The Philosophy of Form

By

Paul Carus

An expanded reprint of the author's Introduction to his "Philosophy as a Science"

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Preface.

THIS pamphlet is a condensed synopsis of the author's life work. The most important part of it consists of his literary labors during the last quarter of a century in his capacity as editor of *The Open Court* and *The Monist*. The different problems have been treated in detail in a series of books and articles, and their solutions are here presented in a terse systematic form.

Special attention should be called to those solutions which the author deems to be helpful for the further progress of science and a scientific philosophy. They are: The far-reaching significance of form and formal thought; the foundation of the formal sciences, especially mathematics and logic; the importance of unity and the nature of quality; the thing in itself as form in itself; the difference between cause and reason; the origin of feeling from unfeeling subjectivity; the origin of meaning which is the characteristic of mind; the origin of consciousness and of self-consciousness.

Further, the philosophy of form applied to psychic phenomena shows memory as the soul-builder; it offers a more satisfactory theory of pleasure and pain, demonstrates the objectivity of truth, sets forth the idea of a free will which is rigidly determined, and teaches a new conception of God as superpersonality.

Finally we may add that with all recognition of the paramount significance of science attention is called to the fact that non-scientific views, which naturally appear superscientific, such as exhibited in religious systems and institutions or presented by artists or by ethicists, are as much entitled to exist as the world-conception of the scientist.

Labors not directly connected with the author's philosophical views, especially in comparative philosophy, comparative religion, the history of Christianity, Chinese topics, German literature, etc., have not received much attention in this synopsis, because it is intended mainly to serve the purpose of laying a foundation for the philosophy of the future.

May this pamphlet be welcome to the philosophical public, and also to those lay readers who wish to be posted on what has been done in this large and important field of human thought.

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Philosophy an Objective Science.

THE aim of all my writings centers in the endeavor to build up a sound and tenable philosophy, one that would be as objective as any branch of the natural sciences. I do not want to propound a new system of my own but to help in working out philosophy itself, viz., philosophy as a science; and after many years of labor in this field I have come to the conclusion, not only that it is possible, but also that such a conception of the world is actually preparing itself in the minds of men.

The old philosophies are constructions of purely subjective significance, while agnosticism, tired of these vain efforts and lacking strength to furnish a better solution of the problem, claims that the main tasks of philosophy cannot be accomplished; but if science exists, there ought to be also a philosophy of science, for there must be a reason for the reliability of knowledge.

Every success of scientific inquiry, every progress of research in the several fields of knowledge, every new invention based upon methodical experiment, is a refutation of agnosticism—the philosophy of nescience—in so far as these several advances corroborate the reliability of science.

Mankind has become more and more convinced of the efficiency of science, and in this sense the philosophy of science prevails even now as a still latent but nevertheless potent factor in the life of mankind, manifesting itself in innumerable subconscious tendencies of the age. We may confidently hope that the future

which the present generation is preparing will be the age of science.

Science and Scientific Method.

IT might seem redundant to ask the question: "What is science?" but we will, nevertheless, answer it briefly.

Science is not the monopoly of the naturalist or the scholar, nor is it anything mysterious or esoteric. Science is the search for truth, and truth is the adequacy of a description of facts.

Science differs from so-called common sense only in this that its work is done with scrupulous care according to well-considered methods and under the constant supervision of a reexamination.

Science is based upon observation and experience. It starts with describing the facts of our experience, and complements experience with experiment. It singles out the essential features of facts, and generalizes the result in formulas for application to future experience; partly, in order to predict coming events; partly, to bring about desirable results. Generalized statements of facts are called truths, and our stock of truths, knowledge.

There are always two factors needed for establishing scientific truth, indeed, for establishing any kind of knowledge: they are, first, sense experience, and second, method. By method we mean the function of handling the material furnished by sense activity. This is done by measuring and counting, by determining propositions; by identifying samenesses and pointing out differences; by tracing the succession of cause and effect; by classifying phenomena; by describing formations or functions, and observing changes; finally by arranging the statements thus gained into a unitary system of knowledge.

By abstraction we learn to distinguish between form

and substance. An evaluation of pure form will yield on the one hand the formal sciences, arithmetic, geometry with all other branches of mathematics, pure mechanics, logic, and all that is kin to it; and, on the other hand, we have the sciences that investigate concrete things as well as definite occurrences—physics, chemistry, astronomy, physiology, psychology, history, etc.

The philosophy of science uses the formal sciences as the organ of thought, which supplies to the sciences of concrete phenomena the method of establishing truth by describing facts of the same kind according to their characteristic and significant features in general formulas, and to systematize these formulas in a unitary world-conception, commonly called "Monism."

A Unitary System.

THE several sciences are traveling on this path; they have instinctively found the right methods which alone can be justified before the tribunal of the philosophy of science, and there is nothing in the entire scope of experience that cannot become an object of scientific investigation.

Experience verifies our conviction that the assured results of the various sciences, the so-called scientific truths, never conflict with each other; they may form contrasts but they never contradict one another. This indicates that the world in which we live is a cosmos, not a chaos.

The statement that the world is a cosmos means that its constitution is consistent in all its details. The world presents itself to us as a unitary system; and a genuine *truth* (i. e., a formula describing the general features of a definite set of facts), if once proved to be true, will remain true forever. Theories may change but the nature of facts remains the same. As soon as a formula has become a mere description of facts it is

a permanent possession of the race. We may see old truths in a new light, we may better and ever better learn to understand their significance and also the relation between several truths; but facts will still be facts and the truth will always remain true. In other words, the consistency of the world is both universal and eternal. At the same time what is true here is true everywhere, and what is true now is true forever.

The Philosophy of Form.

ERNST MACH defines the character of science as "economy of thought," and he is right; but we go one step further in showing why an economy of thought is possible, nay, why it is necessary. Science or the economy of thought is conditioned by the systematic character of the formal sciences which provide us with the scientific method.

The distinction between form and substance is of such paramount importance that I do not hesitate to characterize my conception of philosophy as "the philosophy of form."

All science consists in describing forms and tracing their changes. Matter and energy are mere names; they are empty words, denoting nothing but the objectivity of both things and events. The objectivity of things is called "reality" (i. e., thingishness), the objectivity of events, "actuality," which means that something is doing, something is going on, there are changes taking place. All differences that we can scientifically comprehend are ultimately differences of the forms of reality or matter and of actuality or energy, and all that we do or try to do, be it in art, in invention, or in morality, is by molding and remolding things as well as ourselves so as to be most serviceable and valuable.

The distinction between form and the contents of form dates back to classical antiquity, to Aristotle and

his school, but the contrast has been much misunderstood through a dualistic interpretation.

The modern period in the history of philosophy begins with Kant, and rightly so. The reason of his great preeminence is exactly due to the fact that he saw the significance of the contrast between form and substance, which, however, led him to the wrong conclusion of his "critical idealism."

We may look upon Schiller and Goethe as prophets of the philosophy of form. In fact, the classical period of German civilization as characterized by the names of these two poets, together with Lessing, Herder, Beethoven, Mozart, etc., is to a great extent due to the clearness with which these men appreciated the significance of form.

The Science of the Sciences.

SCIENCE is originally one and undivided and serves the practical purpose of guidance in life. When by a division of labor the several sciences originated, there remained a field which was common to all of them; and this field is the domain of the science of the sciences, i. e., of philosophy.

The scope of philosophy is threefold:

First, it investigates the methods of science, it explains their origin and justifies their efficiency. We may call this branch of philosophy *methodology,* which necessarily includes a theory of cognition, a description of the nature of abstract thought and of logic, and a definition of truth.

Secondly, philosophy summarizes the assured results of the several sciences which would be characteristic of existence. This may be called *ontology.* In other words, philosophy attempts to offer a description of the nature of being, i. e., a world-conception, the essential part of which must be a characterization of the soul, of our own being, in its relation to the entirety

of the whole, the universe, the All, or, religiously speaking, God.

Thirdly, philosophy applies the truths thus established to practical life, a discipline which might be called *pragmatology*. It includes men's endeavors in the line of scientifically guided discoveries and inventions, sociology, political economy, education, religion and ethics, i. e., the so-called applied sciences, the arts, and the science of conduct in the broadest sense of the word.

Pragmatology is the purpose of all methodology and ontology, and so it is the most important branch of philosophy, but it would be wrong to limit philosophy to it, as is done by pragmatists. They scorn theory, rationalism, and any methodical unification such as is attempted by monism, and the result is that they lose themselves in pluralism and subjectivism. If the most essential element of a philosophy would remain the philosopher's subjective attitude constituting the personal equation of his mode of thinking, a philosophy of science would be impossible, and philosophy would sink to the level of the poetical effusions of mysticism.

The philosophy of science is not the affair of one man, but is being worked out in the scientific development of the race. Most scientists adhere to it unconsciously, and in fact very often they employ scientific methods instinctively; they have been trained in their use and rely on them sometimes without having investigated their philosophical significance, yet their reliability is not doubted and the assured results of the several sciences affect the world-conception which, by a kind of indefinable consensus, constitutes the intellectual atmosphere of our social life.

The Foundation of Mathematics and Logic.

THE formal sciences are constructions of pure thought which we build up in the field of an abstract void. We take away all that is concrete, matter as well as energy, and retain only the ability to make operations of an abstract nature. For mathematics we need pure motion, which means the mere idea of motion, i. e., motion without energy, and the opportunity or possibility of moving about. For logic we need the assumption of consistency and, rightly considered, this means that all constructed forms should remain faithful to themselves. In other words constructions or the products of operations of the same kind are expected to be and to remain the same, and this constancy is expressed in the formula $A = A$. An A here is an A in any other place and under any other conditions. All concrete particularities being excluded, the same form remains the same anywhere and at any time. In other words, purely formal logic presupposes a sameness of the same forms which renders possible the existence of types.

In thinking away everything concrete, we retain a field which possesses no difference of particularity and is throughout homogeneous. Thus all constructions of the same kind are everywhere the same in this empty field of our operations. What can be said of one construction holds good for *any* other which has been made in the same way, and so we characterize the void as a field of anyness.

Constructions made in a definite way in a field of anyness are of universal validity; and further, constructions of universal validity which are uniquely determined can under no conditions be different, which means that they are necessary. Hence every purely formal construction (or in Kant's nomenclature, the *a priori*) is universal and necessary.

It is important to note that in this method we do not start from nothing, but we build our constructions under definite conditions which have been derived from experience through abstraction. These conditions are (1) the idea of pure motion, (2) the void or field of anyness, (3) the possibility of types derived from the homogeneity of the void and involving the possibility of classification in a system of genera and species; and we must add that all the constructions thus made can be applied not only to the world of concrete things but even to illusory existences of any kind.

The very absence of concreteness and particularity results in the assumption of the sameness of same constructions and thus renders the formal sciences useful as a general system for classification of any kind of objects furnished by experience. Thus through a progress from unit to unit we construct the system of numbers. We name them successively and derive from their interrelation by the methods of addition, subtraction, multiplication, division, etc., an insight into the nature of numbers, applicable to any kind of existence, real or imaginary; and whenever we deal with concrete things, we use this *a priori* construction of numbers as a system of reference with which we determine certain conclusions definitely and exactly.

Kant calls universality and necessity the characteristics of apriority but does not explain their nature; we deduce universal validity and necessity from the conditions of the construction of pure form.

Accordingly form is not purely subjective as Kant thinks; it is both objective and subjective. Form is a quality of objective things, and sentient beings become acquainted with both the sensory and the formal features of things at the same time. All things with which our sense organs come in contact present themselves as definite forms of feelings, and the idea of pure form, of pure space, of relations, of a system of empty types, of a succession of events, also of time which is

a measurement of such succession, is ultimately derived from our experience. The idea of pure form originates through abstraction by omitting the contents of sense-impressions and concentrating our attention exclusively upon the purely relational. As a result we acquire the idea of pure form, pure space, pure time, the idea of numbers or pure units, of a system of types for classification, etc., and we discard at the same time from our notion of activity any thought of actual energy. The scope of our activity being deprived of all concrete existences is an empty field of homogeneous anyness containing all the conditions for the construction of the purely formal sciences.

Having approached the problem of the foundation of the formal sciences in this way we will understand that mathematics needs no axioms, no unprovable assumptions; while on the other hand mathematics does not start from nothing but requires certain abstract conditions which have ultimately been derived from experience. Purely formal constructions are verified in experience but they are independent of experience (or, as Kant says, *a priori*) because they are the work of pure thought. Every correct construction is applicable anywhere and this has been characterized in philosophical language as universality and necessity.

The difficulties of a philosophical foundation of mathematics appear in the problems of the plane, the straight line, parallel lines, the right angle including also the sum of the angles of a triangle. The remarkable properties of the plane, the straight line and the right angle cannot be demonstrated by logical argument but result from the way in which they have arisen from the progressive halving of space. As boundaries between equal magnitudes, the plane, the straight line, and the right angle, are unique in their way and are therefore peculiarly fitted to serve as standards of measurement.

The straight line is the product of an operation. We

can imagine conditions in which no straight lines are possible, or in other words we can assume that the axiom of parallels is not valid. Then we find that the assumption alters the character of space. From this it follows that different space-constructions are possible which must then be regarded as varieties of one universal pangeometry.

Limitations of Method.

CERTAIN difficulties in the methods of thought have frequently given rise to mystical notions.

In spite of the great advantages which all the formal sciences possess we must be aware of the fact that their methods imply certain disadvantages which sometimes lead to limitations, but these limitations do not indicate that the objective world is incomprehensible in any of its processes but they lie in the nature of the method itself.

When in a system of numbers we operate with discrete units many relations which we have to measure by counting will become incommensurable. Further, certain functions, for instance $\sqrt{2}$, will become impossible, which means that they can not be executed. In geometry, on the other hand, the figures consist of lines which are not composed of discrete units but are continuous, and here there are certain problems, as for instance the division of an angle into three equal parts, which cannot be solved. Such are the limitations of the several methods, but they do not prove that the objects dealt with are themselves mysterious or incomprehensible, nor does this state of things imply any insufficiency of human reason or of science. These limitations are due to conditions of certain methods and are not irrationalities. The term "irrational" as it is used in arithmetic is therefore misleading. The irrational is simply a function which can not be executed.

How much a special method is to be blamed if a

function can not be carried out, and how little truth there is in the assumption of an incomprehensibility of things or of the objective world, appears from the fact that certain relations can be carried out in completion by one method while they are impossible or can only be approximated by another. For instance the relation of one to three ($\frac{1}{3}$) can thus be expressed in integers or whole numbers, but it results as an infinite fraction when expressed in decimals (0.3333...). In order to have this decimal fraction really equal to one-third we should be obliged to write down an infinite number of threes. In the same way the numerical value of π can only be calculated approximately, while in geometry the relation of the periphery to the diameter is quite definite and by unrolling the circumference into the shape of a straight line we can represent it in a concrete geometrical figure.

If we calculate the path of a curve we think of the curve as composed of infinitely small fractions of straight lines, and by the aid of this artificial device we can solve the problem. The curve is continuous and according to the infinitesimal calculus we think of it as consisting of infinitesimal discrete units which change their direction one by one according to a definite law.

In a similar way the unlimited possibility of a progress in space furnishes us with the idea of infinitude, and a continuous progress in time with the idea of eternity. In reality only the here and the now exist, that is to say the present condition of a concrete thing, but it is endowed with innumerable possibilities of alterations, and this endowment too is an actuality. Thus infinity and eternity form the background of all existence. These potentialities are important features of concrete things, and the "maybe" is a part of the "is." The "maybe" is not concrete, however; it is not an actualized particular object, and only when we think of "maybes" as concrete things, are we involved in

contradictions. The most important potentialities, infinitude and eternality, are therefore features of finite objects and the finite is always set off by the infinite.

While we remove the irrational from such concepts as infinity and eternity, we nevertheless retain these potentialities as one of the most wonderful attributes of reality. Life would be trivial indeed if it could be exhausted. Luckily this is not the case and unlimited possibilities stretch out before our view on every hand. It may make the man on the street dizzy to gaze into unfathomed depths, but the thinker will only find satisfaction in the thought that concrete reality is not complete but bears within itself the germ of unnumbered possibilities.

The Thing in Itself.

A RIGHT comprehension of the significance of form disposes of the metaphysical question, *Are there things-in-themselves?* It shows that things-in-themselves are *forms in themselves,* and these forms in themselves are by no means unknowable.

Any elements can be combined into groups which possess absolutely new qualities. Two or three or more lines that do not cut or touch each other are simply a number of lines, whether they lie in one or several different planes. They constitute a quantity, but they are not combined into a new unity. Two lines that cut one another, however, produce something entirely new. They form four angles, and an angle, i. e., the inclination of two lines in different directions, is a quality that can not be deduced from the nature of the line. It originates by the cooperation of two lines.

In the same way a triangle is not the sum of three lines, but constitutes a geometrical figure formed by three intersecting lines; and how many wonderful qualities a triangle possesses we learn in the study of geometry and trigonometry.

Nothing of this can be derived from our idea of the line; all results from a combination of the lines into a triangle. These instances prove that certain groups of any kind of elements produce new units possessed of qualities not contained in the elements themselves but originating through their cooperation.

A watch, a steam engine, a dynamo, a motor, an aeroplane and likewise an organism, a living creature of any kind, are things whose parts possess a definite arrangement not to be measured quantitatively as the sum of their parts. They must be appreciated qualitatively because these units possess new qualitative values.

Pure forms, i. e., forms in themselves, are the types of possible entities and do not exist as such in the shape of concrete material realities, but we can not say that they are non-existent, nor that they are pure naughts. They are possibilities. They are "maybes" or potentialities and according to the law of their combination the things of the material world are molded. They are the factors which determine reality, and in this sense pure forms are more important than material and actual things. They are superreal and this superreality contains the norms of all existence. Thus the philosophy of form throws light on the problem of the nature of quality.

There is a common tendency in science to look upon its legitimate methods as being limited to counting and measuring, and the propositon has been actually made, that quality is a conception to be discarded and that ultimately the solution of all problems will always prove to be a matter of quantities. This conception is an error, for it overlooks the significance of form which by combining definite groups creates new unities possessing new properties. These can be explained not by mere quantitative measurement and by numbers but only by a consideration of their forms.

Cause and Reason.

THE concepts of cause and reason are of the utmost significance and yet they are often misunderstood; they are often used interchangeably or regarded as synonymous. Without a correct comprehension of these concepts we can not gain a clear understanding of the nature of causality.

The philosophy of form throws light also on causality, the problem of which was pointed out first by Hume and taken up, but not correctly solved, by Kant. If we bear in mind that causality is nothing more nor less than the law of transformation, we shall understand that it simply formulates the dynamic aspect of what, in a static consideration, is known as "the law of the conservation of matter and energy." The sum total of energy and of matter (or rather the substance of which matter consists) always remains the same, while its arrangement in groups varies. The law according to which the changes are made is called causality.

Many philosophers who do not understand the nature of causation confuse the terms "cause" and "reason," and speak of "first cause" when they mean "ultimate reason," and of "final cause" when they mean "purpose."

A cause is an event which produces an effect; a reason is an explanation why a certain cause (and with it the whole class of causes of the same kind) will, under definite conditions, produce its own peculiar effect. Causes and effects constitute a series of concatenated events. Every cause is the effect of a prior cause, and in its turn, every effect is or may be a cause that produces subsequent effects.

Reasons, on the other hand, are not successive; they are simultaneous. Whereas causes are real and concrete, reasons belong to the realm of abstraction and are more or less generalized statements which we, if

we were omniscient, could arrange into one large system of co- and sub- and superordinated descriptions of facts (so-called truths) which are uniformities of the typical relations of things, commonly called laws of nature.

Organized Nature.

ALL laws of nature are really one and the same throughout existence, yet we must recognize that there are differences of conditions, and we can classify different kinds of phenomena according to their characteristic features into distinct groups. One of the most obvious divisions is the distinction between organized and unorganized nature, the latter consisting of the purely physical domains of existence, and the former comprising all the phenomena of life, vegetable and animal, reaching its climax in the development of humanity.

If the universe in which we live truly constitutes a unitary whole, a cosmos, we cannot look upon the origin and development of life, of animation, of consciousness and of rationality as some accidental by-play, but on the contrary we must regard soul, spirit, mind, or whatever we may call it, as the necessary outcome of the intrinsic nature of existence.

Nevertheless, organized life constitutes a domain of its own and within this domain the group of psychical phenomena is again a province with distinct characteristics of its own, which are absent in the domain of inorganic nature.

In one respect we can look upon all nature as alive. All things are self-active; that is to say, they bear a spontaneous source of their movements within themselves. Even the stone does not fall to the ground because it is pushed by an outside force but because it is drawn towards the center of the earth and because it presses in that direction. The same is true of chem-

ical and electrical forces. In the limited sense of the word, however, organisms alone may be called alive, and their life is made manifest in metabolism, a constant change of substance. As soon as this metabolism ceases, death occurs and the organism is disorganized, becoming again subject to purely physical and chemical forces.

The attempts to explain psychology from physics or chemistry must therefore be futile, for the very elements of psychic life (the significance of subjective states, of feelings and thoughts) are not met with in those fields where the objective conditions alone (which are always matter in motion) are an object of investigation. No investigation in molar mechanics, physics, chemistry and electricity can give us any explanation of the origin of feelings.

Combinations of matter give us entirely new substances, combinations of energy new forces; but only subjective elements (potential feelings) can produce psychical conditions.

A view of the world based alone upon physics and chemistry, or in general upon the sciences of objective nature, will always prove a failure, for it will never explain the soul. Thus we must invert the process and expect the solution of the world problem, not from the lowest forms of existence but from its highest efflorescence. We must recognize the import of subjectivity which, though apparently absent in pure physics, exists and reveals itself in the consciousness of man, the noblest product of organized life.

Here lies the paramount significance of psychology, and we do not hesitate to say that the way in which the psychological problem is treated is always the best test of a philosophy.

Subject and Object.

IN psychology, the doctrine of parallelism has been generally accepted, but it must not be interpreted in a dualistic sense. There are not two separate factors, the psychological and the physiological, running parallel to each other, but there is one reality which has two aspects—the one being the internal or subjective, the other, the external or objective. The two are as inseparable, and yet different, as the internal and external curves of a circle.

Regarded from within, or internally, existence is inwardness, or to use the customary expression, subjectivity; but from without it presents itself as externality or objectivity. We are conscious of our own existence and this consciousness is an intensified feeling. The sum total of all the feelings of an organism is called soul. The object or objects outside of us form the objective world which we sense and think of as corporeal things moving in space. We ourselves feel our existence purely as feeling; but our hands can touch, our eyes can see other parts of ourselves which thus appear to us as objects, and the conception we have of their totality constitutes our idea of our own bodily existence. Of the organs which lie inside the body and can therefore neither be touched nor seen we have but the faintest and most unclear conception—a fact most strikingly demonstrated in the brain, the organ of feeling and thinking.

It belongs to the subjective nature of our feelings that we can feel only our own states and can merely infer the feelings of others. Other living beings appear to us as objects, just as on the other hand we are objects to them.

The opposition between subjectivity and objectivity is conceptual. It is a contrast between two different

view-points, not of two contradictory separate existences.

Since all chemical elements of which sentient beings are composed occur also in the world of lifeless objects we must conclude that the origin of living forms must depend solely on organization; that is to say, that life and sentiency are closely connected with the interaction of certain forms.

The character of the subjective domain exhibits the phenomena of sentiency, feeling, awareness, consciousness and self-consciousness in different degrees, beginning with the absolute zero of feeling in inorganic nature and rising to the concentrated attention of a rational being.

The character of the objective domain is motion, gravity and momentum, chemical reaction, heat, electricity, vitalism, physiological function and the action of premeditated purpose.

The inner aspect of subjectivity always corresponds to the outer aspect of objective events. Both form a unit, and are mutually determined, or, properly speaking, they are the same in two aspects. It is a parallelism of two independent realities.

The two aspects are radically different and must be clearly distinguished. Feeling is not motion, nor is motion feeling. The soul is not body, and the body is not soul, but they are one, of which the soul is the inner, and the body the outer aspect.

Personality, Ego and Self.

ORGANIZED life originates by the interrelation of certain functions, and the unity of an organism is due to the cooperation of its parts. How tiny the most primitive organisms and their organs may be is as yet unknown because biology is not sufficiently advanced, but we know that their unity is always a product, not a cause. The unity of primitive organisms known to

us, such as cells, develops into a systematic multiplicity by a division of labor. A cell divides and redivides, while its parts continue to be united, being differentiated according to the needs of life and changing into organs that serve the common purpose of the whole. This common purpose and the cooperation of the parts in its service will strengthen the unity of an organism, and these factors necessarily lead in the course of further development to the establishment of a center of feeling which in higher animals appears as consciousness, and in man as self-consciousness.

We know by introspection that the self-consciousness of man is connected with the word "I," situated in the center of language, and the combination of consciousness with the word "I" is commonly called by philosophers in its Latin term "the ego." This little pronoun "I" is of enormous significance because, though empty in itself, it represents man's whole personality, all his feelings, his doings, and his intentions in their unity and continuity throughout life.

The personality of man embraces his entire self, body and soul, his corporeal appearance and his character, his sentiment, his intellect, his will. The term "soul" is limited to his feelings. According to common usage "soul" embraces all psychic qualities, and we distinguish between man's spiritual soul and the lower animal soul. By "mind" we understand the mental or intelligent portion of our feelings, and "spirit" denotes the meaning of both feelings and intellectual functions if considered without any reference to its bodily substratum. Thus we speak even of the spirit of books, referring thereby to their meaning, their tendency, and their significance.

The term "self," which is so frequently used in philosophical terminology, is a synonym of personality. In the Vedanta of ancient India it has been called *atman*, but there it is understood not as the ideal unity of a person but as a being which has an existence by itself.

Buddhism rejected this metaphysical conception, preaching the doctrine of *anatman,* which means the non-existence of an atman by itself. In this sense Buddhism has become a forerunner of modern psychology, but we wish to emphasize here that while the self or a unity of any kind is not a concrete substantial being, while it is not a thing in itself or a metaphysical entity, it is by no means non-existent or a nonentity, for we have seen that unities produce new qualities, and that the development of the world, the origin of life and of personality, is greatly influenced by the actuality of new unities, which originate in one way or another through the cooperation of parts. It is not true that only the several parts of a dynamo are to be regarded as real. Their whole combination, the cooperation of the parts, though not a material thing, is unquestionably of the highest significance and can not be considered as non-existent. This is exactly the fault of materialism, that it does not appreciate the importance of form, of conformations, and the nature of quality.

The two extremes, as represented by the Vedanta and Buddhism in ancient India and by materialism and metaphysicism in modern days, are untenable and find a definite solution in the philosophy of form.

The Origin of Consciousness.

THE doctrine of parallelism in its monistic interpretation leaves open the question of the nature and origin of consciousness, and here I offer an explanation which, briefly stated, is this: Every objectivity has its subjective aspect, and is possessed of the potentiality of developing into actual feeling or awareness; but the subjective interior of inorganic nature is not ensouled with anything like actual feeling or awareness, nor of consciousness, because its inner commotions or subjective states remain isolated. Elements of subjectivity, so long as they remain isolated, are not feelings in the

proper sense of the word. In order to be actually felt, they must internally enter into an interrelation so that one subjective element meets another subjective element; two or several elements must cooperate, so as to let one communicate with the other. One feels while the other is being felt, thus producing the possibility of an interaction between several subjective states among themselves. Thereby alone can a state of awareness result, and this internal interaction of feelings is possible only through organization.

This explanation tallies with facts established both by biology and by physiology, for we know that consciousness is always associated with a nervous system, and nervous systems originate only in those organisms which move about freely. Stationary organisms have to wait for the satisfaction of their needs, but a motor-endowed creature is enabled to go in search of food. In this way its organs learn to cooperate, and this imposes upon them unity of purpose. The unity of purpose produces the unity of the soul.

The characteristic distinction of living beings, when compared to physical phenomena devoid of life, is organization, which, in moving creatures, produces a coordination of subjective states gradually approaching self-consciousness. Vitality is not a special force or substance, but solely the function of organization, yet as such it is a phenomenon *sui generis* and different from the forces of physics, chemistry, electricity or molar mechanics.

The energy of vital phenomena as observed in living beings is the same energy as it appears elsewhere in nature, but in living beings it assumes a new and original form. Chemical, electrical and mechanical processes play a part in physiological functions. The whole life process is absolutely new, and in animal life the most significant part is the prominence of the internal aspects or of subjectivity which here appears as the salient point sinking everything else into insignificance.

A monistic world-conception does not require, as some people believe, that the solution of all problems must be sought in the ultimate and simplest elements of reality, and hence that a monistic psychology must be a subdivision of physiology and this again of chemistry or of physics and mechanics. They overlook not only the fact that the objective sciences are not sufficient by themselves to account for the development of subjectivity, but especially also that many new qualities arise by combination and constitute entirely new domains. If views of this kind were right we might as well expect to deduce the properties of the triangle from the nature of the straight line. The essence of the soul is not comprised within the atoms, as is often stated, but only arises through a cooperation of psychical functions in organized forms of life.

Preservation of Form in the Flux of Life.

THERE is a deep meaning in the line of the old English poet Spenser when he says:

"The soul is form and doth the body make."

The typical feature of organization is the constant change of material which takes place in living substance. It is called metabolism, and in animal substance consists of a building up or anabolism, and a partial breakdown of the energy thus stored up, called catabolism. Anabolism is nutrition; it changes food into living substance, a process called assimilation. Catabolism in setting energy free renders motion possible, and this motion has under certain conditions its subjective aspect, which means that it is accompanied by feeling.

The partial breakdown of living structures called catabolism is not always the same but varies in form, depending upon the circumstances under which it takes place. It is a reaction upon a stimulus, and the reac-

tions upon ether waves or light, air waves or sound, upon chemical processes in the nose and on the tongue, called smell and taste, or upon mechanical impacts, called touch, are different physiologically as well as psychically.

In other words, the irritation of light produces one kind of structural change, while the irritations of sound and of touch cause other modifications, all of them being analogous; the same kind of cause corresponds to the same kind of physiological function, and each function possesses a form of its own and is accompanied by a feeling peculiar to itself.

Here the great significance of form for the explanation of life and of the soul becomes manifest. The *psyche* with its mentality, its reason, its purposes, its ideals, and all its religious and moral aspirations would not be possible, without a preservation of form in organized substance.

The waste material of a catabolic breakdown (mostly carbonic acid) is discarded, while through the anabolic process of nutrition the lost elements are again restored in the living substance, and this is done in such a way as to preserve the structure in its minutest detail. Every atom is replaced by another of the same kind. Thus the modifications produced by the reaction upon the several stimuli remain and constitute so-called *vestigia* or traces. In so far as this preservation of the form of living substance is accompanied by feeling, and as former feelings can be revived on the application of proper stimuli, it is called memory.

The matter of which our body is composed is constantly changing but the form remains. The new impressions which are added modify and enrich the memory forms but do not destroy them. Thus originates a continuity of feelings which constitutes the consciousness of the identity of our self.

Memory, as Hering has pointed out, is a property common to all living substance; it is the indispensable

condition of the development of the soul. The differentiation of nerve activity into the senses, with its several modes of reacting upon the stimuli of the outer world, is due to a specialization of the several reactions in different parts of an organism. Every function creates its own organ by specialization through memory, i. e., a preservation of the forms of the several reactions. We are well aware that forms last a longer or shorter period according to circumstances. Inscriptions on tablets of stone endure for ages, while words writ in water are gone in a moment. Living matter is plastic and yet relatively very stable. The preservation of form in the realm of physiology is not so rigorous as the conservation of matter and energy in physics, but it is not less significant.

Memory the Soul-Builder.

THE most important service of memory is the part it plays in building up the soul. Memory creates the conditions which beget the soul and then continues to foster its growth by adding and superadding new mental riches to its capacity.

First of all, memory renders possible comparisons between the images of past impressions and new sensations. Every sensation leaves a trace of its own, and a new sense-impression of the same kind travels on the same path as its forerunner and revives its memory, which results in a feeling of sameness. The new sensation fits into the trace of the old one and is felt to be of the same kind. This feeling of sameness implies an unconscious act of recognition by which the sense-impression gains meaning. It is no longer merely a feeling, but it is a feeling that means something. It means that here we have the same kind of sensation that was formerly experienced and this implies that the same kind of circumstances has caused the present sense-impression which caused the former one that left

the memory trace. In this way sense-impressions of the same kind come to represent the objects which cause them.

Here we have the principle from which we derive the explanation of the soul, for the soul consists of feelings which have become representative of things, conditions, experiences, etc. In order to solve the problem of the origin of the soul we must show how sentiency acquires significance.

The soul consists of the significance of feelings. The lowest forms of sentient life whose sensations are isolated and are bare of meaning, have not yet a soul. The soul originates when feelings refer to external events and represent objects in the environment. In short, the soul is a system of sentient symbols. Our explanation of the soul is like that of the origin of feeling. Certain component parts cooperate in such a way that a higher unity arises with entirely new qualities.

This solution looks very simple and it is simple, indeed; but how grand and infinitely complicated are the corollaries implied! Consider that such a symbol, a form endowed with meaning, is what it is by its relation to the objective world. It represents either a thing or an action, or a relation, or general properties of many objects, abstractions, truths or natural laws, which are eternalities that obtain in the various interrelations of forces or things. Thus the soul is like a mirror which reflects the universe, and the worth of a soul consists not only in the exactness and faithfulness of this picture but also in the more or less true and proper way of responding in actions.

* * *

The great storehouse of systematically arranged memories, and accordingly the seat of intelligence, can only be the cortex of the hemispheres of the brain, while the organ of consciousness appears to lie in the central organs of the striped body (*corpus striatum*). We must look for it especially in the shell of the lens

(*putamen* of the *nucleus lentiformis*) and perhaps also in the tailed body (*corpus caudatum*) which is coordinated with it. The cortex can operate directly and its activity is then unconscious, but conscious activity is regulated by nerves which pass through the *corpus striatum,* this powerful central organ of gray nervous substance.

Conscious activity passes through one more station and travels over a longer road than unconscious activity, which explains the fact that it is slower. That these central bodies are not absent in lower creatures harmonizes well with the fact that a central organ of consciousness by which the different activities are regulated is not lacking in those lower creatures whose cortex is either undeveloped or almost absent. Therefore we assume that the organ of consciousness can not be situated in the gray substance of the cortex but must be sought in this accumulation of gray substance in the central bodies of the brain from which so many voluntary motor nerves issue.

Truth and Error.

FACTS are real, and if they are facts they are always real; ideas may be true or false. Ideas are true if they describe the facts correctly. Truth exists only in the domain of mind, and so the possibility of error also originates in the mind. Outside of the soul there is no error.

Sense-impressions are facts which we can not change; they are real. But sense-perceptions may be false, and if they are false they are called hallucinations. An hallucination is a sense-impression wrongly interpreted. The interpretation of sense-impressions, which according to their nature correspond to different objective conditions, constitutes the nature of the soul, and false interpretations are called errors. If a red spot produces in the eye the sensation "red," and is

interpreted to correspond to a spot of paint on a piece of paper, the idea thereby produced is true; but if a bluish after-image remains and we think that it represents a bluish object which replaces the red paint this interpretation is erroneous and we would have to call it an hallucination. The after-image is real but its interpretation is wrong. The interpretation is refuted when it is contradicted by further experiences. The error is corrected when the wrong idea is replaced by another consistent with all facts and corresponding to the real state of things, and we discover that there is no actual bluish object for our hands to touch.

The truth is ultimately proved by the result that all our ideas are found to be consistent. The slightest contradiction is evidence of a mistake somewhere in our interpretation of facts. Such a disturbance causes a condition called doubt, and the reason of the doubt is called a problem. Doubt is overcome by a solution of the problem as soon as the idea which causes the difficulty has adapted itself to the ideas with which it came into conflict. All our interpretations must constitute a unitary system of our world-conception, and the harmonizing of ideas which do not agree with others is called "explanation."

Truth the Measure of Man..

THERE are symbols or ideas not only of real objects but also of conditions and tendencies; and as things may be conceived correctly or incorrectly, so tendencies may be good or bad. There are tendencies which lead more and more to a true interpretation of the cosmos. They deepen our insight and widen the domain of our power. Certain modes of activity insure our moral health while others lead to ruin, to decadence or even to perdition. Truth mirrors the constitution of the cosmos and places us in harmony with the great All, but all errors and aberrations lead

astray and will be conducive to harm for ourselves and others.

Man's aim must be to find truth and to live in harmony with the All. The soul of man is an image of the world-order which has made him a rational being.

Here we have the test of progress. Progress is not, as Spencer says, "a passage from the homogeneous to a heterogeneous state," it is the realization of truth. Progress means growth of soul, and growth of soul means growth of truth. The more clearly, correctly and completely the world-order is mirrored in a man, the more it permeates his disposition and with the more certainty and accuracy it directs his actions, the higher has he mounted on the ladder of evolution.

This foundation of ethics forms a striking contrast to the hedonistic theories of agnostics and other liberal philosophers such as Bentham, John Stuart Mill, Herbert Spencer, and Höffding. We can not derive any moral maxims from the pursuit of happiness, and the greatest amount of pleasure whether for the individual or for the greatest number can furnish no standard for ethical actions. If a man could follow only his hankering after the greatest pleasure, if there were no other motives possible, then there would be no ethics. Joys and pleasures are not sin, we need them for recreation and for the purpose of keeping buoyant in life, and it is also much better to enjoy doing our duty; but nevertheless joy and happiness, or pleasure can not be the touchstone of ethics.

Joy, happiness and pleasure are of a subjective nature and the norm of ethics is and must be objective.

Pleasure and Pain.

ON this occasion we must call attention to the strange fact that the nature of pleasure and pain has been wrongly defined by the greatest philosophers and that this incorrect definition is still commonly accepted.

Pleasure is characterized as a feeling which accompanies growth, and pain as one that accompanies decay or dissolution. This is erroneous, for growth is very frequently accompanied with pain. Think for instance of the pains of pregnancy, of the growth of teeth, or growing pains which occur mainly in the knees of children, and similar phenomena. The expanse of civilization frequently produces conditions in social life which are accompanied with much misery, and the happiest state of a people is a conservative quiet life without the restlessness of progress. Progress to-day needs readaptation among several classes of people who are not accustomed to it and frequently throws a number of laborers out of work who are not able to adjust themselves to new conditions. Accordingly we must recognize the truth that pain is caused by a disturbance of definitely given conditions. Pleasure, however, accompanies a repeated satisfaction of wants. When hunger is allayed or thirst is quenched there rises with more or less intensity the recollection of a feeling of satisfaction. A repetition of the hunger produces a need to have it appeased again and the act of eating is perceived as pleasure.

The acts which produce pleasure in man are very different according to education and habit. The performance of good deeds and leading a normal natural life, may just as well become the source of pleasures to us as vicious habits and unnatural vices. There are men to whom a cigar would be a great enjoyment while others are disgusted at the mere idea of smoking. This variety in causes which give pleasure to persons of different dispositions is in itself sufficient to make the feeling of pleasure unserviceable as a standard of ethics.

In ethics pleasure is to be considered as an untrustworthy guide and ethics has been invented solely to counteract the hankering after pleasure. Ethics teaches not to follow blindly our pleasure but to recognize the

nature of what is good and then *vice versa* to find the source of our pleasures in doing what is good.

There are philosophers who believe that a man can not help following the motive which promises him the greatest pleasure or the least pain. They explain acts from religious motives as being due to the expectation of greater pleasures in a future life, but this view is contradicted by facts, for man as well as any other living being does not always follow a calculation of what is pleasurable. Reflection enters only in highly developed minds as a motive. Men of the average type, like animals, simply yield to the impulse that is strongest at the moment. The ruffian and the game-cock pitch into a fight, although both may know very well from experience that no pleasure will come out of it but only blows or wounds. However, as soon as the fighting impulse is stimulated and there is no self-control to hold them back, the action takes place without hesitancy, and with the same necessity which compels a gun to go off as soon as the trigger is pulled.

Motives, not reflections, are operative in man. Reflection becomes a motive power only in the higher man. Reflections must first harden into motor ideas in order to be effective at the moment of action, and here pleasure and pain exercise an educational influence. This proves that, in contrast to the so-called utilitarian views of ethics, pleasure and pain exercise a secondary, not a primary, influence upon the will of man.

Free Will.

IN addition to experiences of pleasure and pain, the feeling of responsibility exercises an educational influence upon the human character and changes the impulsive savage into a civilized man. In human society every one is judged by his neighbors according to his actions, and this is but fair. The actions which injure

others are criticized or condemned or even punished, while the endeavor to be helpful is praised, and upon the whole there is in every one a tendency to earn the approval of his fellow beings.

Here we are confronted with the problem of free will.

By free will we understand a will which is not hindered from passing into action and does not suffer compulsion. We call the will of a person free if it is not prevented from passing into act, which means when he can act according to his character. We must bear in mind that the act of a free will is determined with the same necessity as are any mechanical or physical processes of nature. The characteristic feature of an act of free will is this, that it is our own deed which we do without undue influence from others or without being compelled by outside pressure. An outside pressure compels us to act in a different way than we wish. A deed done under compulsion is not our own deed and we can not be held responsible for it. Responsibility attaches only to deeds done freely of our own accord.

It is true that our character is determined by our past. It depends upon heredity and education and the influence of our surroundings. In a certain sense we can not help being what we are. Nevertheless a thinking man has the chance of learning. He can take the lessons of life. He knows the results of actions and knowing that he is held responsible for his deeds he can modify his very character. There are some criminals who do not know that they do wrong, but others know it perfectly well and take the risk of waging a war upon the social order.

There is an old error prevalent that determinism excludes free will and that free will in order to be truly free must be undetermined. But if free will were not determined, if it were arbitrary as the doctrine of indeterminism assumes, an act of free will would not

characterize the personality of the actor. It would have no moral significance and would be as indifferent as the accidental result of a throw of dice.

The mistake made by the indeterminist philosophers, among whom are many theologians, educators and jurists, consists in their identification of the ideas compulsion and necessity. If a man of a good character necessarily performs good acts and a man of a bad character necessarily performs bad acts this does not mean that their actions are not free or that their decisions have been forced upon them. Their free will is as much determined as are acts of compulsion, only the determinant in the former case lies within their nature so as to make the acts their own, while in the other case it is due to factors which they can not control and for which they are not responsible.

People of practical life who know from experience that the feeling of responsibility plays an indispensable part in life and that its presence in the human soul is undeniable, feel induced to postulate the freedom of will even if it were scientifically untenable; but there is no need in finding here a contradiction to scientific principles, for free will is not arbitrary will subject to chance, and there is no contradiction between the right conception of free will and determinism.

The mistake which considers all that is determined as subject to compulsion can be traced back to a wrong interpretation of the elementary processes of nature. We are in the habit of speaking of natural "laws" when we mean descriptions of what things do. Natural laws ought to be called uniformities for they simply describe what occurs under definite conditions. The stone falls to the ground, and speaking of the regularity with which the stone acts we are under the impression that there is some power which compels the stone to fall. The falling of the stone is a necessity but it does not fall because there is some extraneous force which pushes it willy-nilly. The stone falls according to its

own intrinsic nature which we call gravity. The truth is that the stone falls. It is the stone's own activity which follows the tendency of a quality that lies within it, but it does not fall because nature acts as a tyrant and compels it to feel attracted to the earth.

Even in the lowest natural phenomena there is a difference between spontaneous self-motion and a movement by push or pull. The former corresponds to what is free will in man. Thus if the needle on a mariner's compass moves freely on its own pivot it points toward the north or nearly so. It does so of necessity so long as it is unhampered in its movements, which means so long as it is free; but if it is pushed aside by some one's finger and forced to point in another direction it can not follow its own intrinsic nature. If the needle were endowed with consciousness and could speak, it would say in the first case that its action is due to its own free will, while in the latter it would declare that it suffered violence.

Immortality.

WHEN the body of a man is disintegrated, when consciousness ceases and when the nerves in which the soul has been developed break down, we ask anxiously, "Is this the end of life and of our efficiency?"

The answer to this question touches the problem of immortality which rightly plays so important a part in ethics and religion. In this connection we will point out that the life of every individual person is merely a fragment of the totality of human evolution, and every one feels instinctively that death is not a finality and that the purpose of man's existence does not end with his life.

We have not become what we are through ourselves, and the interests of our life are not limited to our bodily existence either in time or space. As our friendships,

our property rights and other relations extend our existence into the outer world, so our hopes and our goals lie far beyond the span of our life; and the more normal we are, the more our inmost aspirations have become identified with the destiny of mankind, the farther shall we look into the future. This truth has found an expression in the belief in immortality, or better in the belief in a life after death.

Here the fact that the soul is form and that all we do consists in forming and being formed appears in its full significance. Man is not the sum total of the matter of which he consists, he is form; and the main feature of this form consists in those thought structures which embody his will, his aspirations, his purposes, his ideals. But even man's form is not yet his soul. Forms are merely symbols. The soul of man is neither matter nor nervous energy, not even the forms of his brain, but their significance, an intangible immaterial something, a pure nothing; and yet this nothing is the quintessence of divinity on earth. The meaning of these symbols is an image of the cosmic order reflected in the mirror of sentiency. It is an actualization of truth and as such it is a highly efficient power. Here we have that which comprehends, that which chooses and determines, that which guides and gives direction. It is what we call spirit, and this very nothing has built up the history of the world and guides the evolution of mankind.

Man's life is like a tapestry adorned with divers patterns. The warp is the reality of actual facts while the woof is supplied by our spiritual comprehension, our thoughts and aspirations. The warp is indispensable for actual existence but only through its combination with the threads of the woof does the cloth with its patterns originate. Thus it is that a mere nothing, or rather that which appears as a mere nothing in comparison to concrete material objectivity, ultimately constitutes the main factor in human life.

To what realm does this unspeakable something that operates within our soul depart? What becomes of our aims, purposes and aspirations? Our individual existence ends in death but what we have done in life will live in its effects.

Memory plays the same part in the evolution of mankind as in the life of a single individual. Our thoughts, deeds and aspirations are not lost when we die. They continue to live according to the way in which we have impressed them on others. They become building stones in the temple of humanity. The seeing of millions of our ancestors lives in our eye, their hearing lives in our ear, and our present civilization is built up of the best ideas of the greatest thinkers of the past. Even more modest souls find their places and become an essential portion of the emotional and intellectual life of the growing generation and shall remain so for all futurity.

We are form, and according to the law of the preservation of form we shall continue to live and be an efficient factor after death.

The God of Science.

THE grandest and the boldest idea of religious thought is the comprehension of the formative principle of the world as God the creator, the builder and preserver of the world and the dispenser of its destinies, who encompasseth everything with fatherly love; the foundation of existence in whom we live and move and have our being.

Instinctively has man found out by the experience of millenniums that even where he has the power to do what he pleases there is a standard of action which he must heed if he would not pay dear for his folly, and this authority of conduct which dominates the social and historical development of mankind is God.

God appears in nature as the divine world-order, as

a system of natural laws, and in human society as the authority of conduct. This God is no mere imagination, but an actual presence which even the so-called atheist can not deny. He who concedes that truth and error, right and wrong, good and evil exist in the world, and who knows that the flux of things and the changes in human society are conditioned by formative laws which are eternal, believes in the God of science, and this God of science exhibits all the qualities belonging to God according to the orthodox faith of the old prophets, with the omission only of the all too human features. He is the eternal in the transient, he is the norm of truth and righteousness. Reason is only a reflex of his cosmic dispensation, and the rationality of human beings has been molded in his image.

It would be wrong to call this God impersonal because he is the *raison d'être* of all personality. He is not less than a person but more than a person and therefore he is superpersonal.

This view is not the old anthropomorphism which looks upon God as a single individual like ourselves, nor is it the pantheist view which quantitatively or qualitatively identifies God with the All. God is not the sum of all being but the determinant of existence, the law, the *nomos* which is valid even independent of nature. God is therefore above nature and conditions the cosmic order, and this conception we may call *nomotheism*.

The God of science is the only true God, and other God-conceptions, especially those of the traditional views, are only surrogates which foreshadow the truth allegorically and do good service so long as the truth is not yet clearly understood.

The science of God according to the old view is called theology, and the philosophical conception of the God of science we call theonomy. They are related the one to the other as astrology to astronomy.

Variety of View-Points.

A PHILOSOPHER must not be a one-sided intellectualist. He must bear in mind that the noetic operations of man's mind are only one feature of his life; man is also endowed with sentiment, a sense of beauty, fancy, humor, and above all he is an actor, a doer, a worker. Man is a struggling creature who must make a living; he is not a mere thinker, his thoughts serve the purpose of life; they must be applied to the tasks which he has to accomplish in maintaining his existence and earning a livelihood. Philosophy is not mere theory; it serves the practical purpose of teaching us about the world we live in and offers suggestions as to how we are to live and to act. Man takes delight also in giving expression to his sentiments by depicting in poetry and in art the motives that sway his soul. It would be a serious defect in a philosophy if it attempted to be purely intellectual and ignored religion, literature, the arts and music. The intellectual side is of the utmost significance and quite indispensable for the highest type of man. We must consider that only by his reason has man worked himself out of the brute state. We can never produce a better and a higher age without cultivating a scientific insight, but science is not the goal. It is only the means to the end of lifting humanity to a higher plane. We boldly maintain that a science which does not seek to ennoble the entire man is not the right kind of science. Sentiment must not be neglected any more than the intellectual faculties if we are to bring humanity to its highest and fullest expression.

Religion and Art.

RELIGION covers practically the same ground as philosophy and is in many respects even to be considered its rival. Like philosophy, every religion offers a world-conception and applies it to practical life, but while sentiment is for the most part the dominant power in religion, the ultimate criterion of philosophy is the intellect.

The several religions are popular philosophies in the form of continuous historical movements, while philosophies might be regarded as the religions of individual thinkers. Every religion is built up of the thoughts of many thinkers as they were understood by the people and handed down to later generations. Those notions that appealed to the multitudes in one way or another survived and hardened into creeds which operate with an unquestioning directness as do the instincts in the minds of animals. An appreciation of religious sentiments, therefore, together with the history of religion, especially of Christianity and of comparative religion, is a highly important branch of philosophy.

An historical investigation of religion will more and more lead to the conviction that Christianity is the natural and necessary result of the conditions which just preceded our era. It seems like a break with the pagan past, but a deeper view of history shows us that it is the legitimate continuation of the pre-Christian religions of the inhabitants of the Mediterranean countries. Of special interest are the religious parallel formations of Buddhism, Zoroastrianism and its later form Mithraism, as well as the philosophical systems of India and China. Comparative religion teaches us that the evolution of religion follows the same laws everywhere, and that all lead to a common goal, the religion of good will and love for one's fellow man.

The correct method of treating religion (so far as I can see) would be a combination of the two opposed principles, radicalism and conservatism. I would rigidly and fearlessly apply scientific methods to religious doctrines and error should be pointed out and discarded. But while it can be foreseen that this will destroy a belief in the letter of dogmas, I propose at the same time to search for and hold fast to the spirit of religion which is the truth contained in the several religious doctrines.

The old conception of Christianity will gain new life if the leading minds of the churches drop the demand of a belief in the letter and allow symbolical interpretation of their doctrines. Any tampering with truth would not only be dishonest but also unwise while by a confession or a concession that the symbolical books are truly symbolical many antiquated institutions will easily be adapted to modern needs.

Dogmas are symbols and the essential feature of a symbol is the meaning which it conveys. We may be able to forego the belief in the letter, but we must not lose the spirit; we shall probably be compelled to surrender our religious dogmas, but we shall need their significance. We must preserve the seriousness of moral conviction and the faithfulness in the performance of duty, which has been insisted upon by all religions.

Finally we would urge that art should not be neglected, for art, not unlike religion, is a powerful factor in man's spiritual life. Art is possessed of a deep significance, for every piece of art reflects the mind of the artist and with it his world-conception. There is no painting, no statue, no poem, no song, no symphony which has not back of it a sentiment of the All, a cosmology, and in this sense it may be said that all art is the expression of a philosophy.

The philosophy of science must encompass the entire man with all his aspirations, and in consideration

of it we should not only cultivate the taste for art, but also bear in mind its philosophical significance.

The Significance of Form.

THERE is no genuine philosophy which has not first investigated the nature of form and worked a way out into clearness concerning its significance. The many failures of abortive philosophies are mainly due to the fact that there are thinkers of ability who persistently ignore the lessons of the past, and, above all, scorn to learn from Kant. A philosophy of science is not otherwise attainable than through clearness of thought.

What might stand in the way of a ready acceptance of the philosophy of form does not lie in the difficulties or intricacies that beset its issues, for, on the contrary, the solutions thus offered recommend themselves by their simplicity. Indeed the simplicity of the solutions is almost puzzling, and it is disappointing to those who take delight in the obscure hazes of occult explanations.

Man naturally has a hankering after mysticism; he loves the chiaroscuro of the inexplicable and is disappointed if a cherished self-mystification is dispelled by a rational explanation. There are philosophers who gain great popularity by a shallow obscurity. Their views, which are like mud puddles through which every street urchin can wade, without danger of going beyond his depth, acquire through their very confusion, the appearance of an unfathomable profundity in the sight of the admiring public. This kind of philosophy suits the superficial man who does not care for scientific accuracy and is satisfied with the counterfeit of depth — an intricate and bewildering confusion of thought which prevents a clear vision to the bottom of things.

The difficulties of the philosophy of form which orig-

inate through a necessity of studying the nature of form and formal thought, are as great as the difficulties of studying mathematics or logic, but no greater, and they are overcome by painstaking exactness. There is, however, another difficulty which is a matter of attitude or judgment. We are apt to underrate a simple solution. It is not easy to estimate the enormous depth of a clear Alpine lake, the bottom of which lies under us and is contemplated as through a magnifying glass. So the idea of pure form, on account of its crystal clearness, appears to those who first become acquainted with it as sheer nothing, without any depth, without meaning and without efficiency. And yet what a wealth of applications, of possibilties, of inexhaustible potentialities! What looks shallow at first sight is in truth possessed of an unfathomable profundity.

It takes a Plato to understand that pure forms are eternal types, and that the entire system of all formal thoughts (or, to use a Platonic expression, of the *Logoi*) constitutes a divinity which Philo called "the Logos." This Logos conditions the cosmic order and creates and governs the universe. Pure form looks like a nonentity, and yet the laws of pure form are the factors that determine existence in all its details. Pure forms are superreal.

The truth that all bodily existence is transient and that it cannot be other than transient, is apparent. On the other hand, that those norms (the purely formal conditions) which constitute the laws of nature are wonderful presences, or better, omnipresences and eternalities of an unfailing efficiency and full of deep significance, is easily understood but not so easily appreciated. We are too apt to think of pure form as nonexistent because it is not made of matter. Nevertheless pure form is of paramount importance and we must comprehend its significance for our interpretation of existence.

The philosophy of pure form gives us the key by

which we can unlock all the problems of existence, at least in theory, and in cases of practical investigation it suggests the method by which truth is to be attained.

On account of the complexity of existence science has not yet grappled with all the several details of the innumerable problems with which it is confronted, nevertheless we can have a clear theory of the most general characteristics of the world and of life, and further we can so put our trust in science that we may continue confidently on the path on which we have started.

The Age of Science.

THE new world-conception, animated by the spirit of science, shows itself in the changes that are wrought not only in our views of the importance of science, but also in practical affairs, in the nature and administration of justice, in the education of children, in our judgment concerning social as well as international affairs, in the way we consider the occurrence of great disasters, such as earthquakes or volcanic eruptions, and in many other things. The spirit of the Middle Ages with its penal code of barbaric punishments, its cruelty in pedagogy, its narrowness in nationalism and religion, retreats step by step, while truer and broader views that are being more and more universally recognized, herald the advent of an age of science.

The duty of the philosopher is not to produce an original system of thought, but to work out a philosophy of objective reliability. This philosophy is actually dawning in the minds of scientific men, and through them in the minds of all thinkers, finally destined to become a power in the life of the multitudes of mankind.

All my literary work is subservient to this, my main purpose, the establishment of the philosophy of science, and I endeavor to let the heart-pulse of the best philosophers and scientists of the past, as well as of the

present, beat in my own thinking. I have no desire to start life, and with it the evolution of scientific thought, *de novo,* but wish to continue the work of my predecessors, to mature thoughts that are only half understood, to systematize scattered ideals of the significance of science, and to render clearly visible the aim toward which mankind is tending.

Conclusion.

THE philosophy of science is animated with a remarkably conservative spirit. In spite of the rigorous radicalism which replaces belief in tradition by a recognition of the authority of provable truth we find the old orthodoxies justified in many important questions. They have frequently hit on the right solution and expressed it in the garb of myth, of allegory, of symbol, while liberalism is in a habit of attacking the belief in the letter, pointing out the contradictions of dogma, but in so doing it often loses thereby the truth contained in religion. In this respect the philosophy of science offers new solutions which stand above party interests and lead to a conciliation of the traditional contrasts. The philosophy of science overcomes the narrowness and want of scientific comprehension that characterizes the old orthodoxy without accepting the vague superficialities of modern liberalism. So in place of the widespread negativism a new orthodoxy is promised which combines the advantages of a liberal breadth with a definite and well-founded scientific clearness.

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