I look at the Argument from Order somewhat differently from Hicks, but agree with him that in its strict form it is distinct from the one from Design. He did not, I consider, give sufficient attention to analyzing the latter, of which my view is as follows: "The socalled Argument from Order is the proposition that *the regular and symmetrical arrangements of things which abound everywhere must be the work of an Intelligence.* But by Order we may mean either of two things: in the first place mere *regularity of parts,* which is an argument for an underlying Unity but not for an Intelligence; or secondly, a *symmetry,* or *relation of parts which pleases or tends to happiness,*—in a word, touches the chord of Joy. The latter is part of the Argument from Design" (*which*

is an argument from Feeling and not from regularity. Order ought to be confined to regularity.)

157. On the other hand, my view of the Argument from Design—which I call the Teleology of Joy, and on which the theory of purpose in the Outer Consciousness is founded, is as follows: If we analyze the simplest type of an act of will, such as extending one's hand to get an apple,—dismissing all previous conceptions of willing, and regarding only the phenomena concerned in what occurs, it will be found to consist essentially of:

the coördination of
A certain series of mechanical movements
With
A certain series of states of consciousness,
Towards a result, a concomitant of which is a pleasure (or away from a result a concomitant of which is a pain).

Complex acts of willing sometimes appear to consist of different elements from these; but such appearances have only to be analyzed to their ultimate constituents to be reduced to the same formula. The impression that other factors than pleasure or pain are desired and felt in willing are based upon reasons similar to those in the ethical arguments for "goods," other than joys, and "evils" other that "pains." Where not solvable by the analyses of the Utilitarians, they are traceable (through habit, instinct and reflex action) to the sphere of the Outer Consciousness after the manner followed in the previous chapter on "The Outer Consciousness in Ethics."

158. The formula of willing above stated is important since it enables one to resolve several ques-

tions which are confusing if considered from complicated examples. From it, for instance, we can at once deduce the conclusion that *we have the power,* to follow joy, and thus are not helpless in the universe,—a doctrine which has immense and precious consequences.

But far more important than simplicity of formula are the results that follow the consideration of the nature of pleasure (or, as it should be termed, joy, and in its higher manifestations, happiness). Once we realize what joy and pain actually are as we feel them and once we have grasped the principle that all things known to us are indifferent except in so far as they result in joy or pain to someone, we recognize that whatever persistently pursues objects of joy presumably understands that joy, and its act is an act of conscious knowledge; and when it persistently brings to us objects of joy it must have a knowledge of that joy and presumably a will to bring it. If it appears to do so unconsciously, then it is proper to look about for some other purposer as a source of the persistent gift. *Joy is so significant that it cannot be overlooked as can the vast stream of indifferent facts* which to us compose the phenomena of the universe in general. *The latter are incapable of proving purpose of any kind, except by superficial analogies.* Joy is the sole fundamental basis of the concept of value. In paragraph 125, I mentioned the confessed inability of some of the most accomplished psychologists to arrive at an analysis of Values on the basis of introspection of the individual consciousness. But on our superpersonal theory the difficulty disappears. Primi-

tive Christian psychology (which is superpersonal) had already solved it.

The words of Lotze given at the end of the last chapter emphasize the significance of joy. Alexander Bain also wonderfully describes it in his passage about the delight of the sweetbriar odor. Hymnology is full of it.

159. In one sense there may be said to be a tropism towards joy. But it is the fundamental purpose-tropism, unlike any other in being that which interprets all the other tropisms. Loeb thought that by artificially imitating all the others he had settled all tropisms as physical and banished mind as a directive. His successes in producing artificial reproduction and tropisms towards light, chemicals, and so forth were no answer to the psychic "tropism" towards joy. When defeated in one form it seeks and finds another. And in palæontologic life, in the words of a master of that science, Henri Ami, "it is forever going one better." So also in the cosmic sphere & probably more so.

When therefore we find the persistent results of the operations of the Outer Consciousness to be to bring us joy and enable us to evade pain, the natural conclusion is the presence in it of conscious intelligence. This is the principle of the Teleology of Joy. It throws a light on the operations of the Outer Consciousness and opens up a new world to discovery. I propose to briefly sketch the difference between this teleology and those to which men have applied that term, as well as to recapitulate the conclusions to be derived.

160. A distinction between the true Argument from Design and the true Argument from Order has been drawn above, and some defects in the latter indicated which reduce its value to secondary and derivative;

that from Design being based on conclusions from joy-and-pain, while that from Order rests on regularity and therefore upon *indifferent* facts. This conclusion is confirmed by a study of these arguments and the discussion thereon presented in Hicks, Janet, and similar compendiums. There is nothing in the Argument from Order that the mechanist doctrine of an immanent unconscious order in the universe does not plausibly explain. In that from Design, however, there is strength, not in bare appearances of ends, but in so far as the examples imply some phase of the Teleology of Joy. "Benevolence", "goodness", "utility", "kindness", "benefit", "beauty", "admirable provision for the whole animal world" were some of the phrases of old teleologists that betrayed their foundation. John Ray in "The Wisdom of God Manifested in the Works of Creation", 1691, wrote: "The great wisdom of the Divine Creator appears in that there is *pleasure* annexed to those actions that are necessary for the support and preservation of the *individuum,* and the continuation and propagation of the species; and not only so but *pain* to the neglect or forbearance of them."

161. Hicks was very partial to his Argument from Order. He says (p. 355): "The mind-marks stamped upon any geometrical figure are deeper and more ineffaceable than the merely human marks. If we found such figures in places inaccessible to men, we should have no doubt of intelligence having been concerned in their production." Is not this bad logic? Crystals do not prove intelligence. Neither does regularity in constellations. Hicks admits other limitations: "The utmost" he concludes, "that can be claimed from this

argument alone is that intelligence exists in the universe. A personal Supreme Being is not proved; volition is not proved; benevolence is not proved; even intelligence is not proved to be infinite." (p. 368.) This too is one of the chief defects in the system of Driesch, whose principle of "wholeness" (ganzheit) is based upon Order.

162. Today it is possible to construct a new teleology on the basis of evolution. Ample material is to be found in the innumerable contrivances for joy and success which are such outstanding marks of the great process. But this mass of marks of intelligence should be interpreted *as one movement*—not a congeries of individual disjecta membra. There is an intimate connection between joy-and-pain and evolution, consequently close study should be given to these facts and all possible use made of them.

163. Recognizing the overwhelming evidence for evolution, noting its identity of type with human willing, and applying the test of persistent joy-production and pain-evasion to the consideration of functions and instincts, the unity of this joy-producing movement everywhere will be noted, and in it a conscious personality seen at work.

164. Once the Teleology of Joy is thus applied and its cumulative strength perceived, the Argument from Order becomes a powerful branch and auxiliary of it,—not because of order in itself, which remains an indifferent fact, but by contributing the joys of unity, vastness, stability, and ease of comprehension which the fact of vast order can bring to a world of joy,—a world of design.

165. Other historic arguments fall into place in the

system. The misnamed Argument from Final Causes —the other remnant of the older Argument from Design—being the doctrine that converging lines of construction toward "ends" prove purpose—proves nothing except in so far as it coincides with the teleology of joy. We have remarked how the regularities of crystals prove nothing at first hand, and how the theory of an immanent order (which is a mechanist theory) is a sufficient reason for such appearances. The phrase "final causes" also has nothing to do with the law of cause and effect, but is a verbal notion of the schoolmen. Nevertheless, although muddled in logic and phraseology, this ancient argument has rendered good service in the past as a football for debate and for the trying out of distinctions, and has nursed its twin offspring, the Teleology of Joy and the Argument from Order. It is not hard to study these considerations if one reads with an independent mind such a repertory of the theories as Paul Janet's "Les Causes Finales" and the more so because Janet was substantially pre-evolutionary, writing just before and after the dawn of Evolutionary thought.

166. If confusion has sometimes resulted from the fact that in man himself, his ends sometimes have the appearance of being devoid of any motive of joy or pain, or may even occasionally court pain rather than joy, it is because the true end does not lie on the surface of the individual consciousness but in the larger consciousness behind it.

167. Paley's much-borrowed analogy between the found watch and the ordered constellations and anatomy of man, falls into the same category. The watch is an object of a class which our experience

tells us is frequently manufactured by men. Our experience cannot say this either of the constellations or of the anatomy of man. *As a mechanism,* natural selection quite explains the latter, and the related doctrine of immanent order the former. There is no reason why an accidental universe should not be accidentally of an orderly form. There is so far no compelling reason for assuming intelligence. There is no teleology in mechanical phenomena except where close association with conscious phenomena afford some derivative force of inference.

168. Darwinian "natural selection" does not explain Happiness: but is essentially indifferent,—a form of mechanism. Nor even the "subjective selection" of James Ward—except in so far as it might involve happiness. The present theory of Affective Selection aims to fill the gap.

For in the sphere of animal consciousness the logic is different. When all the guards and contrivances for the protection and benefit of the infant, and all those for the benefit of man and the animals are contemplated, a totally distinct class of examples are recognized. The objects have feelings. Paley's Argument has that much of solid residuum. If it were invariably accompanied by *torture,* that Argument would fail.[x]

169. The Argument from Conscience and a Moral Order in the Universe likewise has its true basis in the Teleology of Joy, as was explained in "The Outer Consciousness in Ethics."

Of the other historic Arguments which theists have enshrined in "natural theology" the Ontological, and Causal, are not of teleological nature, and the

x When scrutinized, this new Theistic Argument will be found to be of enormous cumulative strength — even much greater than that for Terrestrial Evolution itself — to which it is closely related.

Anthropomorphic is founded on an assumed likeness of God to Man. It also has a sound residuum, if not pushed too far, for it is by man's psychology alone that we can find materials for psychology in Nature. The Outer Consciousness is the link.

170. The results which might be achieved by the Teleology of Joy have been partially indicated. In the chapter on "The Characteristics of the Outer Consciousness," was sketched the application of the principle to the outcomes of functional, instinctive, and evolutionary operations, carrying the happiness-interpretation of Bentham and Mill, concerning objects of desire into the realm of the subconscious, and of the so-called Unconscious, throughout the realm of living beings. In "The Person of the Outer Consciousness" it was aimed to show that the proposed Teleology dissolved the claims of the mechanist philosophies; and the light it might throw on future happiness, individual personality, and immortality, was suggested. In "The Cosmic Aspect" the same principle was advanced as of probable use in tracing the scope of the Soul throughout the universe at large.* In "The Outer Consciousness in Ethics," it was applied to the clarification of moral ideal and intuition, and to reconciliation of the great schools of ethics.

It may here be added that the great success of Behaviorism—and as a one-sided system it has shown itself of immense scientific value in the hands of men like Loeb, T. H. Morgan, Watson and Bernard,—is founded on the inherent uselessness of indifferent (non-affective) facts to prove purpose or directiveness. John B. Watson has said: "We need nothing to explain behavior but the ordinary laws of physics and chemis-

* In the Cosmos too, 135, the principle of Evolution (p. 130) that it is "forever going one better" means increasing altruistic happiness, forever advancing towards the Better World, the moving Goal of all Evolution.

try" . . . . . and "Order in the universe is merely a matter of conditioning." But the defect of Behaviorism is that it overlooks the inherent significance of affective facts.

171. If purpose be invariably attended by joy-aims, then it is legitimate to look for purpose wherever there is persistent beauty or other joybringing thing, wherever there is *any* joy or joy-bringing thing at all, wherever there is instinct or aspiration. And joy may prove to be an undreamt of interpreter of the universe. For the lovely beauty of the woods, the stars, the innumerable snow crystals, the coral marvels of the oceans, the shell iridescences, the uninhabited places, the cloud-realms, the boundless universe of boundless loveliness,—all are for our deeper Self. The marvellous eye and ear are only rudimentary stages towards one complete Sense. Human delight touches only a drop of the Ocean of Joy. Is it too bold a hope that this theory of an Outer center of consciousness may offer a field of detail and discovery in evolutionary psychology not unworthy of a humble place beside the other fields now so well explored. Has the vast element of Feeling ever been given its chance in science? Or has it been abandoned to Mysticism?

NOTE.

172. In order to better fix the place of the Teleology of Joy, I append in condensed form, the following résumés of two sides of the matter, by two competent authorities, who seem to me to give fair accounts of the recent position of teleological theories as seen from their opposite points of view.

THE TELEOLOGY

I.

The Rev. James Lindsay, LL.D., in "Recent Advances in Theistic Philosophy in Religion," 1897, (pp. 170-215) says: "It appears to us a decided theistic advance that the Eutaxiological argument, drawn from the order and harmony of nature, as betokening plan and speaking intelligence, has its relations and serviceableness as a preliminary to the teleological proof, more exactly defined and more fully described. In a vastly higher way it has been seen by the Eutaxiologist how, in the words of Dante:

> "Among themselves all things
> Have order: and from hence the form, which makes
> The universe resemble God."

These twin arguments have better recognized each other as theistic allies, and have dwelt in larger unity. . . . . We agree with those who perfectly recognize the entirely changed aspect of the Paleyan argument from adaptations when these adaptations are viewed in the light of their being issues of a process of evolution in time. . . . . We must believe it the need of the philosophy of theism today to dismiss the idea of design to begin with, and to lead up whither the teachings of evolution may direct. . . . . We certainly insist on all rational caution in divining of final causes or intrinsic ends. . . . but not practical abandonment of all belief in ends that have been devised by intelligence. . . . . True, such ends cast little or no light on the nature of conceiving or devising intelligence,—say as to the unity or the immanence of said intelligence. . . . . .

There is good reason to lament that more has not been done to enable design to reassert itself amid all evolutions of time. Only those who have followed the course of recent theistic endeavor know how much loose thinking has had to be cut away from scientific sophistry as to final causes. . . . . It has recently been the aim of theistic thought to concentrate its attention mainly on the field of organic nature as being that wherein adapta-

tion to internal ends or evidences of will-purposes are most palpable. . . . . And it concludes only a *finite* cause adequate to the phenomenal world, for that is all that can here be legitimately inferred. . . . . Recent theistic philosophy has purified itself of any former philosophic indiscretions in the sphere of teleological inquiry. . . . . It perfectly recognizes the fact that the material with which he works must have a limiting effect for the Designer. . . . . In the spirit of the *Ethics* of Aristotle, it sees purpose combining with all action, sees some end or good for every movement. . . . . The immanent thinkers like Trendelenberg have held a philosophy of design to the effect that wherever design is found realized in the world it was preceded by thought as its First Cause. . . . . But of course we must see that there *is* design, and not the fact of actual fitness or adaptation merely. . . . . It may be perfectly true that we are called to reason from the present life and no other; but under what compulsion must our view of the present life be confined to what is merely external? . . . . . There must be no blinking of the sad facts of plague and tempest, of dearth and disaster, of disease and death. . . . . But it has more carefully distinguished the suffering animal world from the world of suffering man, recognizing in how many ways the former is exempt from troubles that belong to man as a being gifted with rational foresight and beset with so many hopes and fears. . . . . Thought has enriched the world with a wider and worthier teleological view of the world as an organism having an end in itself than was possible to the older theory of it as a machine of so many parts indwelt by no principle of life. . . . . and has shown a decided inclination to at least entirely discard the phrase 'final cause,' since end is not properly cause at all. . . . . It has preferred to view end or purpose in an inductive light rather than an a priori aspect. . . . . Still, we must reject an unconscious finality as foreign to all our experience. . . . . Professor Romanes thinks the inference of our knowledge as a whole to be towards establishing the fact that design—if operative

in nature,—makes for animal improvement or evolution, rather than for animal enjoyment or well-being. . . . . There is no such thing as an unconscious teleology. . . . . What we have been showing has just been the utter impossibility or futility of trying to escape a true and real teleology in Nature, as it appears to any scientific or organically evolutional view of the universe. . . . . but it must be said that the ripest results of that argument are yet to be found.

II.

173. An opposite view is contained in the article "Zoology" by Sir Edwin Ray Lankester in the Encyclopædia Britannica, 1911:

"Darwin's theory had as one of its results the reformation and rehabilitation of teleology. . . . . The so-called evidences of design which was supposed to modify the limitations of types assigned to Himself by the Creator were seen to be adaptations due to the selection and intensification by selective breeding of fortuitous congenital variations which did not survive in the struggle for existence. Thus not only did Darwin's theory give a new basis to the study of organic structure but . . . . . finally, it brought the simplest living matter or formless protoplasm before the mental vision as the starting point whence, by the operation of necessary mechanical causes, the highest forms have been evolved, and it rendered unavoidable the conclusion that this earliest living material was itself evolved by gradual processes, the result also of the known and recognized laws of physics and chemistry from material which we should call 'not living.' It abolished the conception of life as an entity above and beyond the common properties of matter and led to the conviction that the marvellous and exceptional qualities of that which we call 'living' matter are nothing more or less than an exceptionally complicated development of those chemical and physical properties which we recognize in a gradually ascending scale of evolution in the carbon

compounds, containing nitrogen as well as oxygen, sulphur and hydrogen as constituent atoms of their enormous molecules Thus mysticism was finally banished from the domain of biology, and zoology became one of the physical sciences."

A revulsion from the evolutionary mechanist position of the last writer is well under way. But by comparing Lankester's point of view with Lindsay's, one obtains a conspectus of the conflict which still constitutes the teleological situation, and it may facilitate an understanding of the place which the theory of the Outer Consciousness seeks to fill.

Cf. pages 240 seq.

CHAPTER IX.

The Outer Consciousness and a Future Life

175. Our centre of consciousness outside us.—178. Instinct of future life.—179. Four forms.—183. Man is like a leaf.

174. Whoever aims to present a new thought concerning conscious survival after death starts against heavy odds. James, in his Ingersoll Lecture on "Immortality" remarks that "at the back of Alger's 'Critical History of the Doctrine of a Future Life,' there is a biblography of more than five thousand volumes." Any large library has a formidable collection. Not only has the question been a first interest of all mankind for untold centuries, but everybody knows that it has brought out many of the profoundest reflections of the best philosophers, poets and theologians.

Still, the hope remains that, founded on the evolutionary facts collected in a new age, which have affected the forms of so many other ideas, a new aspect drawn from them may prove unhackneyed.

175. In nothing does the placing of the centre of our consciousness outside the individual man, by the method indicated in the previous chapters of this series, seem more fruitful in possible practical consequences than in respect to the question of conscious survival. In effect, it implies an offered solution; for if our larger life is already beyond the body, the dissolution of the body does not mean our extinction. This point

of view evidently differs from all theories which are centred in the individual man. Just as in Ethics and Teleology, whoever seeks the solution in surface phenomena of the individual consciousness must meet formidable uncertainties. And if, on another hand, it be sought in the physical phenomena of the body, these are all, or nearly all, against survival. But if the death of the body is like the fall of a leaf, and our centre of life is in the Tree, the conclusion is at once different . No bodily,—in fact, no material,—changes affect the persistence of the deeper consciousness. The fall of a star is in this respect the same as the fall of a leaf.

176. The next differentiation of our theory is from all those noble and ancient religious conceptions which regard man's soul as an emanation from some form of the divine; not because their principle may not be substantially correct, but because they do not rest on inductive reasoning, as this theory aims to do. Nor is it necessary to add that, for the same cause, it is to be distinguished from all the modern deductive metaphysical hypotheses, and the great mystical systems which attribute to man various relations to a Universal or Central Unity.

177. What we seek is to explore the capabilities of inductive scientific argument. Ours is one of the attempts to unravel the story of evolution. And with special emphasis on the elements of its psychological side. By applying the Teleology of Joy,—which is only a clarification of the Argument from Design—we arrive at conclusions which are a beginning of insight into that Outer Life of which we form parts, and that Outer Person, with whom we are one, and

with whose consciousness ours displays its unity by a constantly varying coalescence. Some of its characteristics of that Life—the life of the Person of Evolution—(for it is more than a process, an entelechy or a Power)—have been suggested in the preceding pages. In brief, they are: its action as a vast composite living being, of which all lesser individuals are really and truly extensions; the antiquity of its life-history; its continuous partial appearances as instincts and intuitions; its purposive reasoning; its ingenious intelligence; its care for vast and unknown numbers; its independence of human intelligence and will; its universality of outlook; its appreciation of Joy; its progress towards universal happiness. Many other characterizations are probably within our power of knowledge; although we must recognize that human knowledge has great and certain limitations.

178. If we examine the connection between the Outer and Inner Consciousness, we will notice that when an instinct, such as the maternal, wells up in a human inner consciousness, it blends with the conscious reasoning of the moment, and the two correct one another for the best welfare of—in the example of maternity—the infant. Since this is a typical example, it proves the continuity of our conscious purposing with that of the Outer Consciousness and the unity and similarity of their willing and purposing. If we turn from the standpoint of similarity and close association to that of origin, we are borne to the same conclusion. Our embryology and descent refer us unmistakably to the same unity of consciousness with the rest of the evolutionary family or Person. If again, we scrutinize the problems of the moral con-

sciousness which have been touched upon in "The Outer Consciousness and Ethics", we are once more led back to that unity.

179. We now turn to the instincts—part of our mental and, as we hold, conscious heredity. For us the instincts are not subjects that go beyond our programme of inductive logic. They are part of the special material of our theory and therefore not alien to its rules. Instinct (in that broadest meaning, which includes also the functions and all their related phenomena) wells into the human consciousness in four forms:

(1.) That of infancy—the period of unreflecting trust in the operations of the Outer Consciousness,—a miniature indication of the nature of that other life.

(2.) That of "happy-dying"—a form of repetition of, and return to, the instinctive trustfulness of infancy—and, like it, an indication of the nature of the other life.

(3.) That of the unsophisticated—including all unlettered peoples and classes. Here, though mixed with more or less misinformation and illogical errors, its essence can be distinguished in religious faith and aspiration.

(4.) That of the sophisticated: where the glare of consciousness of the mundane world obscures instinct and emphasizes the superficial phenomena of that world. Yet to perform this emphasis is the first purpose of the human individual considered as an organ—a local focus of the Outer Consciousness. In fact this emphasis is a necessary process of evolutionary adjustment to a particular environment. Thus this local world of ours, though small, is rich in sharp distinc-

"It is not unpleasant to die. The 144 dying person slips drowsily away. At the last there is no pain. Doctors say so. Those who come close to death say so. With their last words those who return from death (some do) say so." - Dr I. H. Pearce, in Penn. Med. Journal, 1938.
Regarding return from death - Dr. Alexis Carrel says: "Life can be restored"

tions and clear perceptions so far as it goes. It is the task of our science to apply these to all existing phenomena and thus in the end to enlarge the work of consciousness. With regard to the question of conscious survival, it must consider instincts one by one and in their characteristics on the plane of individual consciousness; and also, and more especially, in their general movement and meaning in the mass, as part of the one great movement of evolution.

180. With respect to the first form in which instinct wells into consciousness, none can improve on Wordsworth's "Ode on Intimations of Immortality in Early Childhood." The second is amply proved by the testimony of many physicians and soldiers familiar with the last moments of the dying. The third is the subject of innumerable religious books. In Hebrew-Christian literature it is expressed by

"I know that my Redeemer liveth."
"The Lord is my Shepherd."
"As the hart panteth after the water brooks."

The fourth form has simply to systematize the other three.

181. Each of the forms is a phase of the evidence. Complete study of them all is desirable. Some further remarks on the subject have been made in the chapter on "The Cosmic Aspect." and 240 seq.

182. Nothing is to be gained here by entering into attempted descriptions of the nature of the other life. Enough that, according to the indications of our subject, it is conscious, personal, benevolent, continuous, brilliant, happy, progressive, immortal for at least all purposes we can regard as practical, infinite in the

same sense, and as infinitely profound and multifarious. If we aspire to detail knowledge beyond the scope of our limitations, we ought not to expect it, but since we do not know our full limitations, there is no reproach in continually attempting to scale them.

183. Although our world of phenomena is the world of detail for us, may it not enable us to attain indirectly some valuable grasp of even a part of the detail of the world of our Outer Consciousness? Our world is part of the other. In addition to being able to put ourselves in the places of many other forms of living beings of our protoplasmic cousinhood, may we not reap something from studies of colonialities in general. As individual organs of the great evolutionary protoplasmic being, is each of us not a colony of it, and not merely a colony separated but a colony unseparated and still a living part of the original? Is not all organship simply a form of coloniality? And are the laws of coloniality not also laws of purposing? Has coloniality in all its aspects ever been seriously studied? Thus a new psychology—that of the super-personal mind, would seem to present itself.

Yet for the present paper these vistas of enquiry, are but variations on the main matter concerning the other life—the maxim, that whether the Tree be of one foliage or another—whether its flowers bloom in one or another concord of shimmering loveliness—OUR LIFE IS IN THE TREE.

And conversely, as we are an unfolding of the Tree, so all that is in us helps to explain the Tree and is all packed into the earliest seed of terrestrial life. Our Tree of origin is the life of the outer universe. Here then is our original Tree, and containing life it must contain conscious knowledge.

(Revise) or (Omit & replace)

CHAPTER X.

The Psychology of the Outer Consciousness

185. Simile of a strange animal.—186. Principles.—187. Characters of the Person of Evolution. Superpersonal. Aesthetic. Discriminating. Thinking?—193. Selfhood. Space. Time. Categories. Willing.—195. Differences from Man.—196. Its conditions of study.—197. Its unity. —199. Coloniality.—201. Its extra-human fields of joy.—204. Superpersonal psychology compared with behavioristic.

184. I have now to approach that uncharted enterprise, the psychology of the Spirit of Terrestrial Evolution. My utmost possible must be a trial sketch and, I know, a poor one.

185. Let our enquiry begin with the simile of an unknown animal (to represent the Outer Consciousness,) which comes at night out of a boundless wood, and leaves tracks and traces in a settlement. I would even for a moment over-emphasize the analogy of a superanimal so as to draw more sharply the distinction between this question, which is a psycho-biological one of an empirical kind, and those deeper questions, theistic and metaphysical, which lie behind it. Even the words "eternal," "infinite," "absolute" and "universal" in the technical sense shall be avoided, as scarcely fitted to inductive argument.

186. We have arrived at certain special principles of the enquiry which shall serve as guides for its continuance. They are:—

(1.) That the typical act of human willing con-

sists essentially of the coördination of a certain series of mechanical movements with a certain series of states of consciousness, towards a result a concomitant of which is a pleasure (or away from a result the concomitant of which is a pain).

(2.) That that act is the type, not only of all human acts of willing, but of all the purposed acts of all animal creatures; and of all their reflexes, habits, functions, instincts, behavior, intuitions, conduct, in short of all their movements, conscious, subconscious, and unconscious; also of the development of all vegetable organisms;—of, in fact, all living substance, and apparently of all action in the known universe.

(3.) That all is (as regards its prima facie apparent character) the purposive work of one vast conscious Actor, a biological entity, manifesting a colonially organized form of conscious life, and being the deviser of many ingenious devices.

(4.) That its aim is the establishment of the most perfectly attainable happiness (and freedom from pain).

Doubtless there is a conceivable possibility, of an extremely tenuous sort, that there might exist other purposive elements than joy and pain, but the consideration is not practical; joy and pain are a sufficient explanation of all the facts we know. They are the factual affective material we find in our world, and on them alone serious psychologies of action and conduct should be built.

(5) That it attains much, but not all, of the desired end.

(6.) It suffers many apparent disasters and

failures. (If we could grasp the whole process better we might think otherwise).

(7.) The process of Evolution is the general and all-inclusive form of action of that entity, and is one continued act of purposive willing, of which all other actions are but details.

(8.) That that entity, the Terrestrial Person of the Outer Consciousness, following always the urge towards happiness, is constantly striving, by the constructive power inherent in its willing, to build out, and perfect, organs of itself in all directions, and it is more or less successful in favorable environments. All the terrestrial protoplasmic creatures, both vegetable and animal, are such organs, thrust forward by it during its past terrestrial life or phase, of many millions of years.

(9.) That the evidences of its purposive action in nature—and the only true proofs of purposive action in general—are those arrangements and devices which persistently produce joy and avoid pain. These constitute the basis of a Teleology of Joy. Those more orderly arrangements which are found throughout the universe, stalactites, salt mine caverns, crystals, solar systems (the subjects of the so-called "eutaxiological teleology") do not necessarily prove purpose when not associated with joy or pain ends. Whitehead and others have certainly greatly enlarged the scope and connection of analogies of Order in the universe, but none have yet arrived at so obvious a chain as to produce conviction of living unity. Consequently it is to the facts of æsthetic feeling that we have to look for primary light concerning this psychology.

187. What then do the "tracks and traces" of this biological entity show?

Firstly, the seat of the consciousness of pleasure and pain shown in the purposive actions of the outer universe as we have before noted—is outside any terrestrial individual: so that the central point of view must be sought from that angle. Unless it has several subsidiary foci, in which case its central point of view would reside in the mass.

189. Secondly. The consciousness so indicated is primarily a series of æsthetic feeling. The series resembles in some degree our broken phases of Feeling. It bears the features of the pleasure-indifference-pain scale. It bears the evidence of wider, more perfect spread, variety, age and acuteness. It is so essential a part of the Outside psychology that wherever we find joy persistently produced, there is part of the action of the Outer Will, and at the same time it is an evidence of joy in the Outer Spirit's own psychology. If we can add together, and put into their connections all the joys discoverable, past and present, we can draw a faint and imperfect picture of this part of the Person of Evolution's consciousness. Does it feel them as the many as well as the one?

A friend of mine.

E. B. Titchener remarked several years ago something to the effect that Feeling had not yet received sufficient attention at the hands of scholars. Nothing truer has been said of recent years. It is as if the schools of art were attending entirely to drawing and neglecting color.

190. Thirdly, the "tracks and traces" of the suppositious Superanimal exhibit the faculty called Discrimination, or intelligent consciousness. For with

the æsthetic feeling, there go the marvellous purposive adaptations. Consciousness in the one form proves consciousness in the other. There may be unconscious order, but there is no such thing as unconscious adaptation to feeling. Discrimination implies awareness, the general characteristic of consciousness.

It also implies something more than awareness,—what in man we would call thinking. But in the Outer Consciousness it cannot quite follow the same method as human thinking, depending on our form of neurone. machinery. But has it a machinery? It certainly uses and has built for that purpose,—the human and other protoplastic neurone mechanism. Our neurone mechanism—the whole mechanism through which our thinking works—is devised to meet the needs caused by the smallness of the individual's sphere compared with that of the Evolutionary Person. To that end the small nervous and psychic range is concentrated into the changing focuses we call Attention; and various forms of mnemonic and other storages of results are added. The Outer Attention is vastly wider and more inclusive. Space and time would not come to It in small and roving instalments. Its world would be wider and more complete, its past would stay longer, its future be seen more clear.

Thus we can probably cast some dim light on another aspect of the psychology of the Person of Evolution if we can add together in their proper connections and attentively survey, all the existing intelligent adaptations in the universe. And how far do the mechanistic problems of our psychology apply?

192. Discriminatory consciousness being but another form of perceptual consciousness, I venture to

offer here (with due deference to all the wonderful details and theories of experimental psychology and physiology), a suggested statement of the relation of the latter to æsthetic consciousness. This one is very like others that have been advanced, such as Herbert Spencer's "activity" formula of pleasure and pain. It is adjustable to forms of protein simpler than the cell.

Conceive an unwalled single cell of amœba type. An object from outside impinges against a point on its periphery. At the first moment of the impact its presence is merely perceived: since it is not yet apparent whether it is destructive to the organism or can be absorbed constructively by it,—physical alternatives associated respectively with pain or pleasure. It is therefore not yet assigned to either the pain or the pleasure end of the joy-pain feeling-scale. The state of consciousness produced by it is therefore at the indifferent point between the two. *This indifferent form of consciousness is pure perceptual.*

193. In feeling and in intelligence then, the consciousness of Evolution exhibits some family likenesses to, and differences from, the limited human constitution.

What are those likenesses, and what the differences?

(The simile of a "Superanimal" having now sufficiently served its purpose, the term may be dropped.)

Are there not present in the Evolutionary mind evidences of other essentials of the human consciousness,—*self-hood, time and space* (*or space-time*), and so forth? How can a terrestrial, or even a wider, biological entity be conceived as other than existing in time and space: and if conscious, conceiving itself as

so existing? But does not Einstein recognize a "relativity of simultaneity"? May there not be another *relativity of time?* Consider some short-lived butterfly's view of time if it could have one? Let us say that it finds events which to us are quite momentary long and full of incident. What if the Outer Person regards all geological time as we regard a moment? It is not likely that Outer Person time is very like human time. Similarly with Outer P. space. The part played by Attention in these is closely associated with their psychology.

How far the Kantian system of analysis might apply, and how far not, is another question. To apply the human categories is certainly difficult.

194. Then there is the power of willing itself,—the to us unknown source of the nexus between æsthetic feeling and action—between the world of æsthetic consciousness and that of physical phenomena, as man might say. How does the Outer Person experience it? We cannot conceive much about the nature of that to us unknown power; we can only note it. But there should be some resemblance.

195. If such be some of the features in which the psychology of the Outer Person seems to have family resemblances to that of man, we can also note some additional differences:

Firstly, in the Outer Person's duration and extent.

Its past life would be obviously at least all palæologic, and perhaps all geological, time.

And in all probability an immeasurable previous past.

All the events of its past existence are evidently before its consciousness, for its devices are grounded

upon its experiences. Unlike those of man, whose momentary consciousness is always limited by the capacity of his Attention.

Moreover its aims for the *future* are always before it. How much farther can it see forward than man? Are its experiences the measure? It adapts its conduct by trial and error, like us.

The vast field of its present operations, and all the feelings and natures of its prodigious numbers of organs, are also before it. The protozoic, the subhuman, and the human minds, are probably all alike present in its consciousness.

This broad and ancient outlook is the ground of its and our own consciousness of moral universality (as outlined in Chapter IV., "The Outer Consciousness and Ethics",) and of all instinctive knowledge.

196. Another point of comparison. A man's conscious intelligence is only a small part of the intelligent processes going on in him. This is clear evidence that the intelligence of the Outer Person, which includes them all, is, as might be expected, immensely greater than the man's.

Does not the key of individuality lie in the nature of *Attention*? For if a man's individual consciousness is connected in faint (and even to him apparently unconscious) forms with that of the Outer Person,—and with other consciousnesses, either through it or directly—then the individual personality is larger than it appears to him—*i.e.* larger than it appears at its individual centre of attention—and its very nature as a concept is conditioned and formed by Attention, the concentration of consciousness. In a babe, is not the formation of experience an operation of "selective

attention"? And with the experience the notion of personality? The only device by which limited man is able to use his consciousness is to use small portions of it at a time by successive concentrations of his attention.

The same reasoning applies to the æsthetic feeling of the Outer Person. We leave behind the realm of our little senses. Does one great inclusive Sense take their place, sentient simultaneously to every vibration of profoundest space, sympathetic to every emotion, sensitive to every beauty, experiencing the heights and depths of a scale of which we only know a broken section?

It is evident that if we are to attempt to understand the Person of Evolution, we must coördinate the psychologies of all the protoplasmic individuals, kingdoms, orders and communities. To human, we must add social, and then comparative, and genetic, psychology, and the revised teleology, and then the independent position of the Person of Evolution itself, and allow for its unknown powers.

197. How far is the Person of Evolution psychologically a unit? Is it rather a loose and disconnected combination? Or is it an entirely unfounded concept, whose elements are not connected in any way? The last is in effect the working hypothesis of the psychologies of to-day. Any general handbook will confirm it. Yet it is an unthinking assumption.

The real arguments against unity are those of the pessimists, and now chiefly resolve themselves into the conflicts which exist between species and individuals in their struggles for survival. All animals live by destruction of vegetable beings: much vegetable and

protozooic life is destructive to animals. Every species is in battle against others. Most individuals are in some mortal rivalry with neighbors: and the lives of the predatory species seem to us bloody scenes of horror. Since each of all these derives its impulses from the Outer Person what unity can there be in the latter?

Yet if they be all thus conceived to be derived from the Outer Person, it has at least the unity of a source of origin. Their common descent proves and preserves a long unity in time; their continued relationship a wide unity in space. And the constitution of man's mind is proof that a good deal of the interior apparent conflict is compatible with psychological unity.

And on the other hand, are not the conflicts more apparent than actual? Some reasons have been cited in the previous papers. Are they not parts of a method which is unitary in reality? The problem of the proof resolves itself into a question of relative joy-pain. In our chapter on "The Person of the Outer Consciousness" it has been suggested that the pains supposed to be attached to these conflicts are more apparent than real. Alfred Russell Wallace (Darwinism pp. 25, 26, 27.) says: "Now there is, I think, good reason to believe that all this is greatly exaggerated; that the supposed torments and miseries of animals have little real existence. . . . . We must remember that animals are entirely spared the pain we suffer in anticipation of death—a pain far greater in most cases than the reality. . . . . On the whole then, we conclude that the popular idea of the struggle for existence entailing misery and pain on the animal world is the very reverse of the truth. What it really

brings about is the maximum of life and the enjoyment of life, with the minimum of suffering and pain."

May we add that conflicts are part of the "trial work" of the evolutionary process. And by the fundamental principle of revulsion from pains, they tend finally to their own correction and contribute to the advance. Everything is "in process."

198. One thing however must be admitted. The process is not an ideal one, judged by the standard of joy-pain. This admission must be allowed its modificatory weight as regards the unitary nature of the Outer psychology. It is a unit, but not a perfect one.

199. There is one way in which it has been acting as a unit: it has pursued throughout the ages a single progressive end. By this it has crept from improvement to improvement until in this visible world of ours it has manifested among other results, the highly organized constitution of man, the song skill of birds, the marvels of insect achievement, the many glories of flower life. Must we not conclude that the progress attained is an increase of the happiness of the Outer Person as well as of its system of manifested individuals? And if the synthesis of its results be qualified by a certain element of apparent failure in parts, would not this in general indicate that the Outer Person "mental makeup" is colonial, having some, perhaps remote but typical, sort of similarity to man's in that respect?

200. Coloniality in fact seems to be the plan which best explains its actions. Innumerable individual personalities each living its own brief life, nevertheless—mostly unconsciously—contribute also to the dominating, persisting, life, and help to carry on the common

action and the larger consciousness. Coloniality, in fact, has evidently a far broader place than man throughout the universe, psychologically as well as physically. And somewhat as each colonial cell in a man,—each of his multitudinous cells—responds to every single impact of a stimulus from the environment and contributes to the high and subtle complexities of his every thought and feeling, so apparently in greater degree, the vaster multitude of "cells" in the larger Person contribute to its unfathomable consciousness.

Its coloniality can scarcely be very nearly the same as man's. Some of the differences are obvious—its magnitude, power, grasp, antiquity, permanence. Man has a relatively insignificant number and type of sub-individuals. And has it not a knowledge and care respecting the included individuals which man scarcely begins to possess, and which those beneath him never can?

What is the scheme upon which its uses of Instinct and Intelligence are adjusted and correlated? How can we more than feebly sketch it?

201. Are there not also indications throughout our world, of other fields of Outer Consciousness action concealed within its materials, which favor the thought that other lives than any of those known to us may be part of the same system? Some of these indications have been mentioned at the end of "The Teleology of the Outer Consciousness",—the beauty of the woods, the stars, the hiding wild flowers, the innumerable snow crystals, the ocean corals, the cloud-realms, the further universe. For whose eyes are

these? Does not he who sees them see into the heart of the Outer Consciousness?

202. In a recent visit to a natural history museum, I was struck by other examples, including the following: the golden-pearly sheens and graceful forms of many shells of old geological periods, such as the *Placenticarus placenta,* embedded in quantities in the rocks of Western Canada; the *Ammonites,* large and small, very numerous, exhibiting similar pearly patinas, as well as the elegant *Ammonite* volute patterns resembling the finest ancient Ionic marble capitals; the *Abilone* shells, so prized for ornament by Pacific Coast Indians, which have their best sheens deeply concealed by weathered incrustations; the endless delicate shapes and tints of the *pectens;* the snowy intricately woven tubes of the *Euplectella speciosa,* whose alabaster loveliness is hidden during its lifetime as the skeleton of that sponge, and whose marvellous process of building up its silica spicules has recently been described in *Nature;* the generations of graceful ferns, cones, and palms preserved in the Coal Measures of the world; the sparkling crystals of calcite embedded in fossil shells, and the endless world of gems, precious and semi-precious both in hoards and throughout the substance of the rocks themselves.

203. Beside these were ranged other beauties meant for the delight of certain living creatures, but in whose production they have no part. There was the brilliant breast and neck of the peacock, its mass of varied indigoes and dark and light blues shading into greens and olives of all possible tones; there also the humming birds, the male Rubythroated, *Trochilus colubris,* the *Chrysolampis,* the *Cometes,*—all with that marvellous

brilliance of breast patch as if to burn the entrancement of their color harmonies into souls akin to theirs; there were also the *cayenne Cotinga* with shining peacock blue body, dark blue wings and tail, dark maroon throat and golden eye with black pupil; the *Cotinga caerulea,* with indigo body, dark blue wings and tail, and darkest maroon throat and breast; and the Red-tailed Chatterer, as splendid in another range of color.

We have mentioned elsewhere those joy-facts of insect psychology deduced from the flowers which were constructed to appeal to their sense of sight. Whoever sees flowers sees far into the past. But insects have also other good æsthetic sense, such as for the flower scents and honies. And their eyes are often of unrivalled brilliancy, perhaps the most beautiful of all physical objects. These eyes and their splendid wings and sheaths must thrill them. Do we not even get some psychological light on another phase of the matter from our *emotions,*—such as rage, fear, and love, those vivid accompaniments of the beneficial explosions of vital energy coming from our Annulid ancestry, (which they still betray by their visceral associations), and where they were one of the earliest forms of Instinct.

The foregoing examples reveal something of the Outer Consciousness behind them. The glory of its world is great.

204. Let us now compare our trial sketch of the psychology of the Person of Evolution with a standard handbook of human psychology, the excellent manual of Warren of Princeton. All the better that his work is of behaviorist type, with which the present writer disagrees.

Of mental life, his definition is that it "comprises the events which occur in the active give-and-take relations between organisms and their environment." Of the cell, "all agree in at least two fundamental characters: (1) The cell is capable of maintaining itself by ingesting material from without and casting off its own waste products; (2) It is capable under certain conditions of subdividing and therefore reproducing new cells." In short, of *maintenance* and *reproduction.* He does not attempt to discuss any interest in these powers. Affective consciousness is ignored as if it did not exist.

To explain Conscious Purpose, he adopts the theory of *Psychological Mechanism,* namely, that "purposive behavior is fully determined by neural activity, and that all the transformations involved in the chain of events may be expressed in terms of physical and chemical processes." (The significance of the pleasure and pain reaction, which appears so strong to the Outer Consciousness theory, does not occur to him).

In describing the nature of "behavior," he admits that "responsive reactions tend in general to promote the life processes or prevent the destruction of the creature"; but he fails to note the happiness factor, or anything more than pure mechanism, in that tendency.

Like others, he divides human behavior into reflexes, instincts and intelligent behavior, being "a classification based upon the nature of the central adjustment." "Intelligent behavior *becomes differentiated* into two distinct types called habit and rational behavior. (The differentiation is regarded as an accidental process!)

Of instinct, he says, "Earlier writers treated it as

a mysterious innate power possessed by subhuman animals, which enabled them to do the right thing in the right way, without consciousness or deliberation. To-day we know that instinctive activity *is the result of* integration and coordination of nerve impulses, and that the adjustment is *due to* inherited connections between sensory and motor neurons." (Of two narrow hypotheses, the "earlier writers" had the more complete).

Concerning the shading of instinct into intelligent action, he says: "Few pure instincts are found in the human adult, but a great number of *modified instincts.* It would not be proper to treat these as forms of intelligent behavior, yet strictly speaking they are not true instincts." (Ought not the conclusion rather to be that instinct and intelligence are forms of the same thing and easily combine?)

Of subconsciousness he remarks: "It may be assumed that the striking clock" (whose strokes of the hour he did not hear) "is actually heard, though not in relation to our dominant conscious life, and that the nerve impulses concerned in our fixed habits constitute 'conscious experiences' of subordinate centres, even though they fail to connect with our higher mental organization." (This sounds like the colonial theory.)

"The real significance of feeling in our mental life," he states, "can only be understood through a study of its biological history. . . . . The mechanism of the two opposite types response" (*i.e.* avoiding noxious stimuli and reacting positively to beneficial) *"is developed through one of the phases of feeling."*

(Does this not imply the governance of the operation by feeling?)

The ingenious mechanist descriptions of Conations, Volitions, and Rational Thought, (as well as those above, of instincts, intelligence, æsthetic expression, and subconscious action) all suggest restatements in Outer Consciousness terms. Similar difficulties are evident in the recent work on "Instinct" by L. L. Bernard, in which the existing confusions and disagreements are strikingly shown by careful quotations and tabulations. Professor Bernard is himself a behaviorist, who favors environment and habit to explain most of what others refer to instinct and heredity. He enumerates hundreds of alleged instincts cited by authors, and quotes many contradictory definitions, classifications and comminglings of psychological, biological, and other elements in the various theories. John B. Watson frankly envisages psychology as entirely based on chemistry and physics, in which consciousness plays no part and is merely a looker-on. Our comprehensive superpersonal view would at once dispose of most of the confusion.

205. But non-mechanistic manuals also treat the subject in a disconnected way. Even Spencer's synthetic system, though based on a unitary view of evolutionary phenomena, offers behind them an indifferent abstraction.

206. In Outer Consciousness psychology, these would all be manifestations of the inclusive Person,—surface expressions of its mind. The instincts would indicate a slow, but continuous and widespread unveiling of a purposive, benevolent, consciousness. Intellect would put together its unity, greatness and profounder

aspects. The picture is gigantic. What Niagaras of willing, what judgment halls of awareness, what innumerable scouts at all the outposts, what unfathomable and growing joy attained, what murky chaos of pain disappearing in defeat. There a shoreless Stream of Experience flows by; Time, the current of that inner River, is there, but is swifter, and flows back as well as onward, so that history gives up its lives and scenes in unimaginable profusion; Space is not petty and limited to a few senses,—it opens in unthought dimensions; Speech and other symbols have no place in presence of the Things; Attention is not a focus but a Realm, and all the subordinate attentions form one communal whole; Fear, Hate, Hunger, Anger,—all the appetencies and animal emotions—are absent. And the terrestrial Person of Evolution thrills constant messages to its neighbors across the Ether, subpersons in a greater Person. These characterizations are little more than negatives, for the positives cannot possibly be expressed by man. Yet, within our limits, it is in our constitution,—derived from the patient inventiveness of our Ancestor—to forever strive to open up further methods and materials of study of that Ancestor, the Person of Evolution. The stupendous in the psychological world ought no more to daunt us than the stupendous in the astronomical.

207. If these attempted characterizations of the terrestrial aspect of the Person of Evolution seem meagre, how much more beyond us is that of the Ultimate Person of the boundless life of the outer universe, of whom a few scant impressions have been indicated in our chapter on "The Cosmic Aspect." Even the great thoughts with which Kant, Fichte,

Schelling, Schopenhauer and Lotze have pictured the Mind of the Universe shrink into insignificance and insufficiency before "that aweful Face which, clad with Heaven and Earth and souls of men, forever veils Itself from mortal ken."—(*Romanes*).

CHAPTER XI.

Schopenhauer and the Outer Consciousness

208. Resemblances of his "Will" to the Outer Consciousness.—209. Differences.—210. Deductive, not inductive. 211. Blind, not conscious.—213. Pessimistic.—214. Impersonal.

208. (1.) The Outer Consciousness theory can be partially elucidated by comparing it with one to which it has several points of resemblance.

When, in 1819, the brilliant son of Dantzig, issued "The World as Will and Idea"—*Die Welt als Wille und Vorstellung,*—he was dealing with the same subject. His approach, his solutions, his treatment, were very different. But had he lived fifty years later—fifty years further from the strong influence of his Master Kant, and in the full stream of evolutionary thought—there are indications that he would have tended naturally to an inductive system, and rebelled against introspective interpretations of the universe—in other words, would, like Darwin, have formed his conclusions on broad bases of facts, rather than, like Kant, have elaborated them in his study. For he eagerly sought support for his principles in the natural sciences. While Kant propounded, rather obscurely, that the universe is a projection of the Subject (but with reserve of some outer reality), and Fichte, that it is a projection of the Subject alone, and subsequently Schelling that it is a projection of the Object alone, Schopenhauer insisted that it was none of these, but

the representation which contain them both: that both matter and intelligence are aspects of the same fundamental thing, and that that fundamental thing is the Will; that within us it wells up as the *human will;* that in the exterior universe it appears as *force;* that it is the one source of all things, and is in fact the unknowable Thing-in-itself; and that even intelligence is but its product and servant.

(2.) According to him, this fundamental source of all things appears in the inorganic world as *cause;* in the plant world as *excitation;* in the animal world as *motive* (including desire, joy, anger, hate, fear, etc.) It is itself blind, but seeking happiness, it forms the world, and ultimately the brain, which produces intelligence (as a mere function) in order to attain the objects desired by the universal Will. Intelligence is consequently its interim instrument, and does not deserve to be exalted to the first place, as it usually is. That of which each of us has immediate knowledge is our will. The voluntary act and the action of the body are not two things but one and the same. The foundation of our being is our will; its immediate manifestation is our body. The will is identical with all the forces which act throughout Nature.

(3.) It is evident that Schopenhauer's start is made, not from a basis of collected facts, but from a general idea derived from Kantian idealism. He partly also drew it from Berkeley, the subjective idealist par excellence, of whom he was a pronounced admirer. Nevertheless, as Ribot says, "he holds empty and vague terms in horror, such as absolute, infinite, suprasensible and others of the same kind; he applies to them the remark of the Emperor Justinian, "They

are nothing but negative terms, accompanied by an obscure conception." This is rather extreme condemnation for worthy idealist speculations which after all have great uses. He makes attempts to escape the effect of the first origin of his system by appealing to the natural sciences for empirical support but he does not effectively get away from his preconceptions. He glibly speaks of the *irresistible tendency* of waters to cavities; the *perseverance* of the compass toward the north, the *ardent desire* of iron towards the compass, the tug of gravitation,—all these are to him one and the same thing with human purpose. Of this unity he produces no proofs: in his hands it remains an assertion.

(4.) In the vegetable world, the objectivation of the Will, becomes more intelligent, but the Will remains unconscious, as in the organic world. Each vegetable has its determined character, *i.e.,* it wills in a special manner,—one prefers a humid environment, one a dry, one turns to light, another to water. The animal kingdom is a higher manifestation. It requires for its complex life the aid of intelligence. By this the Will passes up from darkness to light. The animal body, being the objectivation of the Will, its members represent the essential desires of the Will, the teeth, the pharynx, the intestinal canal, are hunger objectivated, the brain is the expression of the will to know, the foot to go, the stomach to digest.

(5.) Ultimately the Will produces man. "A being superior to him and more intelligent would be impossible; for he would find life too deplorable to tolerate for an instant" (Ribot): Here appears Schopenhauer's pessimistic interpretation of the universe. The con-

stant effort of the Will is to live and attain happiness, but it finds life painful and disappointing. Hence, to escape it and return to oblivion is the true aim, as taught in the Vedanta and Buddhist philosophies.

(6.) The Will is indestructible, as being the thing-in-itself: only appearances are destructible. All death is an appearance, all destruction an illusion. The Will, perpetually continues its blind effort to live. The individual dies, the species is indestructible. He uses the simile of the leaf and the tree: "Know then thine own being in that interior force of the tree, hidden but always acting, which through all its generations of leaves, knows neither birth nor death. Is not man as a leaf?"

209. Comparing Schopenhauer's theory, point by point with that of the Outer Consciousness: There is first, the general resemblance in the fact that both are theories of willing. Without any connection of origin, both analyze the human will as a mysterious something uniting in parallel action certain material phenomena with certain phenomena of consciousness. Both find in it a far wider thing than the human will,—a constructive power working through the world—in fact the constructive power of the universe. But Schopenhauer, imbued with German speculative universalism, prefers to look at it as the unknowable Thing-in-itself, while the Outer Consciousness theory is occupied with the lesser and more practical demand for a preliminary complete descriptive and analytical study of its characteristics as they are. It starts with the concrete facts of willing; follows their connections into the concrete spheres of habits, instincts, reflexes, functions, behaviors, reactions, looking to the students of

these things for guidance, and thence into the connected worlds of teleology and evolution,—and asks that they all be interpreted together. Thereby it hopes for real and new knowledge.

210. Schopenhauer recognizes evolution—but in the nebulous form invented by Kant and improved by Laplace half a century later—a speculation in a period of speculations. It was wanting in the sound and directive foundation of systematized observations given it by Darwin and the hosts of modern scientists. For Schopenhauer, species are immutably fixed. He scarcely dreamt of beginning with detail. Yet he has a theory of crystallization, of vegetable life, of the production of animal organs, and finally as we have seen of human intelligence. These theories are all rudimentary and far removed from the science of today. His chief merit, to my mind, is that he recognizes the oneness of Evolution with willing. Moreover, he sees in it a united forward movement of the Will. And he recognizes it as a progressive process of invention. But to what definite end? Merely to awake into life, and to realize a yearning for happiness which is doomed to be met with defeat. There does not occur to him as any part of the picture, the vast conscious life of a higher biological being, colonially constituted, and thrusting out it organs in all directions, and in whose psychology lies the foundation of the psychology of all its organs.

211. Schopenhauer also perceives something of the nature and place of pleasure-pain in the universe. To him they are facts of Will, the objects of its desires, the most inner and essential facts we know. In this he acutely grasped a great psychological truth. Yet as

they are facts of consciousness, why does he represent his universal Will as unconscious? The Outer Consciousness theory considers it as very highly conscious and as constantly seeking to express and satisfy its affective consciousness in the individual with a definite programme of pursuit of true joy and escape from pain.

212. Schopenhauer has no use for any teleology except the groupings of his Will. Yet there is no will without teleology and no universe-Will without a universe-teleology. He misses the joy-values of present Nature and of evolutionary life and history, of purposes attained, of the æsthetic phases of existence, of multitudinous beauty, of the marvels of attainment, their indications of the wide-spread consciousness, their records of the past, their pictures of the future, and revelations of hidden worlds. To these the Outer Consciousness theory looks for rich fields of tangible psychological light. To it all beauty, all joy, are chapters in the history of Purpose, and of a Person.

213. Most of all, Schopenhauer seems to have failed in his pessimistic conclusions. If in anything he is more unscientific than another, it is in these. Hereditary depression and perhaps that personal perversity to which he appears to have been prone—both doubtless due to an extreme neurotic sensitiveness—led him insensibly to give a painful color to existence which is far from the careful reading. His pessimism was of the dilettante variety too: it was histrionic and temperamental: his own life held none of the sorrows of suffering men; he was comfortable, educated, flattered; he enjoyed the melancholic sentimentalism of his favorite Hindu philosophies. Not in such

soil is found a true balance of the joys and sorrows of the universe. Care, completeness and accuracy must be employed in this study. The elemental power to follow joy and flee from pain, the acquisition of protective processes and organs, the enlistment of the higher intelligent devices, the selection and systematization of the "anæsthetics", the secrets of the built-up ethical and other wisdom of the past—these and their triumphs must be weighed against the failures, dreadful as some of them are. Above all, the momentous problem of joy and sorrow must be viewed from the outer standpoint of the universe—not from the little view of an individual life. In that large light, pessimism does not seem to be the answer.

213a. What then is that which is indicated as the Actor of all willing? Is it the Will alone—the Will as Schopenhauer conceives it, helpless, groping, unconscious? Or is it what the human will is associated with, —not alone a willing, but feeling, conscious self? Is the Outer Will, like the inner, an aspect of a Person: Or does it change its fundamental character when it projects that branch stream of itself which is the individual? The theory of the Outer Conscious does not so hold. It finds the key in æsthetic Feeling rather than in Force. And only in subsequent corollary does it venture to regard all Force as a partial phase of the conscious willing which the presence of feeling shows in region after region of Nature.

214. It is surprising to find so acute and in some respects so modern a mind as Schopenhauer placing men at the summit of the universe. And for such a diseased and pitiful—almost whimsical—reason as that a higher intelligence would find life too deplorable!

The Outer Consciousness theory views man as a frequently repeated stage in a process of change, the outcome of which will be the attainment of something better, and, what is more important, whose foundation is of inexpressible depth and destiny.

215. Schopenhauer's reasoning regarding the indestructibility of life is remarkable though scarcely satisfactory. That all death is an appearance, all destruction an illusion, looks good, until it is made evident that the individual is to totally disappear and only the type survive. One might ask, What of millions of types that are gone? But also to what end is the survival such as it is? It certainly does not mean conscious survival, according to him. His use of the simile of the leaf and the tree has consequently a different meaning from the use (not derived from him) made of the same simile in the Outer Consciousness theory, where the seat of life, while outside the human individual, is his fuller and greater life in all respects.

CHAPTER XII.

A Typical Theory of Mental Evolution Criticized

216. Mind in Evolution.—217. "Instinct precedes Intelligence"?—218. Hobhouse's form of "Instinct".—219. Growth of "Mind".—223. "Mind may be the driving force of Evolution".—224. Rejects the Organic Analogy. Exalts the individual.—225. "Harmony the final purpose".—226. What in his "Mind"?—227. Criticism.—228. Conclusions.

216. Of two great philosophic works in English on Psychological Evolution,—*Instinct and Intelligence,* by Henry Rutgers Marshall, may be said to represent the best fruit of American thought. Marshall's attitude to the "cell analogy" view of the human individual, which involves the fundamental principle of our Superpersonalism, that the directive power is outside of the individual

The other work, the late Professor Leonard Trelawney Hobhouse's *Mind in Evolution,* may in like manner be said to represent the fruit of thought in Great Britain.

217. From Professor Hobhouse's Preface to his first edition in 1901, it appears that his conception of mental evolution was first formed about 1886, and,

being gradually modified, most closely correspond to that of Lester Ward's *Outlines of Sociology,* published in 1898. In his second edition (1915), the substance of the book remains unchanged, but several parts are rewritten. He says: "We shall not endeavour to trace the origin of Mind out of something that is not Mind. We shall take it as a factor in organic evolution which we shall endeavor to trace backwards to its germ, and forward to its mature development, ascertaining at the same time its relation to the other factors. . . . . What bearing those investigations may have on the nature of Mind, its origin in the organic world, or its functions in the whole of things, are questions on which our results must speak for themselves." He remarks that "the normal tendency of evolution is not towards a higher, but a divergent type. In the resulting diversity, old types survive, and there is a deterioration as well as an improvement. But one line leads "upwards",—Orthogenic evolution, the growth of Mind, "the ordering, correlating, harmonizing agent. The organism which is gifted with intelligence shows it by arranging its actions on a certain plan. It adapts means to ends. . . . . Its scheme of action may include the good of its young, of its mate, or its friends, along with its own. . . . . And the organization may include several individuals, a pair of mates, a community, or conceivably a whole species." Instinct precedes Intelligence and "brings the experience not merely of the individual, but the race, to bear on the problems which the race must solve." Hence it serves well the needs of the lower living forms. "But the whole process of Orthogenic Evolution in the gradual replacement of instinct by reason, and it is the final goal of reason to

do precisely what is ascribed to Instinct above,—to bring all the experience of the race to bear in organizing the whole life of the race. That Instinct is a basis for the adjustment and coordination of action unsurpassed in its own way we cannot deny. And along with Instinct we must here class all that belongs to the hereditary structure of the organism,—a wider conception than that of Instinct in the strict sense. . . . Neither Intelligence nor Instinct explains all cases of adaptation. A measure of adaptability is the common character of all living organic matter. We find it in plants no less than animals, in protozoa no less than in mammals. This adaptability gives to the reactions of organisms the appearance of purpose." And he observes on the well-known tendency of even mutilated parts to if possible reconstruct the whole.

218. "If Mind is the highest thing," he proceeds, "Orthogenic Evolution must consist in the unfolding of all that there is of latent possibility in Mind, the awakening of its powers, the development of its scope. . . . . Not all organized action is intelligent But all unorganized action is, just as far as organization is lacking, unintelligent."

"Now Instinct . . . . . is not, when fully defined, to be taken as exclusive of Intelligence. On the contrary, their relations are closely and subtly woven. But we shall put the criticism in more radical fashion by *substituting for Instinct* the conception of *hereditary physical structure* acting in accordance with mechanical laws. Every living being, it may be said, possesses such a structure. It has grown up bit by bit. . . . . *every variation that helped to keep the organism alive, and to perpetuate the stock, being preserved, while*

every adverse change is weeded out by the destruction of the stock it entails." He illustrates by the mechanism responses of the cat's spring at sight of the mouse, "but purpose as a conscious process in the cat has no causal efficiency; what works is the physical system" . . . . . "But the processes of Mind are not machine-like but mental." He does not admit the obvious analogy of the two processes, and his further distinctions are not convincing. "Instinct," he says later, "is merely one aspect of the evolution of structure. The more mechanical instincts approximate to compound reflexes. But in true instinct, behavior is *governed by a persistent interest to the service of which* action is adapted."

(Is not a pertinent question "How can a mechanical structure have a "persistent interest"? Just what kind of a thing can pursue, and govern by, a persistent interest? It would surely be a conscious agent having a certain kind of power. Dr. Hobhouse himself raises the question in another place. Is not "hereditary structure" rather the deposit of willed action?)

219. In his closing chapter (XIX.) headed "Self-conscious Development", he says: "Our object in the present work has been to ascertain the character and functions of *Mind as the originating principle of Evolution.* . . . . The fact that biological evolution rests on a struggle for existence is itself enough to show a *want of that organic unity in which the good of one part is necessarily the good of the rest.* Evolution by natural selection is thus the strict negation of an organic growth. . . . . It is an irregular, backward and forward movement. . . . . This is not development.

It is more like a slow process of sifting. . . . . *no comprehensive plan or pervading tendency.* . . . . The development of Mind in animals and man means the gradual introduction of a higher principle of organization into this relatively chaotic state.

220. (Here one might question whether biological evolution necessarily "rests on a struggle for existence." Doubtless the struggle arrived when crowding began, but there must have been a long period when there was plenty of nutrition for the earliest form or few forms, and another principle than struggle governed that stage of movement, as the results show, and that that forward movement shows a "pervading tendency", and even a "comprehensive plan" seems logically thinkable).

221. "But", he says, "should we not rather compare it" (the evolution by Mind) "to a purpose executed by human forethought? . . . . . It is a self-conscious evolution *having a purpose towards which it steadily makes its way.* . . . . The development in its highest stage is beyond doubt purposive." We can attribute it to the beings taking part therein, or outside the process to a hypothetical Being who contrives the whole movement. "The latter alternative would bring us to the conception of an unconditioned creation of the world order, which can never be accepted by the intelligence without stifling the moral sense. *Is there a third possibility?"*

222. In another passage, in Chapter II, Hobhouse asks again whether vital processes are to be referred to *some wholly distinct agent neither mechanical nor teleological,* such as an "entelechy"? (The present writer holds that a superpersonal agent is indicated.) Hob-

house's general solution is that "Origin and purpose are mutually dependent parts of one scheme" . . . . "the germ of a soul in a living organism". . . . . the working out here "of the vaster process which we dimly conceive as constituting the essential life of the world."

223. In his Preface of 1915 he further adds: "In the years which have elapsed since the first edition was published, comparative Psychology has undergone a great change. Owing to the activity of a group of workers in the American universities, the investigation of the animal mind has, roughly within this period, established for itself a place among the recognized sciences. . . . In particular the observations of H. S. Jennings have shown me that something of the nature of Mind is to be carried further down in the organic world than I supposed. His results, together with other work in general psychology, have led me however to extend rather than to narrow the view taken in the first edition, and even to raise the question whether Mind, in the infinitely varied forms of its activity, from the groping of unconscious effort, to the full clearness of conscious purpose) *may not be the essential driving force in all evolutionary change.* In any case, the revolution which has overtaken biological theory during the same period is profound. Its significance is as yet imperfectly grasped, but it will, I believe, be found, as time goes on, to have invested the constitution of the living being, as against the environing conditions, with a new importance, and in this constitution the fundamental fact everywhere is that the living being is not passive but active, not mechanical in its reactions to things, but assertive, plastic, and, in

a measure proportionate to its development, self-determining. If this is so, psychology will in the future, have a larger part to play than has hitherto been supposed, in the study of the rise and decay of forms of life."

224. In 1924, in his volume on "Social Development, Its Nature and Conditions", which must be regarded as a writing on a form of the same subject, he says: "Essentially the subject-matter of Sociology is the interaction of individual minds each in a manner cased in its own shell, forever divided from its nearest, yet reaching out to one another, responding and craving responses, coöperating willingly and unwillingly, consciously and unconsciously, yet at the same time jostling, thrusting one another aside, trampling down the weaker, with partial aims vividly realized and deeper common needs imperfectly understood, *moving in the mass on lines which no foresight of theirs has traced,* yet not without eventual power of self-guidance and an emergent vision of the true goal." In the enduring community the various classes each carry on their avocation, not thinking of very much beyond them, "and in the broad result the community gets itself clothed and fed and kept in passable health and peace." It maintains itself like an organism, and each member sees something beyond himself. "These facts have suggested the famous *organic analogy.* The community is thought of as an organism related to its constituent individuals as the individual is himself related to the cells of his own body. So stated, the *analogy falls, because the community,* is composed of *members having powers of self-direction* which the cells of the body do not possess, *while conversely the*

individual has a body which is normally one, in contrast to the plurality of minds in the community, which, however they agree, remain of necessity distinct. In the pursuit of the organic analogy, some stress has been laid on the divisions within the individual consciousness, multiple individuality and the like. It overlooks the fact that *to society plurality of persons* is essential and its development lies, not in overleaping the bounds but in giving to each distinct personality its full value. To personality on the other hand, division is the reverse of necessary and its development lies rather in the direction, among other things, of a completer unity." The community then is not an organism, if to be an organism means for it to be *an enlarged animal—a great leviathan."* He regards the idea of "an organic interdependence" of individual members as preferable. "In the physical world the whole is primary and in the main determines the parts, while in social relationships the parts are primary and combine to constitute the whole." He decides that *society rests upon the development of individuals.* "The analysis of sociological laws reveals in society *no superhuman monster,* but only human beings," and he sees "no cause of progress except in the human mind and will.

225. His final conclusion is that "Social development, as here understood, is an integral part of a much more far-reaching process. Mind as we know it in experience has its first humble manifestations in the lowest germs of life. . . . . In man, coöperation becomes the dominant factor, and as it overcomes its original limitations, we see Mind developing towards a true unity. This unity is *gravely misunderstood when*

conceived as a merging of the individual centres in which consciousness has lived from the beginning. It is rather a unity of the true organic type which preserves and develops the constituent units in the plenitude of their individual power; *for the final purpose,* which becomes clearer as rational development proceeds, is to *make a harmony of life,* and the nature of this harmony is not to destroy but to fulfil all that can be fulfilled without mutual destruction or arrest. . . . . It *is the aim, not of the human mind, in particular, but of Mind as such."* Failures may occur. "But underlying every effort . . . . . is that unresting impulse of Mind to the fulfilment of its being, which in its repeated impacts on limiting conditions, holds the secret of development in every field."

226. Now, having tried to state Hobhouse's theory at length, and fully remembering that he does not pretend to "trace the origin of Mind", my hope is to succeed in suggesting some things that should come out of it. And first let us note the following expressions:

That Orthogenic Evolution is the growth of Mind;
That the organism gifted with intelligence adapts means to ends;
That it may include the good of others in its plans, (*i.e.,* see and feel beyond the individual);
That this organism may include several individuals, or even a whole species;
That their adaptability gives all organisms their appearance of purpose;
That Mind means the introduction of a high principle of organisation, *i.e.,* systematic purpose;

That Mind may be *"the essential driving force* in all evolutionary change";

That the living being is not mechanical but self-determining;

That the reparatory process in living organisms is apparently unconscious;

That evolutionary purpose resembles human forethought;

That there may be *a wholly distinct agent,* neither mechanical nor teleological, at work;

That Mind aims "to make a harmony of life."

Since he refers Orthogenic Evolution to the general intelligently directing agent which he calls Mind, we have a right to ask ourselves what he really means by Mind? Does it follow this "purpose resembling human forethought" as a *conscious person,* and if so, what kind of a person? If he means a low-consciousness, diffused vitalistic power, as he apparently does in his theory of its origin, is that not insufficient? Apparently Hobhouse has not noted this insufficiency, for his answer appears in his reasons for rejecting "the organic analogy." They do not cover an organic concept which implies a superpersonality directing individuals psychically from without and within as contributing "cell-lives" in a larger organic whole. On the contrary, he adopts as the only solution of the evolutionary present and future, (and therefore of the past) an "interdependence" of individuals, having mutual needs, the individual being the primary element in the combination, and that the future of evolution depends on development of human individuals, their minds and wills. Apparently the "organic analogy"

he has in mind was not one developed as a broad evolutionary hypothesis of all life,—but rather in the metaphorical sense of Spencer and the imperfect hypothesis of Réné Worms,—both restricted to sociology,—or he might have thought it more worthy of discussion. What strikes the writer is that the true completion of his theory of mental history might have been found along the broader line. His "Mind" as a "driving-force" demands *superpersonal* explanations: it hangs in the air.

227. Take some of his principal propositions:

1. *That the individuals composing human societies are "members having powers of self-direction."*

(*a*) How much power of self-direction have they, when we consider that something like three quarters of the actions of the most independent individuals are automatic and subconscious?

(*b*) How much does even the conscious remainder direct? Is not still a large percentage of it really suggested by events and influences from outside the individual?

(*c*) Whence comes the human "self-directing power" in any event? Is not all received from inheritance that does not come from environment?

(*d*) What, in fact directs this "power of self-direction"? In short, is it not evident that the matter of self-direction cannot be adequately considered for human individuals separately from their whole evolutionary history? Human civilization occupies an infinitesimal fraction of the lifetime of the protoplasmic race, during the rest of which nothing like free human purpose existed, yet the race's preservation and progress were marvellously cared for by something else.

2. *That the individuals of society are primary.* Is it necessary to remark that "primary" is a relative and elastic term in the elusive matter of individuality.

3. *That the human individual is physically a separate unity.* But is not each cell of every cell-colony also a separate unit? Some are linked together by bands of protein tissue and others are not. And are not such free cells as the white blood-corpuscles each physically a separate unit when, guided by some mysterious directing power, they hurry to battle with invading bacteria? And after all, are there not all-enveloping physical connections, in the ether and the atmosphere, between all living individuals? No physical body exists that is absolutely disconnected from any other.

4. *That a plurality of individuals is essential to society.* Does not this beg the question? Is not a plurality implied in the definition of society? Every cell-colony is a plurality of individuals. But perhaps Hobhouse means that society is only a construct of individuals. If so, are there not things in it, like voluntary martyrdom, which no mere construct of individuals can explain?

5. *That the development of society resides in giving to each individual his full value.* What produces that giving? Must it not be a power beyond any individual?

6. *That "the organic analogy" implies "a superhuman monster".* This opprobrious designation is doubtless an answer to some very poor form of analogy. In one or more forms, the inclusive superbeing posited is God. Is God therefore a superhuman monster? And why should any lesser being to whom such beneficent operations are mediately attributed be regarded as a "monster"?

7. That Instinct is not to be taken as a form of Intelligence but a development of structure. And yet Intelligence grows out of "Instinct"! And what of those new discoveries of intelligence in insects by Pictet, Cheesman, the Peckhams and Williston?

8. *That the future of evolution depends on the development of human individuals.* Is it not rather to be expected that human minds, wills and efforts will arrive at a limit, while the directive Power—whatever it is—will continue directing long after man has passed into the shades of time? In my belief, the sole hope of the world for the future, is in that directive Power.

Finally, can any human individuals attain such action as will account for the following facts:

(*a*) the great outstanding fact of *the independence of Instinct* (using the term in its broadest sense) where it disregards the individual and acts without him;

(*b*) the great outstanding fact of the *general helplessness of the individual,* and the brevity of his life;

(*c*) the successes of the evolutionary process during the vast past and the vast spatial present, without intelligent aid from the individual;

(*d*) *the ingenuity of the innumerable contrivances* which favor joy and avoid pain, through all the history of terrestrial life.

228. The individual is doubtless a factor, and a great one, but not relatively great as a directing factor. Nor is he the only factor. The community is a factor. In existing forms man is both an individual and a community. Behind them both, is somewhere the real directing power, since neither of them accounts for

the results. Then must not that which Hobhouse terms Mind be larger than his definition? Must it not be a Power conscious of what it "drives" towards? Must it not be deeper and wider than any individual or known combination of individuals? What is the meaning underlying his phrases "moving the mass on lines which no foresight of theirs has traced," "confident that there must be some unity which holds the jarring elements together", and "to make a harmony of life is the aim not of the human mind in particular but of Mind as such", and "that unresting impulse of Mind to the fulfilment of its being"? These are surely phrases descriptive of a superpersonal conscious unity. Such questions have been asked in the interests of ultimate Theism. But are they not descriptions of the more terrestrial spirit of evolution itself, guiding not only Mind but Instinct and the things that were before either, to "a harmony of life"? What is meant by that "harmony"? It must mean something tangible like happiness, or else it is a hollow word.

Replace ?

CHAPTER XIII.

The Organic Analogy Discussed

230. Herbert Spencer. Benjamin Kidd.—231. Réné Worms' Organisme et Société.—233. Definitions and objections.—236. Durkheim. Duguit.—238. Strong and weak points.—238 Comparison with Superpersonalism.

230. The Organic, or Biological, Analogy, is the hypothesis wherein "the community is thought of as an organism, related to its constituent individuals as the individual is himself related to the cells of his own body." This Analogy, although argued as though limited to Sociology, has a larger application. It has resemblances to that part of the Outer Consciousness, or Superpersonalist, theory which treats each living individual—including the human, and all living individuals, and all interworking groups of them,—as related to the Person of Evolution, on the same general principle as a constituent cell and its mind to the human body and mind; in other words the principle of *coloniality*. And to bare coloniality the Outer Consciousness theory adds coalescence of consciousness. The controversy which took place over the general principle of the Analogy around Herbert Spencer's essay on "The Social Organism" is critically summarized in Benjamin Kidd's article, "Sociology" in the eleventh Encyclopædia Britannica. A more complete survey is the article "Representative Biological Theories of Society," by A. E. Barnes, in the *Sociological Review* for April—July—October, 1925. Hobhouse, we saw, leans to the primacy of the individual

over the community, in their relations: Kidd champions that of "the social process," as the completion of Evolutionary natural selection. And he points out that no individual lives long enough to affect more than a small part of the process. This agrees with our objections regarding Hobhouse's stress on the individual,—the objections of the helplessness and mortality of the individual. Kidd dismisses the early crude forms of the Analogy as being strained attempts to find all kinds of mere likenesses between the cell and the society, and mentions especially the work of the Austrian Dr. Schaeffle as extreme and fanciful. The Analogy was most uncompromisingly advanced at that time by the learned Réné Worms, editor of *La Revue Internationale de Sociologie,* in his book *"Organisme et Société",* Paris, 1896. I propose to discuss his theory briefly, like Hobhouse's, from the larger point of view of our Superpersonalism.

231. He begins his Introduction with the proposition that "sociology is founded on the same fundamental principles as the physiological, chemical and biological sciences. From cosmology to sociology we can pass only by biology, which is thus the closest to sociology. Hence our problem is: what is the contribution of biology to sociology? It is double. We must consider the living beings who are its members; and the bond which unites them, the laws which preside over their life in common. As to the living beings, that study is already made by the biologist." As to the bond, "we answer without hesitation Yes, biology can there also teach us." (Thus far Worms is dealing in generalities.) "The relations which exist between the elements of the organism exist also between the ele-

ments of the society. . . . . the broad traits of the type 'organism' are likewise in the type 'society'. The anatomy, the physiology, the pathology, of societies reproduce in large the anatomy, the physiology, the pathology, of organisms, with important additions but in the end on the same fundamental theme. How could it be otherwise? The society is composed of individuals who are organisms as the organism itself is composed of individuals of lower order, which are cells. Why should the superior individuals, the organisms, act, in the body of the society they form, otherwise than as the subordinate individuals, the cells, act in the body of the organism itself?" Here he may be taken as stating his special proposition, a bold and ingenious one.

He proceeds to further definition, but is still indefinite: *"Consequently the society itself is analogous to the organism.* It is not simply an organism, it is more: being more complex, it may be termed a *supra-organism.* But, including more than an organism it first comprises all that an organism includes. An incomplete idea of it would be given by saying that it is an organism, but a false idea by denying that it is one. To define it exactly, one must recognize that it is an organism with something essentially more. Such is at least our conception of the nature of societies; such is the proposition of this book." He says the theory is much discussed, but that it tends to prevail, although some of the most eminent discutants refuse to accept it, at least in full, among whom he mentions Letourneau, Tarde and Schaeffle. Comte, as the founder of sociology, had originated the phrase

"l'organisme social.". And he called Humanity *le Grand Etre.*

Herbert Spencer also (Principles of Sociology §§220-232), had set forth the Analogy "but he is essentially an individualist and wishes above all to save the anatomy of the human being." First Spencer holds that the social organism is *discontinuous,* while the living being is continuous. "And above all, that the parts of the social body "are *conscious,* but not those of the individual body." (Spencer would not have asserted to-day that the cells are not conscious.) "Therefore in the organism the ends of the cells are subordinate to the welfare of their whole, while the society can have no other end than to assure the happiness of its members: there the parts live for the whole, here the whole lives for the parts."

Worms proceeds: Several authors give the cell theory in part, but Monsieur Lilienfeld alone, in *La société humaine considérêe comme organisme reëlle* makes it the theme of a book. Lilienfeld was a student of Worms. The latter proposes to demonstrate the falsity of the proposition that "there is no unity superior to the individual: the society is nothing of itself." He proposes to prove it to be "a being which lives by them, but which nevertheless lives for itself" and that "the relation between the society and the organism is analogous, (we do not yet say identical), to that between the organism and the cell; that the society, though made of organisms, is not less a real being than the organism made of cells."

233. His First Chapter is entitled "Definitions and General Comparison of the Organism and the Society." His definitions of the society are artificial and partial.

He labors out a theory of what constitutes a nation, and hypostatises its mass thought as an organic life. More incisive is his Second Chapter, entitled "Objections and Answers." First he takes up the objection that *"The individual alone exists."* He points out the composite nature of the human individual: "real unity is inseparable from multiplicity." Yet he does not show that real unity actually accompanies the multiplicity of society, nor that its unity is the same as that of the man, especially in the respect of consciousness.

234. The second objection he combats is: *"that the elements of a living body cannot live when isolated."* He disproves this objection by biological examples, such as arthropods which regrow lost limbs, and certain creatures whose parts, after division continue as wholes.

235. The third objection is: *"that in the organized being, there is continuity of living substance," but not in society.* Worms appeals to the continuity of man's *milieu,* the air, the world, etc. But he unfortunately adds what is not so convincing, that "what constitutes the continuity of the society is at the same time the economic interdependence created among its members by the division of labor, and the similarity of nature which exists between them;" and he mentions their differences of race, of origin, and so on. "The most marvellous type of continuity is the telepathy of two hearts across spaces." But if continuity of milieu and perhaps even sympathy of hearts give some reply to the objection of lack of continuity of living substance, is not the division of labor mere coöperation, and the similarities of bodily and mental nature no

more than simple addition? He might have added, to better purpose, the complex bond between the eye, the mind, and the object seen, and that between the ear, the mind and the violin.

236. The fourth objection is: *"that human society is composed of individuals conscious and free." He* justly answers that man is only partly conscious and free,—that he is largely unconscious, and his freedom is very limited. Freedom he regards as "simply the *ensemble* of our own nature, the ensemble of the tendencies we have received from our ancestors or acquired in our own personal lives: heredity and adaptation explain all the elements. . . . . It is not possible that organic government has not as its end, like social government, the greatest welfare possible of the greatest number of the governed." I think this statement correct and important.

236a. In Chapter Four "The Elements and the Form of the Social Body," he returns to an artificial and narrow definition of "society", as "a durable group of individuals exercising all their activity in common." He is unconvincing in this and the next two chapters "The Social Cell", and "Various Groups of Social Cells". But in Chapter Ten, he says, "If the individual thinks the society, it is not that he creates it, but it that truly thinks in him. . . . . We are thus led to believe that every human being at the same time that he conceives himself as an 'I', perceives his bond with other men, sees himself member of a collectivity, as fragment of a whole, to which he owes himself. This idea has been simultaneously expressed lately by several sociologists. M. Durkheim has remarked it, ... M. Duguit has stated it the most

clearly. 'Every individual consciousness', he writes, 'is at each instant of its psychic life, *double*. This duplication of the conscious personality is a normal and permanent fact. Man has always at the same time consciousness of his own personality, and consciousness of the collectivity of which he forms a part. He grasps it in the same moment as individual and as social cell." Duguit also reasons that the social was the earlier form, from alleged facts regarding primitive man; and he remarks that great discoveries are often simultaneously arrived at by several independent observers, such as the discovery of Neptune by Leverrier and Adams.

Worms ultimately exclaims: "Has then the society a true personality? we have no doubt of it!" But his illustrations again fail him, because his concept of a society is that of a group, and he is driven to such examples as the rage of crowds, their cruelty, their mass psychology.

237. In conclusion Worms sums up his arguments. The total showing is satisfactory, and justifies Hobhouse's rejection of that form of Analogy. His weak points are: the citation of superficial similarities; the artificial nature of his concept of a "society"; his failure to adduce evidence that society has a true central consciousness; and his attainment at best of the vaguest kind of a vitalism. His strong points are his grasp of a general unity of plan between the cell and society; that he feels that the individual is too brief and limited to plan and achieve the beneficent successes of society; and he answers well such objections as that "the parts of a living body cannot live when isolated," and that society has a lack of physical continuity. To

these points should be added the wide scope of his learning, and the adhesion of great minds to certain of his doctrines.

238. Our Superpersonalism resembles the Organic Analogy in its doctrine that the protoplasmic race, is a living unit, of which all its individuals are organs; and that the individual cell and that living unit act on the same organic plan. Where Superpersonalism differs is in holding that the whole of that race is inspired by an indwelling independent, directive Superperson—the Person of Evolution. Its principle is this superpersonal direction,—not a mere unit principle, nor a mere mass addition of units, nor a simple uniting principle, but a directive, organically unifying principle. In that sense Worms unconsciously spoke the language of Superpersonalism when he said: "Si l'individu pense la société, ce n'est pas qu'il la crée, c'est que veritablement elle pense en lui." And Superpersonalism does not confine the principle to analogy of structure between the cell and "society": it sees organicity as the universal principle of life.

CHAPTER XIV.

Conclusions

239. It now remains to sum up the hypothesis sketched in this book. The chief fact on which it is grounded is *the independence of Instinct,* regarding Instinct as a single element coterminous with all the reactions of living substance, including their psychical concomitants, for these cannot be neglected, as Behaviorism suggests. Nor can Instinct be successfully accounted for as a number of separate instincts.

240. The second fact is the close association of Instinct with the law of action towards joy and in avoidance of pain: and we have concluded that, if regarded from the superpersonal, not the individual, point of view, all its conduct,—which is equivalent to *all conduct,*—can be explained by the application of this law. Superpersonal action conforms to that law, and this leads to momentous conclusions. The greatness, the heights and depths, the universality, the meaning and value, of the world of Affective Feeling, have seldom been appreciated or studied, nor thought of as a key to life in the universe.

241. Leading to an examination of the nature of purpose, it involves an analysis of teleology, with the conclusion that persistent production of joy is the only true teleological argument. Nothing is more striking in advancing biology than this persistence through unimaginable intricacies: Nature, within the body, sometimes uses a chemical, sometimes a nerve, or some other device, or even invention of thought, to pursue

its end, and its ends are always resolvable into joy. Thus the old weak Argument from Order is resolved into an Argument from Evolutionary Design, on grounds similar to human purpose.

242. Next, the welling-up in us of purposive impulses from that Outer foundation of conscious life,—the urge of living Evolution,—renders necessary an interpretation of the connection of consciousnesses. Our explanation is an axiom: that every conscious unit has a power of coalescing its consciousness with, and of decoalescing it from, that of other conscious units or groups, under certain conditions. Thus is built up our complex mental structure and its links with other consciousness.

243. Cosmic speculative extensions of the theory are natural sequences and I hope contribute some new considerations concerning life in the outer universe, chief of which are those arising from the facts of the Directive Power. But the distinctive method of the system is induction. The enormous new additions of fact which the sciences have accumulated impose on us an ever closer consideration of the inductive aspect.

244. And, recognizing also the advantages of intellectualistic, intuitional, and perhaps some emblematic and mystical systems, our theory makes no claim to exclusiveness as a system, but can take its place in a fit synthesis.

245. The colonial view of the human individual is a necessary link. Each living thing is constantly in touch of some kind with the whole universe. (I hold it is in *conscious* touch. The sensitiveness of blinded goldfish to light, the origin of the eye from a spot of sensitive skin, the response of our tissues to ultra-

violet rays, all attest this). The impact of that huge series of stimuli on each of the bodily colony of trillions of cells resembles immeasurable touches, changing every instant, on a sensitive musical instrument of uncountable keys. The effect as we know it in our ordinary consciousness, with its subliminal base, is the harmonious music (or sometimes incomprehensible discord) of the personal complex experience. Some of that other music floats unheard by us, in the vastness of the realms of radio. The entire scale of known vibrations is played upon, from the longest Wireless Kilometers down through the Hertzians and the microns of visible light, to the infinitesimal Angstroms of the cosmic rays. And to these must be added at both ends of the scale their extensions of the great and small ether-waves towards the perhaps infinitely great and the infinitely small. These constant touches on our living substance each contribute to our *affective* consciousness and afford the insensible shades of Value which are so elusive to the purely introspective method. They must not only be counted on in their effects within the human individual, but also on the Outer Superperson in which the larger things of our being are transacted. Thus we are adjusted to and bound up with the universe. All events are brought before this collective affective tribunal, measured at their exact worth and deflected towards joy. Such is our real life.

246. How far can we define the nature of that directive power which urges the whole process—which everywhere urges the individual to act for the whole, preferably to (as well as subsidiarly for) the individual? What are the nature and scope of the independent Instinct? What is its meaning in the altruistic

impulse? Why and how is the mass preferred to its constituent cell: the more complex cell-combination individual to the less complex; the organism to the limb; the family, the nation, the herd, to the individual member; the protoplasmic race to any partial race; the many in general to the one or the few, among equals? The principle is evidently one fundamental to Organism. And it is *affective*. Is the living organism the model of the makeup of the known universe? Le Dantec says that "Nature uses very few models." At the other end of the dimensional scale, do the molecule of a protein, and its constituent atoms follow the same law of subjection to some mass interest of the substance of which they are components? It seems as if ionization were a concomitant of the event. There are some pertinent questions of this kind involved in the actions of chromosomes and genes, and in the electrical nature of things shewn by the new chemistry and physics. Is the joy-and-pain law the psychic side of the whole process, both vast and minute? Is it the inside? Is organic equilibrium not correlate to joy? And subsidiary to it? This is now a key question of philosophy.

247. Our Superpersonalism offers comprehensible explanations of these and of other familiar problems. Reasoning and instinct, intuition and genuine faith (not credulity) are all forms of one process. Utilitarian and intuitional ethics are reconciled. Truth, goodness and beauty are not separate values, impossible of analysis, but are related on the basis of joy, the sole basis of value. Immortality is secure for us in the Person of Evolution, our deeper self.

248. Can we look into the future? There likewise

Superpersonalism answers to some effect. Will the Person of Evolution not certainly continue to pursue his work of increasing happiness,—that work which is the law of his being? Must he not continue inventing improvements to attain it? Will he not, as hitherto, continue the higher types of life as his organs? Will he not withdraw the useless inferior? Must he not only strive but succeed? For is he not of the universe and has he not shown the power to become its victor and governor?

Need man then have any fear for the evolutionary future? The amœba lost the lead, but the metazoon took it up; the metazoon lost the foremost place, the trilobite succeeded; the fish replaced the trilobite type; the reptile next took the forefront; the mammals "went one better"; man at length replaced the failing rule of the higher brutes. They were all forms of one spirit; and when man in his turn shall fail and his terrestrial form go down among the fossil strata, shall that spirit not take on more glorious forms of body, mind and heart, ever advancing in oneness with the Person of Evolution. Is then not Pain a disappearing cloud and death everywhere an illusion?

249. It is in the Directive Power *as above conceived* that we offer a new element for guidance in discussions of the nature of the Outer Universe. The physicists are naturally limited to structure and order, the biologists to conditions of terrestrial life. The Directive Power comes straight out of the outer universe, and gives meaning, intelligence and resource to Energy.

Sources

(Those marked are personal friends.)

Although the distinctive thoughts in the present work are not derived from others, the books, old and new, which have helped in its making are too many to list here. A number have been mentioned in the text. If several should be thought quoted too fully, my object has been to give their ideas fair play. Some authors not mentioned are: Sir William Osler, Th. Ribot, J. T. Merz, F. W. C. Myers, Josiah Royce, G. T. W. Patrick, Joseph Needham, Ralph B. Perry, J. Arthur Thomson, F. C. Bartlett, G. Ellery Hale, J. N. Friend, E. L. Bouvier, P. Bovet, A. B. Macallum, C. Dayton Miller, F. C. S. Schiller, C. Lloyd Morgan, T. Hunt Morgan, A. S. Eve, Louis V. King, and W. K. Wright.

Others now or recently on my table are: Sir William Bragg's *"Introduction to Crystal Analysis"*, H. Wildon Carr's *"Theory of Monads"*, and *"Henri Bergson"*, C. Hill-Tout's *"Man and His Ancestors"*, C. Lloyd-Morgan's *"The Interpretation of Nature"*, Eddington's *"The Nature of the Physical World"*, Jeans' *"The Universe Around Us"*, Adami's *"Medical Contributions to the Study of Evolution"*, H. H. Newman's *"The Nature of the World and of Man"*, J. S. Haldane's *"The Sciences and Philosophy"*, H. R. Marshall's *"Mind and Conduct"*, Day's *"Summary of Plato"*, Davies & Vaughan's *"Republic of Plato"*, Jowett's *"Plato"*, Bouvier's *"Psychic Life of Insects,"* Hobbs' *"Leviathan"*, Whitaker's *"The Metaphysic of Evolution"*, Bernard's *"Instinct"*, Wheeler's *"The Social Insects"*, and *"Social Life Among the Insects"*,

Haeckel's *"The Evolution of Man"*, and *"The Riddle of the Universe"*, William James' *"The Varieties of Religious Experience"* and *"Humanism"* and *"Psychology"*, Collingwood's *"Speculum Mentis"*, Hedge's *"Prose Writers of Germany"*, Sumner's *"Folkways"*, Driesch's *"Wirklichkeitslehre"* and *"History of Vitalism"*, Kidd's *"Philosopher with Nature"* and *"Social Evolution"*, Huxley's *"Hume"*, Levine's *"The Unconscious"*, Hough's *"Whither Christianity?"*, Gilkey's *"A Faith for the New Generation"*, J. T. Merz's *"Leibnitz"*, J. H. Robinson's *"The Mind in the Making"*, Lecky's *History of European Morals"*, Dorsey's *"The Nature of Man"*, Hale's *"Beyond the Milky Way"*, Galton's *"English Men of Science"*, Boodin's *"Truth and Realty"*, D. Hird's *"Picture Book of Evolution"*, Patrick's *"Introduction to Philosophy"*, A. Russel Wallace's *"The World of Life"* and *"Darwinism"*, J. Arthur Thomson's *"The Haunts of Life"*, *"Outlines of Zoology"* and *"The System of Animated Nature"*, *"Contemporary British Philosophy"* (Symposium), Samuel Butler's *"Unconscious Memory"*, *"Science, Religion and Reality"* (Symposium), Ogden's *"The Meaning of Meaning"* and *"The Meaning of Psychology"*, Boule's *"Fossil Men"*, Baudouin *"Studies in Psycho-Analysis"*, Baldwin's *"Genetic Theory of Reality"*, Haldane's *"Philosophy of Humanism"*, W. K. Clifford's *"Lectures and Essays"*, Sidgwick's *"History of Ethics"*, Warren's *"Human Psychology"*, Bates' *"Naturalist on the Amazon"*, T. H. Morgan's *"The Physical Basis of Heredity"*, E. B. Titchener's *"Outline of Psychology"*, J. H. Shearman's *"The Natural Theory of Evolution"*, Laird's *"The Idea of Value"*, Darwin's *"The Origin*

of Species" and *"Descent of Man"*, Schiller's *"Humanism"* and *"Tantalus"*, J. B. S. Haldane's *"Daedalus" and "Science and Ethics"*, Paley's *"Principles"*, Lotze's *"Microcosmus"*, Cushing's *"Life of Osler"*, E. B. Wilson's *"The Cell"*, Wm. McDougall's *"Social Psychology"*, Hicks *"Critique of Design-Arguments"*, Kant's *"Critique of Pure Reason"*, Friend's *"Theory of Valency"*, Einstein's *"Theory of Relativity"*, Flammarion's *"The Unknown"*, Gurney's *"Phantasms of the Living"*, Jenning's *"Biological Basis of Human Nature"*, Myers' *"Human Personality"*, Hegel's *"History of Philosophy"*, *"Mind"*, *"Science-Progress"*, *"The Journal of Philosophical Studies"*, *"The Hibbert Magazine"*, *"The Scientific American"*, *"The Monthly Journal of the Royal Astronomial Society of Canada"*, *"The Scientific Monthly Nature"*, Benn's *"Sixpenny Library"*, *"The Trans. of the Royal Society of Canada"*, many standard works on Ethics, many more on Instinct, and a large number of original monographs and clippings, and principal encyclopedias. This list is not given as at all a complete one, but rather of the kind of material used for the present work.

The last thing in the world I would like to pretend is a knowledge, either specialist or encyclopedic, of all or any of the sciences involved. It is physically impossible that any man can be fully versed in more than a small corner of any science to-day. Numberless specialist investigators of to-day and yesterday and of all lands, are necessary. Those that are so are our leaders, within their fields. To them all must look for original specific investigations. Theirs are the papers in the specialist journals and collections. Next

to them are those acute generalizers,—usually also themselves first-hand discoverers,—who produce the ordered *resumès* which are often the most valuable articles on single sciences. These are found in such columns as *Science-Progress, Nature, Psyche, Science, Scientia,* and in the high-class weeklies and magazines. Then come larger generalizations and collections of ordered material, including the most recent encyclopedias and general text books. The shelves of university libraries contain other works. It is at this stage of authoritative preparation and digestion that the task of the philosophers, great and small begins. Their task must be to each make what unity he can of the various forms of the collected knowledge. Such a one ought to try to acquire some share,—it will be very limited,—of the original material and methods of each of the sciences which has a bearing on his chosen line of the synthesis, and enough of the terminology to enable him to read the original papers when necessary; but he should eschew the attempt to encumber his memory with needless nomenclature and small detail. He may aim rather to attentively scrutinize the *resumès,* particularly those which affect his own questions, and to bring an independent judgment to bear on their solution. Following this course with each science involved, he will seek for cross-questions of interest, and apply general laws of logic. Finally come the philosophies to be read and pondered. These processes constitute the method which I have attempted to apply. As regards the search for traces and inferences of consciousness through evolutionary fields I have tried to follow an adaptation of the maxim *Nihil humani a me alienum puto.* Finally, I conclude,

without prejudging the argument, that religion and science are not in two compartments, as nearly all the leading theologians, and nearly all the leading present men of science say they are.

APPENDIX I

Recent Authorities

Since going to press, I have received *The Skeptical Biologist* by Joseph Needham of Cambridge University, the most brilliant work of recent date regarding the problems of life here discussed. Needham had been previously known as one of the most original investigators of the subject, having followed up and squarely assessed as universal the presence of the physical aspect in all phenomena of life. In this last book he clearly sets out, as Eddington and Jeans have done for the constitution of the material universe, the limitations of physical science as regards biology. He particularly scans the relation of science to religion, taking the ground that "of any object, fact or event, it can be said that it may be regarded scientifically or that it may be regarded religiously . . . . . Religion, whatever we may say against, has its roots deep in human nature, and is as natural as walking or singing" (pp. 250-251). "But there is another side to the picture, and it is essential, that religion should not be allowed to usurp the whole of life, to come forward with statements of divine truth revealed for once and for all, or to assert that it gives the noblest picture of the universe. It may be difficult for the religious mind to recognize its own limitations, but the scientific mind has done so and is none the worse" (p. 253). "There is a progress, an unfolding, an enrichment in religion just as there is in science . . . . . Religious experience is no more and no less directly in touch with the real

than scientific experience; it is only another way of exercising our faculties. From this point of view the concepts of goodness, personality, omnipotence, and so on, are seen to be totally inadequate when applied to God, the Incomprehensible, the Ineffable, the One." (pp. 242-3). . . . . "The religious mind, preoccupied inevitably with predominantly human factors, such as personality, purposeiveness, good and evil, love and hate, attributes all kinds of passions to its God, spins genealogical puzzles in heaven, and credits the One with a psychology. Religion will never know God as he is known to himself, Science will never seize upon anything which cannot be classified, analyzed or measured. Each attitude of mind is, at one and the same time, universal and partial." (p. 245).

While these are in substance the final conclusions of this book, Needham leads to them through many pages of masterly exposition of the history of biology, wide philosophical knowledge, clarity of discussion of new issues, and welcome flashes of wit. He appreciates Lotze's expressions regarding the unity of action of all mind and matter, defends science against those who would encroach upon the field, and cleverly knocks some cocksure men of science. His chapter headed "Organicism in Biology" then touches on our problem of how to account for that intelligent government of living colonies and functions which conduct their work without any apparent government at all. He notes that J. S. Haldane's solution is the organism as a whole; Driesch's a wholeness-aim in each part, while Whitehead "applies the concept of the organism to all events and things in the world, taking in thus, in a wide sweep, the whole domains of physics

and chemistry." Here Needham's solution is unsatisfactory. "Organism" he says, "is but a philosophical concept, not a scientific one," you choose your standpoint and you see what is to be seen from that standpoint." Driesch attributes his wholeness-aim to an unconscious entelechy, which Needham scores as an impossible figment. To Haldane's requirement that a man must be considered as nothing short of a *personality,* Needham replies that "such considerations are quite foreign to science";—which seems a narrow way of defining science. I cannot but add to this that Needham misses the role of affective facts, which mean everything worth while in the world. All knowledge, even instinctive and artistic, should be ultimately regularizable into a place in science, in its larger sense of all systematized knowledge. Furthermore, it does not seem altogether true that "the concepts of goodness and personality are totally inadequate when applied to God." All things we know begin with forms near us; all fade off mistier and mistier into the unknown. Our best knowledge of them is in the forms near to us, and which are the bases of our human knowledge of them. We apply the best known to the interpretation of the less known. A personality is an organized consciousness. The Outer consciousness factor is not an unknown, but a less known than the individual human consciousness. If personality is our concept of the latter, why should we not apply it to the nearer and clearer forms of the former? Surely it is scientific to keep our feet on the ground in our reasonings regarding the Cosmos, to relate the finite and definite to the true infinite, to study the infinite of inference rather than that of unchecked introspec-

tion. It may be true that "Religion can never know God as he is known to himself," but the Reality we seek is like the snowy, shining Kanchenjunga of the Himalayas seen sometimes afar off from Darjeeling, invisible for days in mist, then suddenly standing up a majestic vision against the sky, unattainable to man in this life, changing in its aspects but not its substance; different to each observer, to the natives peopled with strange gods; to the explorer containing unknown green valleys, high forests and towering peaks; to the geologist petrologies and new fossil discoveries; nevertheless at least related to the ground on which we stand, approachable mile by mile, and interpretable more accurately at each advance; then ultimately to be fused into one closer conception.

Both Smuts & Driesch are my friends

Another not quite so lately published book deserves much attention,—"Holism and Evolution" (1926) by General John Christian Smuts. He too deals with the wholeness-aim of the organism. But his philosophy is more logical than Driesch's. The effort of lowly organisms to complete themselves he sees as a universal principle; he does not, like Driesch seek to represent it as the immanent principle of Order, but as something much completer, a noble conception of Holism, "a general, common trend of Evolution as not tacking and veering about but as moving in one general course and direction through all the endless days of her voyaging. How is this to be explained? Here again the expedient of personality is often resorted to for the purpose of finding an explanation. It is said that Evolution discloses a grand inner Purpose, that Nature or the Universe is purposive or teleological, and that no other category will do justice to the great fact of

Evolution as we see it. But if there is purpose there must be a Mind behind that purpose. And thus Mind comes to be personified in Nature as the source of the great evolutionary purpose which the world discloses. Cosmic teleology spells a corresponding transcendent Personality. Do the facts warrant or necessitate such tremendous assumptions? Would it not rather seem that the whole basis of this reasoning is unsound and false? In all the previous cases of wholes we have nowhere been able to argue from the parts to the whole. Compared to its parts, the whole constituted by them is something quite different, something creatively new. Creative Evolution synthesizes from the parts a new entity not only different from them but quite transcending them. That is the essence of a whole. It is always transcendent to its parts, and its character cannot be inferred from the characters of its parts. Now the above reasoning, by which a supramundane Mind or Personality is reached, ignores this fact. Such a Personality would be creatively new and unlike the wholes which we know and which would constitute its parts. It would be as different from human personality as this again from mere organism. To call such a transcendant whole by the same name as human personality is to abuse language and violate thought alike . . . . . There is indeed a great trend in Evolution, but it would be wrong and a misnomer to call that trend a purpose, and worse to invent a Mind to which to refer that purpose. *There is something organic and holistic in Nature which shapes her ends and directs her courses,"* (the italics are mine—W. D. L.) "without forming or organizing a mind, the totality of wholes which compose Nature develop an organic

field which is sufficient to control her creative movement. As a physical field has its lines of force, so the organic field of Nature, which results from the interpenetration of all fields of wholes composing her, has its own structural curves of progress . . . . . That trend is not random or accidental, or free to move in all directions; it is controlled, it has the general character of uniform direction under the influence of the organic or holistic field of Nature. But there is more. Behind the evolutionary movement of the holistic field of Nature is the inner shaping directive activity of Holism itself working through the wholes and in the variations which creatively arise from them,—not accidental or haphazard but the controlled, regulated expression of the inner holistic development of organisms as wholes. There is selection, and therefore direction and control, right through the entire forward movement. This organic, holistic control of direction, this inner trend of the evolutionary process, is really all that is meant by the metaphor of Purpose or Teleology, as applied to Nature or Evolution. To infer more is to make the mistake of Spiritual Idealism and to apply later human categories to the earlier phases of the evolutionary process. Thus it is that when we speak of Nature or the Universe as a Whole we merely mean Nature or the Universe considered as organic, or in its organic or historic aspects. We do not mean that either is a real whole in the sense defined in this work. We have seen that the creative, intensified Field of Nature, consisting of all physical organic and personal wholes in their close interactions and mutual influences, is itself of an organic or holistic character. That Field is the source of the grand

Ecology of the universe . . . . . In this Home of Wholes and Souls, the creative tasks of Holism are carried forward . . . . . Its deepest tendencies are helpful to what is best in us, and our highest aspirations are but its inspiration . . . . . The rise and self-perfection of wholes in the Whole is the slow but unerring process and goal of this Holistic universe." He enumerates six stages of Holism: (1) Material structure or synthesis of parts in natural bodies, *e.g.* chemicals; (2) Functional structure in living bodies, *e.g.* plants; (3) "coördination by some marked central control, still mostly implicit and unconscious, *e.g.* in an animal"; (4) "The central control becomes conscious and culminates in Personality, and at the same time emerges in more composite holistic groups in Society"; (5) In human associations it becomes Super-individual in the State and similar group organizations; (6) "Finally there emerge the ideal Wholes, or Holistic Ideals, or Absolute Values, disengaged and set free from human personality, operating as creative factors on their own account in the upbuilding of a spiritual world. Such are the Ideals of Truth, Beauty and Goodness, which lay the foundations of a new order in the universe."

Another striking work is *The Biological Basis of Human Nature,* of Jennings of Johns Hopkins University, explaining the most recent studies of chromosomes, genes, the origins of the differences between individuals, what mental diversities result from genes, and which from environment, his theory of selves, and the relations of divers doctrines of evolution to science and life. "To biological science," he says in chapter XIII., "any species, any group of related organisms,

presents itself as a series of successive and interwoven generations. Taken together, the generations constitute a great web or network. This network extends indefinitely forward and backward in time. It is formed by innumerable strands, the genes, which pass continuously through the net; which interweave and at intervals are gathered into *knots, that we call individuals.* From the knots, the strands again issue, separate, interweave with other strands, and form new knots, individuals of a new generation . . . . . every knot . . . . . containing strands that have been part of many earlier individuals . . . . . As material organisms potentially visible, you and I have been in existence ever since the race that developed into human beings began. This is literal truth . . . . . But as a feeling, experiencing, knowing self, I, the ego, am identified with only one of the knots." What is the relation of myself to the other knots, past, present, and future? "Why should not the body that is produced anew by the genes which have given origin to that individual constitute the same self as that individual,—the same in the sense that myself now is the same as myself a year ago? There seems no inherent reason why that might not be the case?" Jennings discusses the numerous questions rising out of the dividings and combinings of lives in the course of heredity. He turns away from the apparent waste and extinction of individual personalities, and concludes, for good reasons, "that some other alternative must be found." He opines "that the human self is an entity existing independently of genes and gene combinations, and that it merely enters at times into relations with one of the knots formed by the living web . . . . . that there

is a limited store of selves ready to play their part" when a certain physical substratum forms "to which, for reasons unknown they may become temporarily attached." My own view is that of an Outer Consciousness or Greater Self, from which individual consciousnesses are *decoalesced,* and ultimately return into coalescence, after coalescences with, and decoalescences from, other lesser consciousnesses in the course of heredity. And for "knots", my simile would be "eddies".

Jennings strongly refutes exclusive Behaviorism and Mechanicism, and prefers a doctrine of Emergence of "pleasure, pain, blue, red, opinions, ideas," to "computations that begin with masses, motions, arrangements." He "repudiates the notion that the best interpreter of the living is he who confines himself to the study of the non-living; a notion that has been the curse of biological science, condemning it to move in pretentious superficialities." "Aspirations do influence the course of events."

My view of Emergence may be offered here: The various forms of the doctrine of Emergent Evolution are really founded on the progress of the evolution of Knowledge. As parts of, and related to, the universe, our consciousness envisages it in two aspects, not altogether sharply divided. In the stage in which they come to Man (on the way to higher stages) one of these two aspects is our world of clear consciousness, with its extensions by systematized knowledge and by improved apparatus, such as the telescope, the microscope and the spectroscope. It is our world of *knowledge.* The other is the still unknown *rest of the universe,* to which our present senses and their

extensions do not yet attain. Nevertheless we have, as parts, a measure of touch with it all. Future changes in us and in the universe seem destined to reveal to us that whole aspect. The things that "emerge" are all present in that second aspect, though still unknown to us. They move, or revolve, and touch us in revolving. This revolving touch of points in them and us gives us *spacetime events,* and it is this succession of events that constitute emergences. All the greatest things are there,—what we grope at under the general names of the infinites, the eternities, the ideals, the unmeasured bliss, the ultimate Directive Power, the ultimate future, the original past. We cannot know them in their fulness. Whoever cares to speak of infinites and absolutes should remember that he *cannot* here know them as such. But we can at least aspire "on and on".

Again,—since we also move, in what we call emergents, *which is it that emerges?* is it some of these to us, or we that emerge to some of them? When we see, with amazed delight, the extreme beauty of fullblown roses, hear marvellous music, tread a primeval pine grove, are not these exquisite things extruded out of that other world? Both their and our "emergences", like all movement, are controlled by the Great Directive Power.

The longer I reflect on the obscure subject,—the facts of directivity,—on which I have tried to elucidate some impressions, the more I am convinced that it is a real world, having possibilities of true scientific research for larger than those of, say, hypnotism, or even crystal structure. A field is there which touches the inner constitution of the universe.

Later Appendices II and III.
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APPENDIX II
to
The Person of Evolution

ATOMIC LIFE
AND
ITS COSMIC IMPLICATIONS

BY
W. D. LIGHTHALL, L.L.D.

APPENDIX II

Atomic Life and Its Cosmic Implications

For forty years a number of biological laboratory leaders have been studying the smallest of living forms —the series called "the filter passers", because they can pass through very fine filters; they are also called *"ultrascopic viruses"*, because too small to be detected by the finest microscopes. Their nature is such as to raise unusual questions, which bring us face to face with some of the most startling problems in science and philosophy, suggesting a revolutionary extension of the field of life into the world hitherto called the non-living.

Man the enquirer has not always anchored his systems of thought to the patient acquisitions of experimental science. But Kant, Aristotle and Schopenhauer, to mention only three of the greatest philosophers, won their enduring influence by doing so. And now philosophy is again called upon by science for an epochal readjustment.

Two masterly articles on the subject appeared in American magazines in 1930—"Where Life Begins," by Herbert Busher, in the July *Atlantic Monthly,* and "The Ultrascopic Viruses from the Biological Standpoint," by Professor E. W. Schultz of Stanford University, in the November *Scientific Monthly.* Their information is to the effect that in 1892 Ivanowski discovered that tobacco mosaic, a disease of tobacco leaves, was caused by a virus capable of passing through the pores of a fine porcelain filter and thus

suggested the probable existence of life much below the range of any microscope. Busher gave a description of some of the extremely small measurements of the virus particles and mentioned several of the important questions raised in the great laboratories.

I was interested in Busher's statements partly because of their philosophical import, and partly because, in this book (*The Person of Evolution*) I have already expressed in several passages a decided expectation that some such forms would be found.

My object is to follow up the sequence between those passages and the new information. Consequently, at the Oxford Convention of The International Congress of Philosophy in September 1930, after the appearance of Busher's article, I ventured to briefly call attention to the significance of the new measurements of filter-passers in their bearing on the origin of terrestrial life and on questions involved, especially the fact that in these small sizes the complicated problems of higher evolutionary forms of life were reduced to their ultimate elements, and the elementary consciousness which was one of those elements came very near to elementary matter. These questions had received no general attention among British philosophers, but interest was expressed by individuals.

Schultz's article was more complete than that of Busher. I wrote him and he kindly gave me a list of authorities on the subject. In his article, he described the general nature of the viruses, which include about a hundred species, more than thirty of which are infectious diseases, including smallpox, yellow fever, scarlet fever, and the bacteriophage responsible for "parrot fever" (psittacosis).

APPENDIX II

Describing the properties of ultraviruses, Schultz begins with ultrafiltrability. "While filtration through ordinary filter candles tends to yield a rough separation of microscopic and submicroscopic forms, filtration through graded collodion membranes, the pore size of which may, within certain limits, be controlled, enables one to determine, with a fair degree of approximation, the physical magnitude of the agent in question. Even under these conditions it is difficult, if not practically impossible, to make accurate measurements of the size of virus particles. . . . . However, despite these obstacles, some interesting and I trust significant measurements have been made: if the subjects be living they must be appreciably simpler than that of the smallest bacterium known to us; indeed so much more primitive that it is difficult to visualize constituent functional parts in such cells, if they may still be regarded as cells. . . . . The virus on which the greatest number of measurements have been made is the bacteriophage, producing a transmissible disease of bacteria, associated generally with an explosive dissolution of the bodies of the affected organisms. A mere trace of a dissolved bacterial culture containing the virus is sufficient to set up the diseased state in a new culture, and thousands of passages can be set up without the slightest diminution. This compels us to conclude that the agent multiplies at the expense of the bacteria it dissolves. . . . . Because of the tremendous interest which this discovery aroused, many have studied the bacteriophage."

Schultz then goes on to discuss "What is Life?": "Our criteria are based on complexly organized living bodies. We know nothing whatever regarding the

fundamental attributes of the ultimate living or life-giving constituents of the cell. We are entirely uninformed as to how the attributes of these ultimate units differ from those of the living cell as a whole." He proceeds "Some doubt has been expressed as to *whether bodies so small as 5 or 10 millimicrons* could still be complex enough to be living.* 1st, our measurements are rough approximations; 2nd, we know nothing whatever as to what constitutes the ultimate units of life. As Gaskell has recently suggested, life may be an intra-atomic quantity†. It may on the other hand be something that depends upon more complex physical aggregations. The single-cell organisms we see are quite highly organized forms of life. (Hofmeister has estimated that a liver cell contains in all more than 200,000 billion molecules) . . . . . But when we drop to bodies measuring only 5 and 10 millimicrons, the number of protein molecules which are still possible becomes negligible. A coccus of 10 millimicrons has been estimated *not to contain more than 12 molecules* of the size of serum albumin. But why should we disturb ourselves over the question of how many protein molecules may be necessary to establish the simplest living unit? For all we know the *ultimate unit of life may not hinge at all on the question of whether protein is present or not.* For all we know the ultimate principle of life may antedate the simplest protein molecule. It is conceivable that such primary living units may evolve first the smallest living

*A millimicron is 1/1000 of a micron, a micron is 1/25000 of an inch. "A spherical body, half a micron in size may just be seen nicely with a good microscope."

†Life has some intra-atomic features but is certainly not a quantity.—W. D. L.

micella* aggregates; from these primary aggregates the simpler microscopic cells may eventually evolve; from these in turn the more complex unicellular organisms, and with still further specialization and division of labor these give rise to the simplest multicellular organisms, and so on. In such a scheme of evolution, it is entirely conceivable that a place could be found for the ultraviruses regardless of their physical magnitude. Who can say? Two schools have grown up: one maintaining that the agent is of a living nature, the other that it is of a non-living nature. . . . . Most recent measurements place the smallest in the neighborhood of 5 *millimicrons,* meaning that it would take over 2,000 side by side in one plane to be visible. . . . . One investigator has estimated the size of the virus of fowl plague at *about 2½ millimicrons*. . . . . the importance and significance of the observations reported . . . . . point quite definitely to a new group of agents clearly separable from the microscopic forms known to us as bacteria. They must either represent exceedingly primitive forms of life, or belong to a class of agents analogous to *ferments.* That they are not just submicroscopic bacteria seems certain."

"*Cultivation.*—The viruses of fowl plague and Rous chicken sarcoma have been successfully cultivated in living tissue cells *in vitro.*"

Schultz mentions some of their less significant properties, such as immunity.

In the end he returns to the nature of the ultraviruses, with regard to their living or not living and

*A micella is any aggregation of protobes smaller than a cell. A protobe is a hypothetical smallest unit of living substance.

says: "Possibly the best argument in favor of their living nature is *their transmissibility in series.*" Yet in fairness he quotes Vinson and Petre, who conclude that the behavior of tobacco mosaic disease is in many ways analogous to that of a chemical substance.

Busher, in his article in *The Atlantic Monthly* assumes that protein molecules are lifeless and that there is a *gap* between them and living things, that *"life must begin in that gap"* and " that it is reasonable to assume that evolution at the lower end of the scale should also be in operation," and that "a new field of knowledge has been opened up." His descriptions are lucid: "objects which are smaller than the wavelength of light cannot be seen directly even through the most powerful microscope. But if illuminated from the side they can be seen, because each particle becomes a point of light reflection, just as dust in the air of a room. . . . . Based on this principle the ultramicroscope enables us to see things hundreds of times smaller than the smallest thing that can be seen through the ordinary microscope. . . . . And then there is the porcelain filter. . . . . The ultramicroscope disclosed the fact that *the size is smaller as the characteristics of the species approach, the nonliving.* The fact that filter-passers all live within host cells shows the close evolutionary relationship with bacteria. . . . . chemically, filter-passers consist of protein as all other living things do . . . . . whether these tiny organisms are sentient, whether they are conscious, we do not know. But it is probable that any living thing, no matter how small, that knows its pabulum, and gets along in this world, must have at least some consciousness and judgment. . . . . So we

must come to the conclusion that they must be alive, some probably more so, and some probably less. . . . . Whether they are the smallest living things we do not know. But they certainly fit into the *gap* between the largest and most complex non-living chemical molecule and the smallest and simplest thing known until recently, the bacterium. The filter-passer completes the series of units in nature, which starts with the electron and ends with man. . . . . From some such simple origin the evolution of life on this earth at one time began. Or could it be that it is constantly beginning from something similar to these filter passers even today."

F. d'Herelle, the successor of Pasteur, and discoverer of the bacteriophage in 1917, is much referred to. Born of Swiss parentage at Montreal, Canada, he has done wonderful work on the subject in France and other countries, and is the author of several books regarding it, the latest being "The Bacteriophage and its Behavior", translated by Dr. George H. Smith of Johns Hopkins, in 1926. In his view the essential criteria of life are (1) the power of *assimilation* (in a heterologous medium), and (2) the power of *adaptation,* or variability. His opinion as to whether the filter-passers are alive is condensed into a single sentence of his in his last book: "In this volume I offer physiological proof of the living nature of the bacteriophage" (pp. 130 seq. Also pp. 374-6). He does not agree that there are many species, but holds that in such minute forms a great power of *adaptation* results in temporary varieties effecting the results which others ascribe to species, but which he regards as varieties of but one virus,—the bacteriophage, (pp.

365-6). Still, for our purposes, it amounts to the same thing in the end.

Having thus condensed the general accounts given by Schultz, Busher and d'Herelle, I shall quote some of the passages from *The Person of Evolution,* which show another viewpoint. They are submitted without any pretensions as to their value, but at the same time without admitting the narrow and unjustified assertion of many specialists that none but a specialist has any right to express an opinion.

Page 80.—"The work of the endocrines and the other equilibrium adjustments of the body . . . . are marked by a striking directivity and aimed at specific consciousness results . . . . they take their genetic rise at such primitive stages in the history of life that we are set face to face with the earliest conscious scenes of our evolution . . . . those colloid masses in the shallow bays that were we . . . . were already in units of amino-acid molecular chains. They were brought together into those great and complex molecules called proteins, and these again into colonies. Through each of them coursed the galvanic currents of the elementary life. . . . . The psychic side of those responses was the primal form of our terrestrial consciousness" . . . . . p. 81. "And with each step of this organized survival for permanence was associated a precious psychic phenomenon—the attainment of joy. . . . It marked the deeper nature of *living substance.* And with this significant fact went all the facts of directivity. . . . . Were we not then at the very foundation and first terrestrial appearance of the *cogito ergo sum?* And ought it not rather to read, at that juncture, *Sum ergo cogito—'I am conscious because I am.'*—'I am living substance related in my very being to all the outer universe'." . . . . . p. 83. "As living substance we have always had a primitive consciousness of *kinship* with the external world—an obscure but indispensable element of knowledge rooted among our first instincts: for we were

then on the very borderline of transition from the outer cosmos to our terrestrial career" . . . . . p. 85. "The whole expansion of knowledge is really a widening outlook back into the universe from which we emerged in the beginning as a branch." . . . . . p. 88. "Thus the highly conscious creatures are found to be physically in virtually unbroken descent from forms of carbon, hydrogen, oxygen, nitrogen, etc., formerly considered devoid of living connection. The question of energy is also to be considered. So we are carried back to the atom and its constituents and the beginnings of terrestrial life." . . . . . p. 89. "All these elements are derived from the outer universe. In the outer universe then are found all the elements which attend the occurrence of terrestrial life." . . . . . p. 91. "On this basis, protein is not essential to the life-process; nor are water and its limited range of environment. . . . . I know I am arguing an advanced case, but the history of thought is full of the 'advanced cases' of one generation or decade, which are the commonplaces of the next."

Here I should repeat a few words regarding the doctrine of Directivity as advanced in *The Person of Evolution* and previous publications: The inner nature of evolutionary development and its ideal,—Progress,—shows that *the whole of terrestrial Evolution of life is one long process of conscious willing.* It is made up of innumerable separate acts of will, under the guise of reflexes, instincts, and hereditary processes. Each is physically a discharge of electric energy, directed to attain some condition of which the *conscious concomitant is joy;* or escape from some pain. Evolution therefore implies some conscious directivity. Its wide and ancient unity implies a single united and organized consciousness—in other words a Person,—the Person of Evolution. The study of this directivity

in all its manifestations shows that it is an accompaniment of all life. Wherever there is *fitness,—affective fitness,*—there is directivity. It has therefore a use in indicating life, where the latter can be traced *indirectly* in many cases where direct manifestations of *individual* consciousness are lacking, since it deals with an *Outer* Consciousness chiefly, rather than with individual consciousness. It is consequently an *additional instrument of logic* at such junctures. On this view of the facts, of directivity—that evidence of life can be indirect in this manner,—I had predicted as above, that a chain of preprotozoic life was probable, grading down through protein, the amino-acids, and ionization, into the atom and sun-energy. The discoveries concerning the filter-passers now prove the theory sound, at least sufficiently for the general thinker who takes in a wider scope of considerations than the specialist. The filter-passers bridge the gap, and extend the outlook regarding life; and throw some light on questions concerning ions; the business of the atom; and that of energy processes. They also indicate Life as a factor of the outer universe. They bring into one simple atomic unit both matter and consciousness, yet with differences from the atom of any previous monadic theory; and thus establish our own instinctive life and knowledge on a basis of unity with the world of matter, as *psychical* components of life. Thus perceptual consciousness and Affective Feeling enter the stage of universe theories in touch with scientific Reality. Many other consequences flow from the new addition to the realm of life represented by the filter passers.

APPENDIX

Some of the questions which specially strike one regarding the ultraviruses are the following:

I. *Are they living or non-living?* The opinion of Schultz and others is that the question is still difficult to decide. The larger may be living, the smaller not.

Busher's opinion is that they are all living.

D'Herelle is very emphatic that all are living.

He mentions others who hold all to be non-living —but he challenges them to produce any positive evidence.

Casting the extra argument from directivity into the balance, my reasoning is that the case for the living is abundantly proved. The filter-passers are fitted to the same life work as the bacteria. They "know their pabulum and get along in this world." Half this argument is an argument from directivity. The extension of the Directive Power thus leads beyond admitted protein *life*.

II. It is most significant that *the smaller and simpler* the filter-passers become, *the more they pass into likeness to the so-called non-living matter*. This is evidently the evolutionary line of transition by development from the so-called non-living to the state of the living. *The so-called non-living is therefore presumably living*. Moreover the enzymes (ferments) resembling the simplest filter-passers, are themselves another form of this link, for the same reasons apply.

III. The next problem is *how far this passage leads back?*. The protein molecule is immediately concerned. It is a type of all molecules, for in structure they are all of a family. To the atom and atomic structure is then a short and plain step, for molecular structure implies, and is conditioned by, atomic. At

this point even the difference between the bacterium and the molecule is seen as only one of complexity and development.

IV. So, once we have reached the protein molecule, and its atoms, we have reached the whole inorganic world and its atomic structure. The entire field of atoms and energy thus enter the discussion regarding the laws of life. The facts of directivity are much plainer regarding this field of reasoning than the external appearances of subhuman life.

V. The next problem is one of detail. It is impossible of full answer at present. That question is: *What is the process of life in the atom?* Specific materials for its answer can apparently only be sought by physicists. Yet it is a larger question than one of simpler physics; making demands on biology, and on that wider view of biology which includes the whole of the operations of thought and instinct and consciousness. On the basis of that wider biology and physics, the electric system of the atom is concomitant with some form of consciousness and directive power. *But what is the internal system of the atom?* Is it a correct simple statement of its physical aspect to say that it is electric, with a small (but relatively large as to mass) positively charged nucleus or proton and one or more negatively charged electrons revolving rapidly around the nucleus in some kind of orbit or orbits. Can we fit a mental aspect to this?

VI. If we are to go back of the atom, or to some more elemental form, is it some kind of hypothetical *photon?*

VII. The filter-passer shows a probable *affective* fitness to a career in life, the sign of directivity. The

atom seems to play some part in the same hereditary scheme. It too should have affectivity, and experience some primitive form of pleasure and pain. Does the photon also? How far, in any way, are we justified in daring into this new field of suggestion?

VIII. This raises that characteristic of directivity that *correlates* units. In the case of the atom, its direction is *inter*-atomic; and one of its products is therefore the molecule, a composite of atoms.

IX. Man too is both *inter* and *intra-*: he is made both on an internal plan of relations, and an external plan of relations, facing towards and fitting into the universe. Is the directivity that reigns in him not universal?

X. Another mysterious problem is *what is the part of sun-energy in the production of the primitive life? Is the sun a great fountain of life?* And *is energy in general throughout the universe related to life? How far is life concomitant with energy?*

XI. *Is there any such fact as extinction of life?*

XII. How are we to regard the high and low temperatures, the dissolutions of atoms, and other extreme conditions, in the outer universe in regard to life?

My own conclusions are: That life is essentially conscious, outer conscious, directive, and universal. Its conscious side appears concomitant with sun-energy at the terrestrial end of the sunrays and therefore at the solar end also, and life is not limited to our globe. The rays we see by are of the same general nature as nerve-energy; and the "ether" (or whatever it is they travel over) is of a same general nature with nerve. It is not now too early to ask

the formidable question what form life takes *at* the sun; and during the passage from sun to earth; and in all like circumstances in the universe; and here, in the atom and molecule, and in the line of terrestrial evolution, including man? How far can we presume life in connection with *all* the phenomena of physics? The universe seems open for a new set of hypotheses. One of them may be: *There is no matter without life, no form without relation to a consciousness.*

The filter-passers contribute important evidence to a main juncture in the history of life,—the juncture of its terrestrial origin and its universe source, and at any rate the "tremendous interest" of their students is justified. It is henceforth impossible to treat fully of physics without raising the question of life; and the query about the universe will not be "What is its size?" or "What is it all about?" but *"What is its happiness structure?"* represented by its fitness and order and relation to the terrestrial line of evolution. It is in the line of the ancestors of Man. And presumably of many other lines of ancestry.

W. D. LIGHTHALL.

Montreal, March, 1931.

APPENDIX III

TO

"The Person of Evolution"

A THEORY OF ATOMIC LIFE,— UNDYING AND EVOLUTIONARY

BY

W. D. LIGHTHALL, LL.D.

APPENDIX III

To "The Person of Evolution"

A THEORY OF ATOMIC LIFE

[This Appendix was written ~~is intended~~ to close a Definitive Edition. The defects of the original book cannot now be corrected by rewriting, and must await an entirely new work. The application of Instinct to Intuition, especially in regard to Space and Time, seems to call for this. In using the term "Theory" I mean a suggested, not a fully proved one; but it expresses my beliefs. My ideal of it is a truly scientific philosophy.]

Within the past short time very significant new progress in the study of those smallest living forms, the viruses, the general facts concerning which have been given in Appendix II. has tended to complete the chain of terrestrial living forms. In London on September 18, 1932, Dr. H. H. Dale, Secretary of the Royal Society, delivered before the British Association for the Advancement of Science, a Presidential address on "The Biological Nature of the Viruses" in which he said: "The problems presented by the viruses cannot fail to raise questions of the greatest interest to anyone concerned with general physiological conceptions. What is the minimum degree of organization which we can reasonably attribute to a living organism? What is the smallest space within which we can properly suppose such a minimum of organization to be contained? Are organization, differentiation and separation from the surrounding medium by a boundary membrane of special properties, necessary for the endowment of matter with any form of life? Or is it possible to conceive of a material complex, retaining

in endless propagation its physiological character, as revealed by the closely specific reaction to it of the cells which it infects, though it is not organized into units, but uniformly dispersed in a watery medium?" He mentions that Dr. Elford records the size of the foot-and-mouth disease virus as "about three or four times the size of the hæmoglobin molecule" while Bronfenbrenner puts the diameter of the bacteriophage particle at 0.6 of a micron, that is only about one-fifth of the accepted dimensions of the hæmoglobin molecule"; and Dale later uses the phrase "equal in size to mere fractions of a protein molecule", and that "they seem *to form a series*".

A little later, (November 30) the President of the Royal Society, Sir Frederick Gowland Hopkins, in his presidential address to that Society, under the title "Progressive Biology", said "We have assumed that the living cells we have best known are the ultimate units in biology. But of late years the viruses have forced themselves into our thoughts. What are viruses? Do they merely simulate some of the properties of the living? Can we conceive of them as something between the non-living and the living? Are they alive? We do not yet know. Research upon them is at any rate intensely active at the moment. *Its results may make it necessary to modify some fundamental biological concepts and indeed be as revolutionary in their effects as the breaking up of the atom*". When both the President and the Secretary of the Royal Society go thus far, one who has long stood for these views may feel that things are getting interesting. The English progress had caught up to, and perhaps surpassed, that of Germany, France, and America, in this subject.

Berg 1933

More and more it has seemed to the present writer that the viruses give promise of leading to the *most notable juncture in contemporary thought—that by which the two greatest lines of modern science, the*

evolutionary biology of Darwin, and the physics of Newton and Faraday, might find a common meeting point in the hydrogen atom; and that, as directivity and affective feeling seem inherent in the processes of evolution, it is fair hypothesis to attribute these to the atom.*

And this conclusion is not disturbed but very much strengthened by another line of recent discovery, that of Dr. Arthur I. Kendall of North Western University, in 1931, that at least some bacteria can take the minute virus form, and as such can act as filter-passers producing all the general phenomena of viruses.

I have heretofore suggested another line of thought beckoning for investigation, beyond the viruses, in an allied field of the atom,—namely, the behaviour of those apparently "non-living" *chemical* substances operating in all animated bodies, which act just as fitly and intelligently, in the service of the general Directive Power, as do the nerves, the instincts, and even the intelligence itself.

Dr. Hopkins' address notes certain items of this kind in his account of the year's biological advance, such as that "the nerve impulse consists of a transmitted *physico-chemical* event, probably involving *changes of ionic concentration,*" that "adrenaline is liberated at the *nerve ending,*" and that "the action of acetyl-choline when injected into the circulation, resembles in general the effect of stimulating parasympathetic nerves", *"due to the influence of the specific structure of an organic molecule".* Also that "just as Nature seems to have hit upon sound principles for *nerve* structure early in evolution, so she seems to have satisfactorily chosen very early the *chemical materials for life".* He has more lately pursued this question further in another notable address.

*Nature, Nov. 28, 1931. (Letter by W. D. L.)

Can we not trace in all this chemical molecular behaviour the action of the atoms which form and determine molecules; and recognize in such atomic conduct renewed examples of "the wisdom of the body" that significant form of evolutionary directivity? In fact, the idea of "directivity" is used fifty times more today than ten years ago.

If all these recent discoveries should be, as they seem now so close to being, the dawn of a new mother-concept,—that of a *factual living atom*, as the basis of a new physics, a new biology, and inevitably a new astronomy also, may it not be as revolutionary for philosophy and psychology as for biology, physics and astronomy? At such a juncture one is led to expect surprises at any moment.

[A similar surprise came to Pasteur, when, after a long pursuit of the problem of the persistent right-handed and left-handed polarisation varieties of tartaric acid crystals, he dissolved them separately in two test tubes, and discovered that the two liquors produced the same right and left hand deflections of polarisation of light respectively as did the crystal forms; and thus he learnt that the variations were seated not in the crystals but in the molecules of these two forms; and so threw light on the internal structure of molecules.]

It follows from all this that the viruses, being the nearest living things to the atoms, and consequently related to them, the structure and behaviour of the viruses, and the leads they give from the life of the highest human beings downwards, are the natural *points d'appui* to elucidate the nature of the atom. I suggest that the atom ought now to be frankly regarded as *a member of the terrestrial line of life.* From its directive behaviour in biochemistry in aid of the needs of life, it might even be usefully considered provisionally as a *previrus.*

APPENDIX

For the present discourse, the "atom" is that of Bohr and Rutherford. Even the fact that atoms have electronic parts and undergo some changes do not fundamentally affect the argumentation. Nor do the new element "neuton", nor photons, nor cosmic rays, nor anything which does not operate general destruction of atoms. They all are parts of the same system: in which the reign of Order, of Unity of substance and structure, and of Directivity, are characters. But the organized atom is the nearest structure to our terrestrial race, and is at a grand evolutionary junction point. "Since 1925", says Theodore Dunham, Astronomer at Mount Wilson Observatory, "we do not ask to see a correct and up-to-date picture of an atom. This has been impossible since 1925, in which year it became a function in higher mathematics, and quite impossible to draw. It is just as real as it ever was, however, and just as reliable". However, he adds a very good account of the present view. But, after all, these exactitudes are not those required. It has been said that the smallest speck seen under even the ultra-microscope consists of more than 125 million atoms, and that by far the greatest part of the atom is space. Though it requires imagination to grasp these things, perhaps not much more is needed than for the grains of sand in a beach, which, notwithstanding their number, can be treated of in masses.

A Russian, D. F. Sinitsin has recently enunciated a theory, based on the viruses, which postulates the universal existence throughout space of ultrascopic invisible monadic living organisms back of all living processes, and which he entitles "aphanobionts". But this fine philosophical theory perhaps goes too far,— and the factual hydrogen atom is the logical next step in the series of living forms and sufficient as a basis for further reasoning.

Needham* points out the necessity of more *theoretical* biology in order to digest the vast masses of unconnected observations. Others are complaining of the narrowness of biological education. Yet it is no worse off than physics. In truth, a still broader theory than any limited to either of these sciences is needed. Elements of psychology are involved in both of these sciences and universe-wide laws must be sought. The old bottles cannot hold the wine of the newer progress.

In Chapter VI of "The Person of Evolution" I have ventured into the question of the nature of death and life. Let us continue the enquiry: When at death the body is dissipated into its molecules and atoms, it is evident that it had never been more than a constantly changing, though well-ordered, association of such elements. And not even the same elements;—for the life of the body does not depend on any particular particle of energy, any more than on any particular atom. Life in fact, has some resemblance to a flame, or flow of electrons, or current in a battery. Shall each of us then be dispersed into countless atoms, or fragments of atoms? And shall some of them even be incorporated into other living bodies, inhabited by totally different personalities? What becomes of the human individual? Is he annihilated in the dispersal? Or broken up in a mass of new combinations? Do others live upon his ruins? I think the answer to these questions can now be found, or at least a logical theory be offered.

The individual body began as a very minute particle; thence atoms were added and then cells, until its personality appeared as the predominant member* of a vast colony, through a process of *coalescences*. Physically, it was now a collector and distributor of energy—collected from the material universe. That

*"The Problem of Biological Organization," Scientia, Aug., 1932.

* The brain now rides the body as a rider rides the horse.

energy was directed from a source independent of the individual. What was that source? Some of it came from the sun, some from the farthest regions of knowable space. It was *all directed.* And that directivity has references to a *common life.* The Directive Power ranges through all of space. Is space then the reservoir from which life proceeds? a reservoir accessible and related to all living things: Does the universal and unitary character of life find a response in the universal and unitary character of space? Is it the reservoir we seek, perpetually formative of life, animated itself by the Directive Person? Or is it itself still a lesser and imperfect thing, our evolved form of comprehension of an unknown and deeper Reality? At any rate when the individual dissolves, his physical atoms return to space, and his spirit returns apparently to the Spirit of the same. Space is the highway of all movement, the home of all matter and energy and in its Space-Time qualities lies the essential touch with our life, just as they are in essential touch with that Spirit which ever leads us. Are matter and energy forms of one thing as Relativist Einstein seems to prove? It does not change the situation. Nor does it make a difference if we call Time a "dimension of Space". Time is no more a dimension of Space, or even of Space-Time, than Space is: for both are expressions of one Reality behind them. Of one thing the facts of directivity assure us,—that in the hour of departure, the ceaseless process of life, whatever it be, *shall continue us into some new combination of life-bearing electrons.* Since they are all members of the series of living things, the conclusion comes that *they shall again repeat what they have done, shall continue to draw on the reservoir of Energy, shall inevitably organize, shall take up the process of growth once more, and again accumulate knowledge and shall progress towards happiness.*

body form Thus we have a common life with every other individual.

Indeed the principle *that all atoms are members of the series of life-bearers* throws a flood of light and hope. They stand as the links between the terrestrials and the non-terrestrials. Like the viruses, the bacteria, and the races of men, even other forms we now know not of, will receive by them perception, feeling, growth, organization, and the guidance of the Supreme directivity. *Series* and *directivity* are therefore two new and distinguishing arguments regarding the atoms.

Can we doubt that they contain these qualities when we learn that such actually are the characteristics of the atoms concerned in the *chemistries* of the body itself? We need go no further for proof of the fundamentals of atomic life. "Death" is a phase of life, ~~a dissolution~~ a disolution, a decoalescence, to be replaced by a recoalescence.

This new conclusion involves a further result: That just as the bodies of our own atoms are rudimentary in comparison with our bodies, so, *on the other side, in other active spheres, they must be rudimentary compared with the glorious organizations of the outer universe, which are also composed of them.* And this opens up an entire new field of thought and enquiry.

The astronomical entities, the spiral nebulæ, the globular clusters, the galaxies, and other bodies of the heavens, can be interpreted. They are, all of them, atomic constitutes and organic aggregates: they fall into the series of life-bearers. Still, remembering that in terrestrial bodies, life is independent of any *particular* atom or unit, but proceeds from, and is in touch with the great Source of Life; so it should be in the universe. And recalling our principle of *coalescences,* and setting no limits to their *extent, a series* of higher lives and bodies receives an outline.*

In the atom, too, lies the power to follow *affective choice*—the delegated directivity, an essential device of Evolution,—hence of the universal Evo-

*Every life is a coalescence of innumerable living elements, every marriage, every birth a coalescence of trillions with trillions: every Society a virtual coalescence of alliances. The whole Cosmos lives by infinities of coalescences.

lution. Every improvement is part of Evolution. The universal Affective Choice is the antidote to Entropy and Chaos.

Coming back to the fate of individuals after death, and applying a sweeping view of evolutionary psychology: we were born with the fundamentals of knowledge (which imply consciousness, apparent or latent), and since our descent is through the atom,—those fundamentals are inherent in the atom, as the tree is in the seed. There is found that construct Memory, the Time-coalescing device which is one of the conditions of knowledge. By it we can fly backward against Time's Arrow. And similarly by Prevision, we can fly forward. There too are found the Space-coalescing devices of our make-up, the geometric instincts of the infant and the search for order. For these are characters of the whole terrestrial living series. Through the atom then, the fundamenta of knowledge continue after death.

Consider the course of the life of any terrestrial individual,—an ant, a fish, a dog. He comes out of the embryological sleep into a dream regarding a real world; and later he relapses into a sleep. A man is not otherwise. He comes out of the same sleep, into a dream regarding a real world; then he relapses into a sleep. Yet the dream is a part of a reality. All the common life, never-dying, continues the flow, and new forms express to us its eternal innate advance. There are *two paths*—or two principal paths,— by which energy,—and apparently life,—enters to the individual, in his body. One is directly from the great reservoir in Space; the other from the hereditary line of bodies, linked like a chain of electric batteries. The latter path also leads back to Space for its origin, and has been in close touch ever since with the reservoir in Space. By it, ancient directivities which have formed the ancestral line of bodies, have prepared him to receive and co-operate with the directivity ever

coming afresh from Space to him. And that Outer Directivity has also come down from the outer past.

19 The primal and fundamental organizer is the Directive Person. Through It our future is not an unrelated life in some unrelated universe. The World is all *our* world. Space is the home of all "fields" and all relations. Every "field" stretches out into all. New forms of the great process are there for us, intelligible and related to our present. The Directive energy which flows through every atom again swings us into some intellectual and affective combination. Living is the essential part of us: it depends on universal and indestructible elements. Our role in departing is simply to be content like the infant and accept the disposition provided, as we did on entering this life. Nor is hereditary succession of bodies incompatible with the direct outer Source of our Life, since it too was originally drawn from that Source in Space.[x] The hereditary body resembles, in its relation to the latter, a muscle or other organic part of a human body, thus partaking of two lives, its local life and that of the larger body or Source in Space. Directivity and Time are essentially related: since purpose is affective and seeks future ends—perpetuation of good, annihilation of bad,—and involves a time-plan and time-devices.

Space and Motion are also involved. And as directivity springs from life, Space-Time, motion and energy-matter seem therefore manifestations of Life.

So let us take great interest in Space and in the observations of its wise and deep students. Newton, Spinoza, Einstein, Fichte, Kant—what deep thinkers! One of the deepest thoughts of Plato was "God always geometrizes." Samuel Alexander links well many ideas in his "Space, Time and Deity." The "crystalline" structure of Space interests others: all order and pattern are of this. So does its "measuring" aspect,—the sphere of all mathematics. Into the

[x] Just as the consciousness of the infant has all the prospect of the complete man; so the consciousness of the man has by coalescence all the promise of the whole consciousness of God. The process appears to be that God is constantly giving out from Himself those who are to be born, and receiving into some part of His fuller life those who decease here. Every atom of matter at once recommences the living process, from coalescence to affective pursuit, and all the stages of a new life, going on forever.

poetry of its seeming boundlessness soars the imagination.

20. Our "spatial instinct" clings closely to some views of its structure, and particularly to its boundlessness. Light may perhaps now fail us to descry that larger Space, but some day a newer light or other energy, and mightier phases of consciousness may hail us from there. The sense of what we venturesomely call "infinity" will not be satisfied without some explanation of the outer bounds. Though in this smaller life need we pretend to any real cognition of infinity when we have what we have,—a feeling of trust in its, to us, unknowable sufficiency? Thus Instinct in its largest sense claims for its field what Kant attributes to Intuition (of Space and Time) and brings them a new and suggestive set of correlates which usher them within the sphere of directivity.

All the new, tremendous astronomy belongs to it; all that is expected from telescopes and from methods still unthought; all the physics yet to be conceived; all future study of life in the universe; all profounder systems of psychology; all thought of our total cosmos as a cell in a wider cosmos beyond. All imply Space. The higher the organism, the completer the memory and imagination, the more the restrictions of Space-Time disappear, and all is seen as a present unit. Even now, tied up in this short-lived, small, and shabby body, the descendant so-to-speak, of the amœba, the worm, the ant, the shark, the frog, and the lemur, we look, by a psychological compulsion, to external Space as at least one visible field of the complete existence, where perhaps only our outlook through slits of senses deceives us into fixed concepts of extension and succession. A man is a developed atom,—a midway crystal of that Great Crystal the Universe. Physically he is a recapitulation of an astonishingly ancient history, the history of the total universe, no less,—of the universe

past, the future and the present are all dimensions of Time.

(The past and the future are as real as the present. I see today the true Photograph of a Spiral

nebula in Perseus as it was six million years ago — some 351,401,616,000,000,000,000 miles distant. Surely Space-time is very relative! And the human eye is fitted to that distance back, and therefore equally far forward. And, more recently, 20 times as many! And what will it be with the 200-inch telescope? And this is merely sight, not imagination!

known and unknown. He, like his illimitable brethren-units, was being made through it all:—he bears the marks of all the making. And deep in him are seated the memory records of it all. But it seems necessary to remodel some of the traditional concepts of philosophy. Philosophy has always been a human attempt to understand *all that is conscious* and *all that is unconscious*. Here is a new way, that of Instinct in Evolution.

Though we often class ourselves as Realist or Idealist, we are neither completely, but something of both;—we are all perforce *Instinctivists*,—remembrers of very ancient things that have happened to us long ago in the terrestrial evolution, and some in the older, vaster Evolution out of which came the terrestrial, and some in even older, vaster Evolutions; and seers of things that will happen to us yet again in the future far-flung tide of Life.

W. D. LIGHTHALL.

Montreal, January, 1933.

We ought to regard ourselves now as astronomical beings, rather than as terrestrials, without prejudice to our spiritual nature. Problems of sizes, temperatures, compositions, ought not to trouble us.

There is the Sun, our former country, from which we came say 3,000,000,000 years ago or so, on solar rays, to the Earth (which is only $\frac{1}{1,384,470}$ th its parent's size).

In that Sun we dwelt in our then element, a fiery furnace, and ever since, even as protids, we have been kept in intimate vital touch with it. Of what nature was our life in that ancient realm of strength, splendor and beneficence? More ancient still was our sphere in those far 246 Islands of Mystery, the Nebulae, leading off into the immenser Unknowable, and everywhere racing farther outward to the universal Kingdom of the divine Evolutionary Ideal!

- An Index (is to be added).
- And other Studies & Notes.
- Some passages dropped, others improved. Completer references.
- The Cosmic Evolution especially; improved, enlarged and stressed. Cf. Appendix IV. "The Law of Cosmic Evolutionary Adaptation."

"THE PERSON OF EVOLUTION"

THIS BOOK will be welcomed by a vast and increasing number of men and women who have imagined that, when forced to give up belief in the "personal god" as defined in ancient creeds, they must also perforce give up belief in any creative and controlling "person" surpassing the limitations of humanity and in any continuance of their own personality after death.

Almost every intelligent man or woman who has come under the influence of modern scientific theory now takes a keen interest, often a painful interest, in the discussion of such questions, and will be grateful to an authoritative thinker who, reasoning strictly on modern scientific lines, discloses convincing evidence of a super-person in whose immortal personality every human being shares.

The most remarkable achievement of the author is that any thoughtful reader of average intelligence can understand and appreciate his arguments, even though he never "plays to the gallery" with loose logic or ambiguous phrases which would forfeit the respect of the practised and critical philosopher. Rarely do we find a philosophic writer combining lucidity and profundity with such success.