The energy concept: a spiritual concept of reality

Lewis Guy Rohrbaugh
State University of Iowa

Material in the public domain. No restrictions on use.

This dissertation is available at Iowa Research Online: https://ir.uiowa.edu/etd/4360

Recommended Citation
https://doi.org/10.17077/etd.n3ig7b0x

Follow this and additional works at: https://ir.uiowa.edu/etd
The Energy Concept: A Spiritual Interpretation of Reality

By

Lewis Guy Rohrbaugh

A Thesis

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in the Department of Philosophy in the Graduate College of the State University of Iowa

Iowa City, Iowa
June, 1922
CONTENTS

PART I

Dynamics in Science and Philosophy

CHAPTER

I. Energy as Reality

II. The Dynamic Trend in the History of Thought

PART II

Energy as a Spiritual Force

I. The Spiritual Interpretation of Energy

II. Historical Support for the Spiritual Theory

III. The Spiritual Interpretation - Concluded
PART I

Dynamics in Science and Philosophy
CHAPTER I

Energy as Reality

Upon all sides today we hear emphasis put upon the energy concept in philosophy. Dynamism has superseded materialism. Activism, voluntarism, pragmatism, and philosophies of this active type are coming more and more to take the place of the older systems of mechanism. Students in philosophy are compelled to recognize the significant place which such systems as those of Leibnitz, Bergson, and Ostwald are holding in the field of modern thought. In Leibnitz philosophy, though written over two hundred years ago, we find a remarkable anticipation of the present day attitude toward the energy concept. With Bergson life is one continuous process of becoming, and fundamental in this process is the guiding agent which he calls the vital impetus. So active and vital is this inner principle that it would seem impossible to think of Bergson's philosophy out of relation to the concept of energy. With Ostwald energy is the primary
concept; everything that exists is but a part of a great system of energies. Such energetic conceptions as these sound the keynote to modern philosophical thought and receive genuine support from recent scientific discoveries.

In physical science we are told that matter, under the scrutiny of experimental physics, has resolved itself into energy. When asked what this ultimate and final energy is, we are sometimes referred to another concept, that of electricity. And inasmuch as we shall endeavor to interpret reality in terms of energy and make a critical inquiry into the energy concept in its qualitative aspects, it becomes imperative therefore at this stage of philosophical inquiry to examine into this concept of energy and determine, if we can, its philosophical import.

Philosophers have been concerned with the problem of reality since the earliest history of thought, and to the question, what is reality? many and varied answers have been given. We find that in the approach to this problem the scientific understanding of the ancients presents an interesting contrast with that of today. Instead of the four elements of Empedocles - earth, air, fire,
and water—more than ninety elements have been found, entering into the make-up of the earth and all existing objects. "The spectroscope tells us that in the most distant stars the same elements exist as here, and that the periods of vibrations which cause them to emit light are identical with those of their terrestrial representatives." All material things can be analyzed and resolved into these ninety elements.

In the philosophy of the early days we meet two opposing schools of thought—one teaching that everything is and nothing becomes; the other declaring that nothing is and everything is in a process of becoming. Heraclitus, representing the latter school, believed all things to be in a state of flux; there is no such thing as rest. In this he anticipated a fundamental principle in modern science, for science today holds that matter is made up of a countless number of moving particles. In the decomposition and changes peculiar to inorganic matter, and in the myriads of living cells composing organic matter we find that there are no two successive moments when any single particle of substance fails to experience some genuine change.
Brief Statement Concerning the Atomic Theory

As we proceed with our task it becomes evident that a study of the atomic theory, which has to do with the organization of these little moving particles, is fundamental to any treatment which might be made of matter and any search for facts which have to do with ultimate reality. It is a long road, however, from Democritus, the first real exponent of Atomism, to the present time, and many and varied have been the interpretations made of this system along the way.

The original idea of the atom was that of a little hard body moving mechanically through space. But a new light was thrown on the atomic theory when Newton's law of gravitation took its place in the world of science. Instead of the atoms clashing at random and being held together in a chance way by means of their jagged surfaces, the element of attraction was introduced. "It was natural that, having explained the cosmical, and subsequently many terrestrial phenomena, successfully by the formula of attraction, Newton himself, and still more Laplace and his school,
should have attempted the explanation of molecular phenomena by similar methods. The astronomical view spread into molecular physics. Newton himself made use of the notion of molecular attraction - i.e. of attraction existing only at very small distances - to explain the refraction and inflection of light passing from empty space, or from the atmosphere, into or in the neighborhood of solid bodies.¹

Boscovich was among the first to lose faith in a dependence on the impact of the atoms; nor could he be satisfied with allowing them extension. He felt that the fundamental essence of matter was to be found in atom points, situated in space, from which as a basis repulsive forces operated.

Dalton, who gave to each atom a definite weight, was responsible for the establishment of the atomic theory of the modern day. He taught that the small particles in all bodies are held together by an attractive force, and that there is also present and operating in matter a repulsive force. This introducing into the theory the element of forces was carried even further by such men as Fechner, Moigno, and Faraday who would
make the atoms simple centers of force, which
closely approaches a system of dynamism and paves
the way to the energy concept.

In the analysis of substance according to
the atomic theory, the smallest unit we meet is
the molecule which can be further divided into
atoms. In HNO₃ we have a molecule of nitric acid,
containing one atom of hydrogen, one of nitrogen,
and three of oxygen. The molecules differ according
to the number of atoms constituting them. The atoms
of the same element have been considered invariable
in size, having a definite and fixed weight. It
is believed today, however, that the so-called
atomic weights are merely averages. Radium, thorium,
and uranium have the heaviest atoms and hydrogen
the lightest. "We are as certain of the existence
of these atoms and of their uniformity and invar-
iability as if we could count and measure them.
Indeed they are actually counted in certain cases
of radioactivity".²

The Electronic Theory

The atomic theory has been a very profitable
instrument in the hands of science for a long
time, but acquired knowledge now enables us to
make an analysis of Nature which transcends the limitations of the atom. Just as the molecule of substance was divided and the atom made the smallest measure of matter, so the atom today is analyzed and found to be composed of still smaller particles.

One of the most remarkable pieces of work accomplished by science in recent years has been this successful analysis of the atom. As the smallest unit of matter entering into the make up of the elements, the atom has lost its prestige, and science today is thinking in terms of the electron instead. It is the development of the electronic theory which has not only popularized the energy concept but given it a well established place in modern scientific discovery and thought. It has confirmed the long held belief in the presence of a dynamic force in Nature, and seems to show that ultimate reality itself is identical with what science has been calling electricity, but now looks upon as some form of energy.

According to Rutherford each atom is believed to be like a little solar system, being composed
wholly of charges of negative electricity, electrons, revolving "in regular orbits" about a core or nucleus which is a charge of positive electricity. More recent thought, however, is inclined to believe that the electrons are vibrating in certain regions, rather than revolving about a nucleus, within the atom. Motion results as the electrons repel each other and in their activities they are held in balance by the attraction of the positive unit. It is thought that the negative charges are equal to the free positive charge of the nucleus and in this fact the atom realizes a possible equilibrium.

Some writers consider the electron to be a unit of electricity whether negative or positive. For our present purpose we shall call only the unit of negative charge an electron. The electrons of the atom are all the same, no matter from whatever element's atoms they come. They are constituents of every atom, are real electricity, which flowing, constitute electric current.
Concerning the nucleus of the atom, science does not have full knowledge. We are sure, however, that it is electricity and predominantly positive. In this nucleus have been found electrons which under certain conditions are set free. This core or positive charge is less than one ten thousandth the diameter of the atom and numerically equal to one half the atomic weight, while "the whole atom is perhaps one hundred thousand times as large in diameter as the electrons".

The velocity of the electrons in their flight is almost inconceivable; thus they occupy but small space and constitute a solid. The immense possible velocity is suggested in the statement that "the velocity of the electron when impelled by strong electric force may reach sixty thousand miles per second when shot through a vacuum, the better the vacuum, the higher the speed".

Under certain conditions atoms gain and lose electrons. Sometimes the negative charges predominate and sometimes the positive, according to whether the atom has taken on or given off
electrons. Some elements will give up electrons quicker than others. The stronger a metal, the stronger the tendency to give up electrons when exposed to the impact of light. The latest theory of color is based on the principle of the looseness of the electrons in the atom. The weight itself of an element is determined by the electrons. Thompson says "the atomic weight of an element is proportionate to the number of electrons contained in the atoms". So in hydrogen, the lightest atom, we find but one electron and in uranium, the heaviest known atom, there are ninety two. Today then, science does not have to stop with the atom, but can take that more ultimate particle, the electron, as a working basis.

This brings us safely to the place of assumption that electricity is a common, pervading factor peculiar to the finest particles in all matter, and the electron as a unit of energy presents itself as a general medium of permeation running through all forms of material existence, animate and inanimate. This is given partial confirmation in the fact that electrical excitation can very often get definite responses from
animals, plants, and inorganic substances. "The
every day laboratory faith of the physicist is
now not in visible material as formerly understood,
but in the invisible thing we call electricity.
He has repudiated the atom as a unit, observing
in it a wonderful and complex system of unending
interest and great experimental possibilities,
and has accepted the atom of electricity as the
basis for his scientific belief - The reality of
matter, as formerly conceived, is now abandoned,
and the invisible becomes the every day reality
of the scientific laboratory". 7

As we now come face to face with Nature
in its ultimate analysis, reality itself,
we come face to face with what, in commercial
as well as scientific language, has been called
electricity. In this we foresee meanings and
possibilities more far reaching than was ever
dreamed. And in dealing with this dynamic
something, science is not willing any longer
to talk in terms of what has been known as
the electricity concept but endeavors to broaden
and deepen its hold on truth and proceeds in this
field of inquiry in the name of the energy concept.
The Energy Concept and Cosmic Evolution

A study of cosmic evolution confirms the belief that there is and has been an all prevailing something more fundamental than electricity, which something is energy, and which is manifesting itself today as electricity. When we find the dynamic conception of reality prevailing in much of the best philosophy of all ages, in modern psychology, and even in today's philosophy of life, it is not strange that in its progress toward ultimate truth modern science should be confirming this interpretation by its strong and positive representation of the concept of energy. It seems necessary then for us to "reverse our thought in the search for causes and take steps toward an-energy conception of the origin of life and energy conception of the nature of heredity". 

As intimated in the foregoing, the history of the earth's evolution is fundamentally the history of the changes in forms of energy. Four of these have primarily manifested themselves in this process of cosmic development - heat, light, chemical affinity, and electricity.
According to MacFarlane, in the very primitive state of the earth when everything was in a nebulous state, energy manifested itself as heat. The intensity of the heat must have been extreme. "In this gaseous state of the earth and according to Arldt a temperature of at least 15000° may have existed." Associated with the intense heat was a corresponding rapidity in the motion of the constituents of this fiery mass; and in the development from this gaseous state the degree of motion of these particles increased, proportionate to the condensation of heat which took place. Here then, in the condensation of heat energy we meet with motion and its cause as first experienced in the cosmic order.

In the gradual change from the gaseous to the liquid state, instead of energy primarily manifesting itself as heat, it began to assert itself as light. Then as the energy continued its condensation, with an increased activity and higher degree of organization of the atoms we find that energy expressed itself as "chemical affinity". Thus as the earth progressed in its
cooling process, associated with which was a
definite progress in the organization of the
centers of energy, bodies began to come into
definite forms of existence, reaching the
highest and best condition in the solid state
when energy expressed itself primarily as
electricity. Thus when we study the transformation
of energy through the gaseous, liquid, and
solid states, from original heat and light to
electricity, we are not surprised to see electricity
quickly and easily taking the forms of heat and
light, harmonizing somewhat with Farvell's view
that electricity is a "highly condensed or latent
heat". As Osborn would say, it is but the old
forms of energy taking new directions.

Energy then seems to be the Alpha and Omega
of all forms of existence, the different bodies
being but different expressions of the same
thing. Haeckel confirms this in saying that "mechanical and chemical energy, sound and heat, light and
electricity are mutually convertible; they seem
to be but different modes of one and the same
fundamental force or energy".\textsuperscript{12} That energy is a
common principle underlying all existence,
organic and inorganic, is also supported by Osborn: "No form of energy has thus far been discovered in living substances which is peculiar to them and not derived from the inorganic world". Thus the evolution of life may be written in terms of invisible energy as it has long since been written in terms of visible forms.

The Energy Concept and The Unity of Nature

In the unity of Nature we have a situation which seemingly is best explained by the presence of some universal, dynamic essence such as energy; and the more progress we make in our understanding of Nature the more we are impressed with the harmonious interactions and relationships existing between Nature’s constituents. Marvin feels that if we could see Nature through perfect eyes all seeming discords would disappear. He says "the doctrine of evolution has made the forms of animal and plant life, the institutions, customs, and languages and arts of different peoples all seem but different chapters in one connected story of earthly life. In short, increased knowledge reveals increased interconnection and complete
knowledge would reveal complete interconnection". Since organic and inorganic bodies are composed of the same ingredients, all coming from the same elements, it is very natural to look upon the world as one great unitary whole.

Tagore, the poet-philosopher of India, protests against the idea that certain parts of Nature are set off from the rest. He advocates a real unity of Nature in saying that "in the west the prevalent feeling is that Nature belongs exclusively to inanimate things and to beasts, that there is a sudden unaccountable break where human nature begins. According to it, everything that is law in the scale of beings is merely Nature, and whatever has the stamp of perfection on it, intellectual or moral, is human nature. It is like dividing the bud and the blossom into two separate categories and putting their grace to the credit of two different and antithetical principles".

Not only no man liveth unto himself, but nothing liveth unto itself. There is a common chord running through all life. The interests of all forms of existing life are mutual. The tender, sympathetic strain common to all life is necessarily based upon a reciprocity in relationships.
Even between the lower animals and man a tender understanding is often experienced, and in many cases the responses obtained from them are almost incredible. We love to commune with Nature but the reality of this experience would vanish if we should try to make it a one-sided affair on our part. Being human we best understand man's feelings in relation to other existing things but that does not say that he contributes more than his proportionate share of appreciation to the unity and harmony of Nature. In this fact of mutual relationships there must be some element of reality upon which these interactions can ride back and forth. We find this principle of reality in energy into which man and beast and clod can be resolved.

Modern thought seems to support this view. Le Tunzelmann says: "the observed correlation of mental and material phenomena definitely demonstrates the power of the human mind and the minds of other living beings, to influence and be influenced by, changes in the distribution of energy in their material environment".¹⁷

Some would go so far as to say "physical and psychical processes depend so on one another
that it is possible to find in energy not only a possible unifying of Nature but an occasion for an efficient and moving cause”. Energy seems to be established as the fundamental means of interaction and relationship between mind and matter, mind and mind, and matter and matter. Perry would get to the heart of the whole question and says: "Instead of conceiving a matter that manifests itself in forms and motions, why not stop at force and invest it with finality and universality"?18

Perhaps de Tunzelmann comes out strongest in championing the cause of energy as the ultimate, basic element in all matter. He says we cannot conceive of a substance from which the uniform distribution of energy has been abstracted. Its very life would be taken away if the energy element were eliminated. He seems to sum up his attitude in saying, "all the phenomena of the material universe may therefore be considered as arising solely from changes in energy distribution. That is to say, energy is the sole ultimate phenomenal basis of matter".19

It is very evident then that in recent years a great change has taken place in the field
of science due to the development of the electronic theory of matter. In fact, we have come to that place where it can be said that "the old concept of stuff has been completely displaced by the new concept of radiant energy". 20 Thus it seems that the old scientist-philosophers, some of whose systems we shall review in the next chapter, in teaching the presence in matter of a dynamic element, were feeling after the real truth in the situation. For modern science not only confirms this attitude but, as has been suggested, goes still further, and by satisfactory experiments has come to the conclusion that "there is no difference between matter and energy" 21 and that the physical world in its ultimate essence, reality itself, in energy.
10. In suggesting this program we are fully aware that science in America, especially geology and biology, is giving precedence to the Planetary Hypothesis as over against the Nebular Hypothesis. But even so, this does not at all controvert our theory as to the part energy has played in the process of cosmic evolution.
12. Haeckel, Riddle of the Universe, p. 254 (Translation by McCabe)
17. de Tunzelmann, The Electrical Theory and Problem of the Universe p. 471.
18. Perry, Present Philosophical Tendencies, p. 70.
21. Wendt, Lectures
Chapter II.

The Dynamic Trend in the History of Thought

As suggested in our first chapter the dynamic conception of the world is not at all new, and the attitude of modern science toward the energy concept has a strong background of support in the energetic conception of reality so evident in the history of thought. We shall now undertake to pass in review those thinkers, ancient and modern, who have dwelt upon the dynamic aspect of reality.

The men of the early Ionian school were the first to try to get into the heart of Nature and find out what is the abiding element in all changing things - that common substance from which all things come and into which they pass.¹ To understand the teaching of these early Greek thinkers it is necessary to understand the meaning of φύσις as used by them, for this seems to constitute the source and backbone of their philosophy.
In the philosophy of these writers we find \textit{Physis} (Physis) to be a fiery, living, moving, ultimate essence permeating all things. From it, which knows no beginning or end, through the media of water, air, and fire, by means of its own self-activity have come all things, souls, gods, the world itself. \textit{Physis} then, the substratum and essence of all bodies, is a vitalistic, self-producing element from whose eternal mobility and life all existing forms receive impulses to activity, as it constantly plays the role of an urging, guiding, and determining factor. To Anaximander have been ascribed these words: "\textit{αθάνατον γὰρ καὶ ἀνώλεθρον περιέχειν ὑπάντα καὶ πάντα κυβερνάν.}" This ultimate essence then is not only living and free but also divine.

\textit{Hylozoism}

The first philosophy which will be taken up is that of the hylozoists as represented by Thales, Anaximander, Anaximenes, and Heracleitus, in which is prominent the idea that the whole world is a living being and that all matter is
moving; living matter and moving matter being identical. All material elements of Nature are related in a common life. In this system we find the belief that the universe is animated by an inner, fiery, vital principle which operates as a qualitatively psychic factor. This conception of an inner, moving principle of unity appears early among Creek thinkers, and naturally the question arose, what matter is most moving, most alive? What is this ultimate reality which affords a basis for all moving and changing, and which continues to exist after the changes occur?

In answer to this question Thales replied that it was water, seeing that moisture was very essential in animal and vegetable life; also perceiving it to be very subtle and versatile, appearing in the forms of a solid, liquid and vapor. He felt that the plasticity of matter furnished the possibility for everything to change, through water as the medium; all things have their origin in water and go back into water again. The active vitality of matter so impressed Thales that he taught the existence of a world soul, and that a divine mind was
constantly at work. He would say according to Aristotle; "All things are full of gods. The magnet is alive; for it has the power of moving iron." Thales' water, "the soul substance, possesses a superhuman mana, a daemonic energy distinct from the natural properties of the water."

Plato quotes Thales as saying: "Is there any one who acknowledges this and yet holds that all things are not full of gods?" "Its motion and its power of generating things other than itself, are due to its life (ψυχή), an inward, spontaneous principle of activity." Thus in the hylozoism of Thales we have a dynamic conception of Nature which is inseparable from the modern energy concept.

Anaximander also was keenly conscious of the presence of an unlimited, active, vital force in matter but he did not give it the name of an element such as water. He called his the Unlimited or Infinite which is not only unlimited and infinite but is "without beginning, indestructible and immortal." This dynamic, inner life surging through matter is endowed by
by Anaximander with the possibility of "encompassing and guiding all things." We find Theophrastus saying that "Anaximander...said that the material cause and first element of things was the Infinite, he being the first to introduce this name for the material cause. He says it is neither water nor any other of the so-called elements, but a substance different from them which is infinite, from which arise all the heavens and all the worlds within them..... He says this is eternal and ageless and that it encompasses all the worlds.....and besides this there was an eternal motion, in the course of which was brought about the origin of the worlds."7

Anaximines, continuing the same dynamic trend of thought, said that air, with an inner vitality and force peculiar to itself, was the underlying and pervading principle in everything. Air is continually in motion and has the same relation to the world as man's soul has to his body. According to Theophrastus, Anaximines says: "Just as our soul, being air, holds us together, so do breath and air encompass the whole world."
In Heracleitus also we meet with a remarkable anticipation of the modern energetic attitude toward reality. In his philosophy he reaches forward to a fundamental principle in modern science, teaching that everything moves; everything is in a state of flux. Nothing abides; all things in Nature are changing into one another; are in a constant process of becoming. He called his primary cosmic substance, fire. It is not what we mean by ordinary fire but a something which changes into all things and into which all things can be transformed. It so permeates the last iota of all substance that in all matter there is the "ever-living fire." These changing processes, which are expressions of a restless vitality, are fateful, rational, and just. Thus the world is explained in terms of a cosmic substance, a transforming force, fire, which continually burns but never burns out; man himself being a spark of fire struck off from, and at death becomes lost in the great cosmic Fire.

In this whole system there is a marked element of harmony characterizing all Nature,
back of which is a Universal Order, Divine Law, whose force is intelligent and efficient, governing all things. Heracleitus calls this all prevailing principle intelligent Will,\textsuperscript{8} Law,\textsuperscript{9} Justice,\textsuperscript{10} Destiny or Fate,\textsuperscript{11} Wisdom,\textsuperscript{12} God.\textsuperscript{13} It is both material and spiritual. In its fiery make-up it is identical with evident, tangible activities; as Law it becomes pure Form which abides amid all changing relationships. Do we not have here an interpretation of the world in its ultimate essence which is charged through and through with an unmistakeable vitalism? Confirmation and emphasis are given this belief by the fact that to the original substance there is ascribed a spirit of appetency, which determined by Universal order - a rational law - supplies the urge necessary to the conflicting activities by which Nature has come from a general substratum to the experience of specific individual identities. Heracleitus even carries this doctrine of activism over into his ethics and teaches that the "summum bonum" is reached chiefly through the medium of intellectual striving.\textsuperscript{14}
Democritus

We must turn aside at this time and study briefly the philosophy of Democritus, the first materialistic system. Reference to this philosophy is made here, not because it belongs to the history of energy systems but because it is the best example of a purely materialistic system and must be carefully examined to show the limitations of a non-energetic system of thought - to show how an elaborate program of materialism, being without a vitalistic principle, must offer a substitute for this seeming need.

Democritus does not give to his atoms a kind of spontaneity as does Lucretius, nor feeling and will as does the materialist Haeckel. He does not fail, however, to make provision for the energy part of the world. He endows his atoms with original motion which enables them to experience independent self-activity. Inherent in the nature of the atoms there is a tendency to combine. And also in making his fire atoms to be the principle of activity in all organisms, the real "soul stuff", endowing their motion with a psychical activity which permeates the entire organism, producing the "phenomena of heat and life", he presents
a definite substitute for the dynamic conception of reality.

Aristotle's Vital Principle

In Aristotle's philosophy of the organic world we have an interpretation of reality which arises above the materialism of Democritus and is more practical than the idealism of Plato. Aristotle, however, was not so much interested in reality itself as he was in its causes. Thus we find him teaching that beneath the struggle of everything toward a higher and better realization of itself there is a dynamic quality which initiates and lends impetus to the movement, whether we call it idea, Form or energy. Aristotle emphasizes the fact that there is no particle of substance from which this quality is absent. As matter strives to become Form, the potentiality to develop into actuality, it is moving toward its highest end in time, man; reaching out for the highest realization possible, perfection, which is God. This inner principle, the very soul of all things, is constantly moving every part of organic Nature toward a definite end, revealing a principle of purpose, which indicates a knowing quality. This force then, inherent in all organisms, is a
rational principle of activity, and has a real relationship to the energy theory of the present time.

**Epicurus and Lucretius**

In Epicurus' conception of reality there is a program patterned after that of Democritus. There is nothing in the universe except innumerable, indestructible little atoms and empty space. In the beginning all atoms were falling in a straight line. Falling in empty space, they fell with the same velocity. Each atom has in itself a characteristic freedom, a psychical quality which was responsible for their swerving from their original path. Striking one another a nucleus was formed, finally objects, and the earth itself. Thus ultimate reality is found in this little body, ruling out an outside force, final causes, God. There is no system, no law, no purposive organization.

Lucretius who belonged to this same school, in his didactic poem, De Rerum Natura, reemphasizes the philosophy of Epicurus, further saying that only atoms and void exist. All things are the
combinations of these two or an "event of these". But he gives his atoms a certain spontaneity and free will, saying that the world, the same as everything else, is the spontaneous result of the combination of these little atoms which are the constituents of life. In this idea of spontaneity Lucretius makes a marked addition to the psychical activity suggested by Democritus and Epicurus and hence gives to his atoms a genuine dynamic quality.

The Stoics

In a study of the Stoics we find a system of materialism which says everything is matter, from God to the most insignificant thing. Matter is the mover as well as the thing moved. The whole universe is matter in constant motion. Nature not only operates according to law but is a supreme law in itself. It, however, is permeated by a force, a fire, reason, which is a formative, governing, and vital principle. This principle with a power inherent in itself, operates constantly in the process of development guiding things to a perfect end. This force is the very central fact in the universe's existence. It is to the universe what the soul of man is to
man, man's soul being but a part of the great Soul, the great pervading force. Consequently having here a vital force which is also rational, we have a qualitatively psychic and dynamic interpretation of reality.

Leibnitz.

Leibnitz attempted to do away with the old idea of the atom as a divisible little body, also to eliminate the single substance theory of Spinoza, and in this endeavor he built up in his monadology a theory which is fired through and through with a dynamic conception of reality. In his system the universe is made up of innumerable, indivisible little units called monads, which are bits of force constituting the ultimate essence of all things, reality itself. "These primal essences or forces, which he calls monads, constitute the whole of reality; they are the fundamental elements of the entire material and spiritual world....they are contrasted with mere atoms in that they are not dead, inert particles, but instinct with vitality and movement." 18

In the world there are degrees of consciousness, ranging from incomplete to complete
states, corresponding to the make-up of the monads constituting the object. This fact of degree roots itself in the two kinds of quality which enter into matter so called - passive and active. Passive matter obstructs clear perception while active matter represents pure perception.

In minerals the monads have a large measure of passive matter, consequently there is confused perception, not fully conscious. In organic life a large number of the monads possess a greater proportion of active matter constituting a nucleus or governing center around which the other monads cluster. Naturally then in organic life there is a higher degree of perception, man standing at the head of the group. It is only in God that we find monads representing absolutely clear perception. Thus individually and in groups, in all the activities of the universe, we find these little centers of force, with their own peculiar spirit of appetency, climbing toward higher realizations of being. The cause of the natural changes of the monads Leibnitz would ascribe to an internal principle, "since an external cause can have no influence upon their inner being."19
It should be remembered that Leibnitz wrote during that period when the mathematico-mechanical conception of Descartes and Spinoza prevailed. Descartes had applied the mechanical interpretation to everything outside of God and self, denying mental states even to animals. Thus Leibnitz' philosophy becomes a fertile oasis of dynamism having its setting in a desert of dead mechanism.

**Mechanism versus Dynamism**

The mechanism prevailing in this period to which we have referred would say "the substance itself does not change. All that changes is the relation between the substances. These changes in relation give rise in us, as onlookers, to the illusion that the substance itself is changing its qualities."¹ thus making the world of mechanics tell the complete story of reality. This as over against the dynamic conception which would say "it is of the very nature of the substance spontaneously to produce new qualities and states."²⁰ Thus according to mechanism the idea of an inner force directing to an end, or even present at all is supplanted by the belief
that all harmony, all changes are due to the mechanical interactions of parts and their relation to outside influences. As the principles of "adjustment, interaction, continuity, uniformity, and causation" play their part we have the secret of all activities. And as a result of the work of Descartes, Newton, Spinoza, etc. the dynamic theory of reality had to wait for expression until the nineteenth and twentieth centuries, at which time we are ushered into the biological, psychological, and dynamic era in which energy becomes the more basal concept.

That such a dead mechanical view, which had been dominating in this field of thought for years, and also held by Spencer in the latter part of the nineteenth century, was unable to satisfy the mind (pragmatically insufficient) is shown by the new dynamic currents of thought entering from many quarters, all suggestive of the energy concept, several of which we shall take up at this time.

Kant's Theory of the Will

"There were those who said everything
could be explained by natural science as a great world machine," but this attitude seemed cold and harsh to Kant, he feeling keenly conscious that there was something lacking in the philosophy prevailing at that time. It seemed to him to be out of touch with real facts, with real life. He aimed at supplying this need.

In seeking the real facts of life Kant goes past the secondary world of phenomena and discovers a primary world of absolute will. This ultimate fact, will, is untrammelled, free, supreme. All law proceeds from the will for we can do just what we will to do. There is only one good thing in the world, a good will, and this striving will, acting as a unifying power, a synthetic activity, is the Alpha and Omega of all things. Thus Kant's system, the central, vital principle of which is a striving, energetic will, must be given a place in the list of dynamic philosophies, and a definite relationship to the energy concept.

Schopenhauer's Philosophy of the Will

Schopenhauer makes will to be the moving
principle, the vitalizing force, not only in man but in all Nature as well. This striving principle is common to all Nature, nothing being too small or remote to escape its influence. It is the eternal and indestructible ultimate essence, the final reality in all things. Will not only reveals itself in external things but is matter itself. Our bodily movements, and the organs which enter into our experiences are but manifestations of a surging, striving will. "The brain is the will to know, the foot the will to go, the stomach the will to digest." 21

Will is the force urging the grass to grow, the flowers to bloom, the tree to bear fruit, in short, all Nature to observe its uniform methods of behavior. It is the primary characteristic of all life, the lowest type being the willing to preserve life, the simple willing to live. From this lowest type there is a gradual rise in the series until the highest type is reached which is conscious, and is represented by man. The beauty and harmony of all Nature is due to the fact that there is but one will and this same will operates in all
phenomena including man, its great objective always being the highest and best possible.

Striving for the best does not mean any particular end, for Schopenhauer rules out purposes. Thus all activities of the universe constitute a mass of constant, endless, irrational striving, the great driving motor being the will.

Haeckel.

In each of the immediately foregoing systems of thought, indicative of modern belief, we find an active, striving, vitalizing force at work. So, continuing our line of thought which is characteristic of modern scientific presentation, we shall now turn aside for the time being and consider the philosophy of the materialist Haeckel, the monism intoxicated scientist. It may seem out of order to introduce his system in connection with a study of the energy concept, but we shall give a summary of his philosophy and add quotations from his work, The Riddle of the Universe, with the purpose of showing that he actually gives to his atoms a quality of energetic striving.
He purports to represent a system of monism which rises above spiritualism and sheer materialism, as they ignore matter and teach the doctrine of dead atoms, respectively. He would merge both into one and call it monism. There is but one substance into which everything roots itself. In this substance its two attributes, matter and mind, are linked together as one.

Very often Haeckel's representations are not altogether clear. In his explanation of some activities he points to the soul principle, and at other times pictures the psychical activities as representing the ordinary functions of the brain, as rooting themselves in the central nervous system. Psychology is but a sub-head under physiology in his general presentation.

Though a heralded materialist he definitely gives to his atoms a quality of feeling, of will, of striving, which challenges the correctness of the classification which some are inclined to give his philosophy. His atoms seem to have an affinity for each other, a satisfaction in harmonious relationships and
resent an interruption of those experiences. This unconscious, pleasurable affinity noticed in the lower strata of life is what we meet in the sexes of organic life, simply more highly developed in the latter, for this fundamental unity of affinity is found in all Nature.23

This program which places all vital phenomena under mechanical processes of life, even making psychic activities dependent on a definite material substratum, like all other phenomena, later adds that "covering the whole field of organic and inorganic nature the two fundamental forms of substance, ponderable matter and ether, are not dead and only moved by extrinsic force, but they are endowed with sensation and will; they experience an inclination for condensation, dislike for strain; they strive after the one and struggle against the other."24

In speaking of the atom Haeckel says it "is not without a rudimentary form of sensation and will, or as it is better expressed, of feeling and inclination - that is a universal 'soul' of the simplest character."25 He would carry this same principle of activity into the molecule.
In speaking of ether which is boundless and immeasurable he says: "It is in eternal motion, and this specific movement of ether in reciprocal action with mass movement is the ultimate cause of all phenomena." The question naturally arises as to what causes the ether to move or the mass to reciprocate. He would say, "the conversion of one form of energy into another, as indicated in the law of the persistence of force, illustrates the constant reciprocity of the two chief types of substance, ether and mass." But this does not answer the question as to the fundamental cause of change.

Haeckel would make the law of reciprocity dominate the elaborate performances of the nervous system itself. But even when saying that "movement is as innate and original a property of substance as is sensation," he is not fully clear as to cause. It is when speaking of the evolutionary division of mass and ether that he ascribes the real cause of change and which cause embodies a vitalistic conception - "this division so effected by a progressive condensation of matter as the formation of countless
infin\textsuperscript{i}tesimal centers of condensation in which the inherent primitive properties of substance - feeling and inclination - are the active causes.\textsuperscript{28}

Thus there is a "unity of all natural forces" which is the "monism of energy".\textsuperscript{28}

Ostwald.

Among those scientists of modern times who have presented definite energy theories, a prominent place must be given the philosophy of Ostwald.\textsuperscript{30} Here we meet a system in which force or energy is established as the primary concept; the concept matter being classified as a secondary phenomena, having its origin in the association and mingling of certain energies. According to Siebert,\textsuperscript{31} Ostwald means by energy everything that grows out of work and everything that can be transformed into work. The explanation of all occurrences in the whole of Nature rests in an understanding of the activities and shift\-ings of energies in space and time.

There is a continual process going on in Nature of distributing and gathering energy. If a living being is to continue life it must, by
an initiative and energy all its own, gather unto itself quantities of energy sufficient not only for preserving life but in addition thereto, for it is thus that it makes possible its continuance in the preservation of the species. When the barriers of resistance against which the organism has to fight, as it gathers energy, becomes stronger than the latter, then the living form dies. As the body takes in energy the nervous apparatuses constitute the medium for the transmutation of the energy into activities.

Bergson

In Bergson's philosophy there is no mechanistic interpretation of reality or theory of finalism. At every turn in his system we meet activity, back of which is an energetic impulse. With him mind is "a force working, seeking to free itself from trammels and also to surpass itself, to give first all it has and then something more than it has." When speaking of mind he means, above everything else, consciousness; and this he makes to be a vital
factor, active in its very nature. The most obvious feature of consciousness is memory. Consciousness, however, not only retains the past but anticipates the future as well. In the performance of these two primary functions, its chief role is to decide, to choose. Bergson feels that "whether we consider the act which consciousness decrees or the perception which prepares the act, in either case consciousness appears as a force seeking to assert itself in matter in order to get possession of it and turn it to its profit."34 "The evolution of life, from its earliest origins up to man, presents to us the image of a current of consciousness flowing against matter determined to force for itself a subterranean passage."35

With Bergson consciousness cannot be explained apart from matter, and vice versa; and even matter itself he makes to be of an active type. In his Creative Evolution he says that matter is the inverse of consciousness. While "consciousness is action unceasingly creating and enriching itself.....matter is action continually unmaking itself or using itself up."36 A creative consciousness is
continually striving against matter. "Things have happened just as though an immense current of consciousness, interpenetrated with potentialities of every kind, had traversed matter to draw it towards organization and make it, notwithstanding that it is necessity itself, an instrument of freedom." In seeking to account for the origin of consciousness and matter he suggests that they both have a common source.

As we go deeper into Bergson's philosophy the question naturally arises - what is the secret of this ceaseless struggle? And then we learn that there must be an "impulse driving it (life) to take ever greater and greater risks toward its goal of an ever higher and higher efficiency." He explains this ultimate guiding and developing element in Nature by what he calls the vital or original impetus. And this vital principle continually operates in a way very suggestive of the energy concept. Bergson's whole system is distinctively dynamic.

The Philosophy of Life.

Even in the philosophy of life itself, as
it is lived by the multitudes today, we meet a strain of the energy concept. Such terms as "up and doing", "wide awake", "full of life", "on the go", "full of pep", all bespeak life with a large expenditure of energy. And this is present day life. The passive life is altogether out of harmony with the spirit of the times. The gospel of today is that of action.

Bucken.

Rudolf Eucken in his philosophy of activism is the apostle of this type of thought. His works beam with a dynamic interpretation of life. Passivity is diametrically opposed to his idea of real life. The individual who plays only a passive part in life's work not only fails to make his expected contribution but fails in the development of his own self. We find ourselves only as we fight to work out our own salvation. We come to the full realization of the beauty and worth of life only as the spiritual self triumphs over the resistance which it meets in the world. Activity is the only avenue through which one can take his place in the world of real
values. Thus a life full of energy and organized toward right ends is reality itself.

It is thus seen in the history of thought that it would be impossible successfully to relegate to the background the strong tendency to dynamism. It has been in this type of philosophy that the scientific as well as the everyday type of mind has found most genuine satisfaction. Confirmation of this is seen in the seeming fact that those systems have been lasting as well as satisfying which have built around an energetic conception. It is not strange then that modern thought is speaking out definitely in support of an energetic interpretation of reality.

2. Veazie, Studies in the History of Ideas, Ch. II, passim.

3. "Immortal and indestructible, surrounds all and directs all". (Fairbanks, The First Philosophers of Greece, pp. 8-9)

4. Quoted from Burnet's Early Greek Philosophy, p. 42.

5. Quoted from Cornford's From Religion to Philosophy, p. 135.


7. Quoted from Burnet's Early Greek Philosophy, pp. 54-55.

8. Fragment 19—There is one wisdom, to understand the intelligent will by which all things are governed through all.

9. Fragment 91—The law of understanding is common to all. Those who speak with intelligence must hold fast to that which is common to all, even more strongly than a city holds fast to its law. For all human laws are dependent upon one divine law, for this rules as far as it wills, and suffices for all, and overbounds.

10. Fragment 29—The sun will not overstep his bounds, for if he does, the Erinyes, helpers of justice, will find him out.
11. Fragment 63 - For it is wholly destined -

12. Fragment 65 - There is only one supreme wisdom. It wills and wills not to be called by the name of Zeus.

13. Fragment 36 - God is day and night, winter and summer, war and peace, plenty and want. But he is changed, just as when incense is mingled with incense, but named according to the pleasure of each.


15. Democritus (460-370 B.C.) A native of Abdera, Thrace. He studied in the famous Atomistic School of Leucippus which was at that place.

16. Windelband, History of Ancient Philosophy, p. 165 (Translation by Cushman)

17. Lange, History of Materialism, Vol I, p. 135


22. Haeckel, Riddle of the Universe, p. 20 (Translation by McCabe)

23. Riddle of the Universe, p. 224 (Translation by McCabe)
24. Riddle of the Universe, p. 220 (Translation by McCabe)
25. Ibid, p. 225
26. Ibid, p. 228
27. Ibid, p. 230
28. Riddle of the Universe, p. 243, (Translation by McCabe)
29. Ibid, p. 254. (Italics are mine)
30. Wm. Ostwald, (1853-) Professor of Physical Chemistry as Leipsig.
32. Bergson, Creative Evolution, p. 87 (Translation by Mitchell)
33. Bergson, Mind-Energy, p. 27 (Translation by Carr)
34. Ibid, p. 22
35. Ibid, p. 27
36. Bergson, Mind-Energy p. 23 (Translation by Carr)
37. Ibid, p. 25
38. Ibid, p. 24
PART II

Energy as a Spiritual Force
CHAPTER I

The Spiritual Interpretation of Energy

In the first Part we set out to learn, if possible, the identity of that something which in the midst of unceasing change, continues to abide; that something which constitutes the ultimate essence of the world. It was seen that the search for ultimate reality was not anything new but that the inquiry concerning final reality constitutes a strong current in the general stream of philosophical endeavor. Finally we came to the conclusion that that abiding something is energy and endeavored to show that from the standpoint of science and philosophy the whole universe is to be conceived in terms of energy.

Also it was seen that many of the profound thinkers recognized a mysterious, dynamic principle in Nature and ascribed to it wonderful possibilities. This energetic conception seemed to prevail until the seventeenth century when a mechanistic interpretation began to predominate. But science and philosophy seemingly failed to find satisfaction
in a cold, dead, mechanical system, with the result that the dynamic conception of reality began to reappear, receiving a new emphasis, until today science is speaking out boldly saying that not only does dynamism justifiably take precedence over mechanical materialism but that reality itself is energy.

Theories of Energy

There are several theories of energy as outlined by Cooley in his book, The Principles of Science:

(1) Energy is given a place as substance beside matter; it is made to be a universal, formative agency. Matter is the means through and by which energy accomplishes its purposes, the something which it shapes. This then is a dualistic attitude, there being two substances - energy and matter.

(2) The second view makes matter the only substance, and energy is simply the name representing its activities. Energetic phenomena are simply matter in action. So we call heat, chemical affinity, electricity, etc., different forms of matter's activities.
(3) "We may think of energy as the true fundamental substance of the world, and matter as one of its modes, its more highly organized form. This is the conception embodied in the electronic theory of matter, or at least in one form of it. According to that conception fundamental existence is essentially active - a heaving ocean of being - but it is not active matter; it is that more subtle, weightless agency which we call electricity. This, which is the real agent in all that goes on in the physical world, the root of all natural forces, exists in the form of more or less discrete and extremely active units (electrons). Thus we may think of it as itself the one fundamental (physical) existence, manifold in all forms, ceaselessly active in its nature."

It is the third view which modern thought is coming more and more to accept. And the more we study the present scientific attitude the more we are amazed at the large field of facts which the term energy is selected to represent. Thus it seems that at this time by way of explanation it should be said that the word energy with its
established meaning in our vocabulary is really not big enough to represent all that science means when using the term. Since we are making energy stand for so much, it would be more satisfactory if a new word had been introduced into the list of scientific terms. With these facts in mind regarding the use of the term energy we now approach the immediate task of endeavoring to interpret what seems to be the facts of its inner content.

The Spiritual Hypothesis

Having reached the conclusion that reality is energy, we now want to know what this energy is. Curs is an ontological problem and naturally leads us in our inquiries into an attempt to obtain a critical understanding of what "being" really is. Apparently the old philosophers were satisfied to say that reality was earth, air, fire, water, etc., and being just pioneers in the field of scientific investigation could not with positive assurance get close to the heart of their problems.
Science today is past the place where it is willing to take very much for granted and is dissatisfied unless it can get on the inside of its investigated subjects. With the models of the centuries at hand and with accumulated insight and improved scientific methods, we have a right to expect a scientific progress commensurate with the advantages which the present enjoys, in relation to the past. So we must not stop with the general concept of energy but inquire concerning its qualitative aspects.

Since science today is operating on the assumption that energy is that element fundamental to all forms of existence and which represents the final analysis of all things, it is logical for us to adopt the short cut method and simply knock at the door of chemistry and physics and ask, what is energy?

We go to the physicist and ask him for a definition of matter and he tells us it is "an aggregation of electric charges".
If we ask for a definition of energy he says it is the "capacity for doing work"; and if urged to be more concrete he may say it is "force times the distance". Then if we ask for a definition of reality we are told that that does not belong to physics but to another field of thought, philosophy.

Thus we make the discovery that the scientist concerns himself very little with our side of the problem. He deals with energy chiefly in its quantitative aspects and is not as persistent in his endeavor to make a qualitative analysis. It seems that the interest of science in this latter phase is measured and determined by the amount of philosophy which happens to be therein. "Who or what moves bodies, in the sense of agency or potency, is for scientific purposes a negligible question". In dealing with energy the ends of the physicist and chemist are met primarily in the mathematico relationships.

In our study of the energy concept, we are interested in this problem from a qualitative
standpoint. The "number, length, breadth, volume, interval", etc., will not suffice for our purpose; nor is it satisfactory to stop with saying that things behave thus and so as they are influenced by certain causes. We want to go deeper than this and know "why" and "how" these causes operate. And since our immediate objective is to analyze reality qualitatively, we have a goal, therefore, which is very different from that which could be reached by means of mathematical science.

In probing into the question concerning the attributes of energy we read with great interest, in de Tunzelmann's Problems of the Universe, the statement that "the concept of the ether has led us to the conclusion that energy is a more fundamental concept than either ether or matter. It is therefore more fundamental than the concept of mass, so that the indicated path of progress is not the remodelling of our representation in order to make it capable of simpler expression in terms of a system of
dynamics in which mass was regarded as fundamental. What we have to contemplate is, in my opinion, the remodelling of our system of dynamics on the basis of energy in the place of mass. We may then begin to contemplate the ultimate possibility of a future remodelling in which mind will replace energy as the fundamental basis of the physical scheme.\(^4\)

Chamberlain lends emphasis to this attitude in saying that "an immeasurably higher evolution than that now reached, with attainments beyond present comprehension, is a reasonable hope. The forecast of an eon of intellectual and spiritual development comparable in magnitude to the prolonged physical and biotic evolutions lends to the total view of earth-history great moral satisfaction."\(^5\)

Also, Perry says "if it is impossible to construe the world in terms of thought or in terms of moral life, there yet remains a further conception, complete enough to embrace these and every other possible value - the conception of a universal spiritual life (geistiges Leben)"
that shall be infinitely various and infinitely rich." These attitudes point to the same conception of reality; they stress the spirit concept.

Since, as we have suggested before, physical science offers no answer to our legitimate demands for a qualitative interpretation of energy, we are therefore forced to make our own hypothesis respecting its inner nature; and are encouraged by the tendency of modern thought, as mentioned above, to champion a belief in the hypothesis which says that energy is of a spiritual, psychical nature.

This hypothesis is what in philosophy is called spiritualism, and gains for its support whatever strength there is in this system of belief. There are many important facts in philosophy with which spiritualism is in harmony and whose problems this theory helps to solve. While on the other hand, any theory which opposes these outstanding facts or leaves them without explanation, must in its very nature be looked upon as incomplete.
We repeat, while science is looking upon reality as energy it offers no qualitative interpretation of energy. This being true, the spiritualistic hypothesis, as such, is legitimate, and since it will be verified as far as it explains things which need explanation, can demand a respectful hearing.

The Spiritual Hypothesis And The Creative Idea

In the first place, a spiritual interpretation of reality helps to solve the problem of the creative idea. There is a prevailing notion in modern thought that creation is not a finished fact, a thing of the past, but as a principle inheres in the life of the present. "Traces of evidence are lately beginning to come into view, which are highly suggestive of continuous present day creation of matter at the inorganic level, and of creation of life from inorganic materials at the organic level". A creative workmanship seems to be characteristic of all Nature, underlying which is a dynamic, energetic principle. This vital, creative impulse is continually reaching its objective. It is not strange then
that in the recent movements of thought we should meet representatives of creative evolution, creative synthesis, creative intelligence. It seems there is no fact in modern philosophy which looms up quite so large as the creative idea. But in this incessant life of continuous creation there must be more than an inter-play of mechanical agencies. A creative activity is difficult to conceive apart from spirit.

The Spiritual Hypothesis and Vitalism

Again, we have seen how general is the stream of vitalism which runs through philosophical and scientific thought. It holds a prominent place in the history of thought because there are strong evidences of it in Nature. If there are remarkable evidences of a vitalistic principle in Nature we are justified in believing it to be there. Even the "naked eye" reveals to us Nature throbbing with a fervent life. In fact we have concluded that reality is energy. Can we think of a vitalistic principle rooting itself in mechanism? Hardly so. Nor can we conceive of vitalism out of relation to spirit. History and personal exper-
ience have clearly shown that a mechanical "letter of the law" program kills, while it is the spirit which gives life. Interpreting energy spiritually seems to furnish the only explanation for the presence of the vitalistic element inherent in Nature.

The Spiritual Hypothesis and Teleology

In observing the harmonious relationships characterizing the activities of the universe, most thinkers are inclined to say with Tennyson, "Yet I doubt not through the ages one increasing purpose runs". And Henderson, speaking as a bio-chemist in the Order of Nature, stresses the impossibility of ignoring the fact that there is a purposive tendency in things. The evident expression of intelligence which is met everywhere has been explained by many as a teleological provision on the part of a great Designer. There is evidence of teleology in Nature but the old system of teleology is not satisfactory, because it makes God too much of a transcendent Being.
Realizing that the kingdom of heaven is within us, modern thought is making him less of a sky God and is giving him his rightful place in the very heart of life. He is not only transcendent but is immanent as well. It is inconceivable that a ruling King should be living outside his kingdom. Many teleologists are thus modifying their attitude somewhat and are advocating what might be called an immanent teleology. The problem of an intelligent principle guiding all existing forms to the highest ends possible, easily finds its solution in a spiritual system of reality.

The Spiritual Hypothesis and Evolution

Then too, a spiritualistic program helps with the problem of evolution. It is a well known fact that the discovery of this theory has revolutionized science. Modern thought is strongly inclined to a belief in creative evolution, and this principle being true, its cause can hardly be found in a cold system of materialism. Generally speaking, there seems to be a missing link in evolution. If one is willing to stay on the outside and simply take facts as they come,
then probably a general mechanical theory of evolution will suffice.

There are those who would follow in the foot-steps of Hobbes and apply a mechanical interpretation even to the facts of the mind, thus reducing all mental phenomena to a system of physics. But this method would force us to live in a lifeless world, similar, for instance, to that outlined in Pearson's Grammar of Science. And also, a system such as this fails to account for the richness and reality of human experiences. No human being would be satisfied to live in a world which could offer only hypotheses. Thus we cannot afford unreservedly to adopt a system which can only say "it happens so every time", mere chance, and then stop with that.

The evolution of progress can find no justification in the realm of chance; nor can it be explained by a system of mechanism. It is when we place spirit at the bottom of the whole evolutionary process that evolution becomes more reasonable and complete; and a satisfactory explanation of its inner workings is given, for we have thus introduced the possibility of a vitalistic, knowing quality.
2. Ibid, p. 128
3. Perry, Present Philosophical Tendencies, p. 53
4. de Tunzelmann, Preface to The Electrical Theory and the Problem of the Universe, pp. 15-16.
   (Italics are mine)
5. Chamberlain and Salisbury, Introductory Geology p. 634
6. Perry, Present Philosophical Tendencies, p. 153
7. Moore, The Origin and Nature of Life, p. 31
Chapter II.

Historical Support for the Spiritual Theory

Early in our work a study was made of the philosophy of those men in whose systems could be found a strong dynamic element, the purpose being to show that from the beginning of philosophical inquiry an energetic interpretation of reality has characterized many of the strongest systems. Now we shall pass in review some of those writers whose conceptions are distinctive—spiritual, confirming our attitude that many of the best students working with the problem of reality interpret it spiritually, thus helping to establish the hypothesis that energy operates as a spiritual force.

Leibnitz

In Leibnitz' philosophy we have what is perhaps the most elaborate spiritual system ever formulated. His interpretation of reality has already been presented, because of its
dynamic, energetic qualities, suggesting a close relationship to the energy concept. As our immediate interest now has to do with the qualitative aspects of this concept, his theory is re-stated somewhat in detail, from the angle of its spiritual import.

Leibnitz resolves everything into centers of psychic, spiritual force which are without parts, extension or form and are indivisible and immaterial. In the Atomism of that day these little units were material but with Leibnitz they were distinctively spiritual. These "simple substances" constitute ultimate reality; they differ from each other in quality but not in quantity, each being self-sufficient and a little world unto itself. This is somewhat similar to the modern idea of the atom which elsewhere we have likened to an independent little solar system.

Not only are the highest types of being concerned, but the very substance of all reality is found in these psychical, spiritual units. The lowest classification is to be found in minerals, plants, etc. and here the centers
of force are called monads. Here we meet perception just the same, but it is not clear or conscious, the grade of thought being something like a stupor. Also here as in all forms of being each monad has in itself a principle of striving to a higher condition of activity or perception. The clearness of perception is not only proportionate to the activity of the monads but conditions their grade or classification. The confused perception of the lowest state is illustrated by the wave sounds of the sea; we know that each wave makes its individual contribution to the general sound yet it is impossible to perceive them separately, the attempt resulting in confused perception. This is the characteristic thought life of minerals and plants.

The psychical, "simple substances", fundamental in all Nature, whose perception is more distinct and associated with feeling and memory are called souls. Memory which is the sign of consciousness is the differentiating factor between the lowest types of being and animal life.
Human beings have a clear perception and thus live in a higher scale of being. Having reason and knowledge, they can come to a knowledge of themselves and even of God. This quality in man is called rational soul or mind (esprit). There is just one Being who experiences the full power of perception, God, who is infinite and absolutely perfect. Thus we see the whole universe to be alive with thought, the principle of perception prevailing from the most insignificant thing up to God.

In his Monadology then Leibnitz has built up a vast, closely woven system of spiritualism. All reality roots itself in psychical centers of force. These, while individually self-sufficient, together constitute all Nature. In the smallest portion of matter there is a large group of these active, living monads. "Each portion of matter may be conceived as like a garden full of plants and like a pond full of fishes. But each branch of every plant, each member of every animal, each drop of its liquid parts is also some such garden or pond." Each living body has
its central or ruling monad. Then each member of this living body is full of living creatures clustering about a central monad or soul. These little particles surrounding the ruling soul continually but slowly change, thus never giving the soul an entirely new body, while the soul itself does not change. The central monad is always associated with some such body of changing creatures, God being the only Spirit free from a body. No matter then to what forms of being we might appeal, spiritual centers of force are found to be fundamental to all reality.

Hegel

In Hegel's philosophy "everything is spirit; spirit is everything." The ultimate essence of the universe, its true reality is found in this self-operating, inner spiritual principle which is fundamental to all Nature. Spirit finds expression in three forms, subjective, objective, and absolute, covering the entire field of activities.
The subjective spirit strives through the power of the will to bring the spiritual life of the individual to that place of experience where it is free and independent of its environment, and is not satisfied until it reaches the goal of its ambition. The objective spirit is identical with the spiritual life finding expression in the everyday phases and functions of life. Here the will asserts itself in the forms of customs common to human relationships. In a particular institution, for instance, we have a single manifestation of the all pervading spirit. The absolute spirit is the blending of the subjective and objective spirit. Here we have an active, unifying consciousness, absolute reality itself. All differences between subjective and objective experiences fade away. This self-assertive, absolute spirit moves up into satisfied realization chiefly through the forms afforded by the fields of art, religion, and philosophy.
Wundt

Wundt has built up a system of idealism, which reminds us somewhat of Leibnitz' theory of monads. Leibnitz made his monads centers of perception while Wundt makes his units of will. Here we do not hear so much about matter, substance, mind, and soul but speak in terms of ideas, psychical processes, will units. His whole system is built around the activities of the will, for it is the only thing of which we are definitely sure. "There is absolutely nothing outside of man, nor in him, which he can call fully and wholly his own, except his will."

All experiences cluster about the will, not because there is an external initiating force, but because in the will and only in the will itself there is a spontaneity of activity which is responsible for all relationships. The organization of activities toward ends originates and is sustained by the psychical processes representing the will.

God is the universal Will and its objectivation is the realization of itself in the
will units of the world, in which there is an opposition of activity and passivity, constituting ultimate reality. It is only as every will is related to wills that this reciprocal relationship is obtained and it is only in these reciprocal experiences, which offer an explanation for the passive state, that we have reality.

Schopenhauer.

To get Schopenhauer's idea of the qualitative aspects of reality we must understand what an important place he gives to will. He would say the very essence of life is the will. This principle will is inherent and dominant not only in man but in all things. It is the guiding, driving force in the general process of evolution. In the principle of selection which seems to be operating all the time, it is the will which causes certain parts of the organisms to grow and adjust themselves for particular duties while at the same time allowing others to die. For instance, some animals are equipped with instruments for fighting and
killing, because that is what they will to do. The will not only aids in the organization of the organisms but enjoys a pre-existence in relation to them. Amid all those things which come and go it is the abiding fact.

All things are the product of the will. The world is but this principle realizing its great ends. The will is much greater than the phenomenal world which is just the object of thought; it is greater than thought which is simply its by-product. This striving principle then, which is reality for Schopenhauer must be given a setting in spiritualism, far above everything that partakes of the material.

Plato's Idealism

The philosophy of Plato is presented at this time in our study of energy, not because it is energetic but because his elaborate system of idealism makes a large contribution toward the unfolding of our immediate problem - showing that reality is to be interpreted spiritually.
In Plato, the first and greatest idealist, we meet an exalted and beautiful system which believes there are higher realities than matter and motion and the world of sense perception. "Plato points up, Aristotle down."

Most fundamental in his philosophy is the search for ultimate and absolute values, the abiding and unchanging elements in the flux of phenomena. Plato believed with Browning that there is a right ever right and a wrong ever wrong.

True knowledge does not come to us by way of the senses. Such knowledge, often being deceiving, is simply opinion. The highest type, the scientific, comes from the mind through thought and reason. Matter is not the reality of the world. He would say with James that the world of wind and weather is not the real world. Outside the scope of the senses is another realm, a spiritual world, the realm of ideals, of values. It is possible for us to rise above the world of shadows into this realm of being, into the real world of ideas.

With Plato ideas only are real; all else is simply appearance. These ideas are incor-
poreal, immaterial but are hardly psychical or spiritual according to the modern interpretation of these terms, ideas belonging to even a higher state of being than the psychical or spiritual. He would place the psychical functions in the world of Becoming and would place ideas in the realm of Being. Ideas are not necessarily in the mind but are essences, ideals, the highest and best being those of the Good. In this program ἐπίστολος is that something which science has been eagerly striving to know, reality itself. "The world of true reality is but never becomes; the world of relative reality becomes but never is."

"The unfathomable depths of human personality is essentially Plato's doctrine." Reality is divine and the soul is akin to it. The soul is a simple, incorporeal being belonging both to the world of ideas and the world of sensuous material change, but belongs primarily to the higher world. It is the principle of life and motion.

Hence Plato is considered the father of idealism, and as over against mechanical force,
he makes intelligence to be the real moving power in the world. This places him in the forefront of those who have taught the presence of the invisible soul operating in Nature, and who have given an interpretation of reality diametrically opposed to materialism.

Systems Partially Spiritualistic

There are four important systems of thought which probably have no definite place in a program whose chief immediate interest is in trying to show that all things are of a spiritual nature, even the very world of "material phenomena" — Aristotle, the Stoics, Descartes, and Kant. Especially is this true of the Stoics who were really materialists and of Descartes with whom mind and matter are equally real. And while these systems by no means make spirit all of reality and cannot even approach being classified as spiritualistic, we mention them here, parenthetically, to show how unable were the leaders in these schools of thought to complete their systems without giving a "real" place to spirit. This
is particularly true of Kant's philosophy, but let us first examine Aristotle.

Aristotle.

To understand Aristotle's philosophy of reality it is necessary to know his meaning of \( \psi\nu\chi \) because it is to this that he gives supreme place in all life and activity. With him \( \psi\nu\chi \) (breath) is more than we mean by soul; it really represents what is wrapped up in the terms Life and Mind, and we have no English word which can represent the combined thought. Sometimes it is called Vital-Principle, sometimes Soul. This Vital Principle, though there is just one, has its representation in every part of the body. It and the body are not one, but they so relate themselves to each other as to constitute a unity. As Life finds its highest expression in Mind, so the chief characteristic of the Soul or Vital Principle is thought.

This Vital Principle is the essence of Life. It is "the original reality of a natural body endowed with potential life...... If there be any general formula for every kind of
Vital Principle it is - the primary reality of an organism."³ It is a vitalizing influence, not only holding the body together but constituting the energy of the body. This is true not only of man but also of all animals and plants as well. In plants and all such simple organisms the Vital Principle is of a lower degree of vitality. Aristotle was not sure whether this Soul experiences self-activity or is moved by some outside force, but if the latter be true the operation of the outside influence is possible only through the sensations as a medium. So we find his "the breath of life", as a "primary reality", to be not only dynamic but also spiritual.

Stoics.

Even in the Stoics a spiritual strain is seen running through their idea of the real. In matter we find Spirit; in the world, God. In fact the world and God seem to constitute something of an identity, God being a vital element pervading all things, the very Soul of the world. God, however, is not made to be so general as to rule out his individual conscious-
ness. Between all things enjoying a conscious soul life there is a definite relationship, closer than that which they experience with lower types of creation. The Stoics would not only say that everything outside of God is his body but that all these things came from his own self and thither will return again. God being a Soul, then everything can be traced in its origin to a soul life, and must partake somewhat of the qualities of the great Spirit.

Descartes.

With Descartes the fundamental principle is conscious thought. He seems to have brushed all else aside as uncertain and gave to philosophy a new starting point. He would say we cannot build our system of philosophy on things external which we do not know. Only those things "which are clearly and distinctly perceived are true." Cogito, ergo sum - I think, therefore I am. The fact that I think establishes the thinker as a certainty. Even in doubting we have evidence of a thinking doubter. We can doubt everything else but not the doubter,
of which we are certainly conscious. Thus consciousness becomes the criterion of knowledge, and the thinking, psychical being is the only certain, and the most real thing in all the world. Thus according to Descartes the successful search for real values, ultimate reality, leads into the field of psychical interpretation.

Kant.

At first Kant's philosophy seems to be a system of mere phenomena. We begin with the presupposition that the real things of the world are those which are objects of sense. We find then that these are phenomena only. It is soon seen, however, that Kant is not willing to stop here. Since the mind is not satisfied with less than a complete whole and since knowledge does not give this to us, we are compelled to base our hopes on an investigation of moral consciousness. In this search Kant is led to feel sure that back of phenomena there is a world of ultimate reality and his investigation into the nature and limits of knowledge shows to him the possibility of a noumenal self which
is free and untrammelled. He calls this the "thing in itself" (Ding an sich), that some-
thing which is left after everything with which the senses and knowledge have to do is brushed aside. Although it can be interpreted only by a divine intelligence we know there is a "thing in itself" because there must be an objective something which causes our sensations. The fact that we may not understand noumenal things does not at all exclude the possibility of their existence.

What is this noumenal something, this "thing in itself" which lies beyond the world of sense and knowledge? Is it the "I think" which as "an act of spontaneity, can not possibly be due to sense",¹ and "which because of its spontaneous activity, is the only thing to which we may possibly attribute noumenal reality?"² Is it the will which with Kant is the only absolutely good thing in the world and which is good because it wills to be good? These two, the "I think" and the will are identical, for to both he attributes the qualities of complete noumena. "This spontaneous activity, the 'I think' of the Critique of Pure Reason is
nothing else than the autonomous will (final reality) of the metaphysic of Morality and the later Critiques. And it is in the doctrine of the primacy of the will we meet the real Kant; with him the will stands for absolute values. Thus with Kant the realm of real things reaches beyond the world of material phenomena, into the richer world of psychical relationships.

Bergson.

We now come to Bergson, and find him teaching a system of philosophy which harmonizes with a spiritualistic program. In the first part it was found that Bergson introduced into his conception of reality a dynamic element which he called the vital impetus. At that time we were satisfied with the discovery of this single fact, but now we want to get his idea of this vitalistic quality which is so fundamental to life. So from a qualitative standpoint we shall probe deeper into his philosophy of reality to see if it is not of a psychical order.
In his *Creative Evolution* is met the belief that every moment brings something new into existence. "Reality appears as a ceaseless up-springing of something new, which has no sooner arisen to make the present than it has already fallen back into the past." Life is one continuous process of Becoming; it "is a tendency and the essence of a tendency is to develop in the form of a sheaf, creating by its very growth divergent directions among which its impetus is divided."

Fundamental in this process of development is the original impetus of life which passes from one generation of germs to another. This is the inner directing principle, the ultimately real factor that drives all things to an activity and not only carries life but is the essence of all life. This vital principle takes matter and shapes it. "Life had to enter thus into the habits of inert matter in order to draw it little by little, magnetized, as it were, to another track. The animate forms that first appeared were therefore of extreme simplicity. They were probably tiny masses of
scarcely differentiated protoplasm, outwardly resembling the amoeba observable today, but possessed of the tremendous internal push that was to raise them even to the highest forms of life. That in virtue of this push the first organisms sought to grow as much as possible, seems likely." But the matter with which the original impetus has to work is not a hard, cold substance. Characterized by a "tendency", an ascending movement, matter finds itself susceptible to the guiding, shaping influence of the vital impetus.

In trying to find an image that will give us an idea of this impetus Bergson has to leave the physical world and go to the psychical. Consciousness becomes for him the motive principle in all development. He says that "if our analysis is correct, it is consciousness or rather supra-consciousness that is at the origin of life." Consciousness then, which is real life, is the representation of that vital principle which pervades all things. We are told that there is a consciousness slumbering in instinct, which if finding ex-
pression through knowledge instead of action would reveal to us the deepest secrets of life. In his Creative Evolution we hear him say that "real duration is to be found in the realm of life and consciousness" and in his Introduction to Metaphysics he says that "real duration is of a psychical nature." Thus we are not surprised to hear him say that "in reality, life is of the psychological order, and it is of the essence of the psychical to enfold a confused plurality of interpenetrating forms." In summing up it can be said that "he sees as the mystic sees, that the Elan Vital is the energy of one Being which makes matter its means of manifestation, its vehicle, its tool. He sees that the process of Becoming is a spiritual process of ascension."\textsuperscript{10}

Corroboration of this interpretation of Bergson is found in the Preface to Carr's translation of Mind-Energy. After saying that Bergson went over the material very carefully with him in order to give the translation the same authority as the original French, Carr then says that "the separate articles here
collected and selected............are chosen by M. Bergson with the view of illustrating his concept that reality is fundamentally a spiritual activity.\textsuperscript{11}

Bucken and Royce

In Bucken and Royce we have two men who have strongly represented a philosophy of spiritualism, both of whose systems have a distinctly religious bent. Royce is convinced that true reality is spiritual in its nature and that the ultimate ground of things is an eternal, divine world-order. "From the constant interaction of minds he infers the existence of an eternal, divine being which is spiritual and eternal."\textsuperscript{12} Royce thinks "we have no right whatever to speak of really unconscious Nature, but only of uncommunicative Nature," and when we deal with Nature we "deal with a vast realm of finite consciousness of which our own is at once a part and an example."\textsuperscript{13}

Bucken looks within the thinking creature for the source of reality. "It is impossible to hide from ourselves that Nature, as we see
it, does not come to us from the outside as a ready made fact, but that it starts from our own thinking, and under the influence of our intellectual organization, takes on the shape in which it lies before us. He teaches a monism which is really an important process, deeper than and fundamental to both materialism and spiritualism. Bucken lifts his philosophy into the realm of life itself and life becomes "a transformation of reality into a whole endowed with soul." This resultant, vital process becomes the goal and reality of life, because in itself complete satisfaction and fullness are realized. In this real activity the revivifying, guiding, controlling element is the spiritual which enjoys perfection and completeness only as it masters matter.

So in all the systems which we have reviewed, the search for truth about reality takes us past things material and points with strong emphasis to the realm of the spiritual. And that something which Plato calls ideas, Leibnitz monads, Schopenhauer will, Bergson
the vital impetus and which we are calling energy is to be interpreted as a spiritual force.
2. Latta, Leibnitz: the Monadology, p. 256.
3. Lewes, Aristotle, p. 231.
5. Schreiber, Kant's Theory of the Primacy of the Will, p. 28.
   (Italics are mine.)
14. Eucken, The Life of the Spirit, p. 188.
   (Translation by Pogson.)
CHAPTER III

The Spiritual Interpretation - Concluded

In the foregoing chapters we concluded that reality is energy and then further set forth the hypothesis that the ultimate quality of energy is spiritual. We saw spiritualism able to make a definite contribution toward a better understanding of such significant problems as creative activity, vitalism, teleology, and evolution; and also found in the history of thought strong support for the spiritualistic interpretation. But before drawing our final conclusions let us look at our problem a little further.

Our work here in dealing with the qualitative aspects of energy, which we are calling reality, cannot be taken into the laboratory and handled as an ordinary scientific problem. We must search for facts in systems of thought and test these beliefs by their practical consequences, judging not by laws, principles, etc. but by fruits. We have done this in a general way in the case of such facts as creation, vitalism, teleology, and
evolution. In this chapter we shall apply the attitude of representative modern thought to our hypothesis, and approaching our task wholly from this angle, try to see first, if psychical energy is a fact; second, if it is universal and the only reality, and then finally suggest a theory of reality on the basis of organized units of psychical energy. If modern thought, consciously or unconsciously, declares itself in favor of our hypothesis it is because the belief in psychical reality has stood the test; and if the converging lines of testimony in its favor are sufficient, then it should be regarded as true. Our immediate task will be to see if a belief in the existence of psychical reality, from the standpoint of modern thought, is justifiable, and then later treat its universality.

de Tunzelmann

De Tunzelmann feels that this hypothesis is the only alternative. He says that "schemes have been propounded with a view of accounting for the
established order of Nature without the assumption of a primal intelligence .... no scheme of the kind has ever been presented which would appear even superficially plausible to any but untrained minds .... In the present state of scientific knowledge we are justified in maintaining that the possibility of such a scheme is unthinkable .... I propose to introduce the concept of an all-pervading universal mind or omnipresent intelligence forming an entity even more fundamental than the all-pervading ether".¹

Bergson

In Bergson's philosophy there is a graded intelligence which reaches below the animal kingdom. This reminds us somewhat of Leibnitz' "confused perception" which is met in the lowest types of being. Bergson says: "The more the nervous system develops .... the clearer is the consciousness .... the lower we descend in the animal series the more the nervous centers are simplified, till finally the nervous elements disappear, merged in the mass of a less
differentiated organism. But it is the same with all the other apparatus, with all the other anatomical elements; and it would be as absurd to refuse consciousness to an animal because it has no brain as to declare it incapable of nourishing itself because it has no stomach .... This amounts to saying that the humblest organism is conscious in proportion to its power to move freely. We should define the animal by sensibility and awakened consciousness, the vegetable by consciousness asleep and insensitivity". 2 This together with the more elaborate treatment of Bergson's philosophy in the chapter on the history of thought leaves no uncertainty as to his belief in psychical being.

Pragmatism

A similar attitude is met in modern pragmatism. In this philosophical system "creative intelligence" is championed - a pragmatic theory of intelligence. It is an intelligence that "frees action from an instrumental character", that "frees experience from routine and caprice"; an
intelligence that liberates and liberalizes action; an intelligence that is "inherently forward looking", which can forecast future possibilities and can help toward the good. "A pragmatic intelligence is a creative intelligence, not a routine mechanic".3

In this system the problem of reality is not treated and hence there is no attempted explanation of this creative, evolutionary power. But since it has the faculty of discerning the future and distinguishing between the desirable and undesirable it must be interpreted as having a psychical, spiritual nature.4

Perry

In Perry, an able member of the new realistic group, there is evidence of a belief in the presence of psychical reality. He says that "as a potentiality without assignable limits it (matter) may be as reasonably endowed with intellectual force as with physical force".5 Then again, he says "if it is impossible to construe the world in terms of thought or in terms of moral life, there yet remains a
further conception, complete enough to embrace these and every other possible value - the conception of a universal spiritual life (geistiges Leben) that shall be infinitely various and infinitely rich".6

Idealists

What need be said concerning the presence of a spiritual reality in the recent systems of philosophy represented by Bowne,7 Royce,7 Ward,7 Richardson,7 Aliotta,7 Howison,7 etc. To take away belief in a spiritual agency would be taking the heart out of these philosophies. And would it not be difficult to find a modern system of thought in which psychical reality does not loom up, consciously or unconsciously, as a significant fact?

Here we have proposed to us all kinds of panpsychisms, pantheisms, pancausalms, etc., and hence all the phenomenalistic theories of matter. A psychic quality in all Nature, however, can hardly be said to be complete panpsychism. These theories simply represent a psychical principle
running through all things. Ever and anon we meet such beliefs which are looked upon as panpsychic. In them there is usually the tendency to interpret body as phenomenal, thus involving us in an epistemological discussion which need not becloud the issue. Etymologically speaking, panpsychism is that theory which ascribes a psychical nature to the whole of being, and should be equivalent to spiritualistic monism. And in our endeavor to show, from the standpoint of scientific attitude, that there is a psychical energy in all Nature, it is imperative that we keep in mind that this is not our ultimate objective; although dealt with in detail it is but a sub-station along the way. As we proceed it will be seen that we are advocating that genuine panpsychism which says all reality is psychical or spiritual.

The Universality of Psychical Reality

The criticism may possibly be made here that the converging lines of testimony which have been offered to show the presence of a psychical, spiritual reality, in this chapter and elsewhere,
have to do primarily with the higher forms of being in the organic world. But it is the belief of many students that the law of analogy can be brought into play in this case, and what is true of life in the organic world will hold good for all forms of being; and as the so-called physical has been found to be, seemingly, a medium through which the psychical finds expression, it is reasonable to believe that this principle prevails in all Nature, holding good even throughout the inorganic world.

The attitude represented in the preceding paragraph has the strong backing of science. The law of continuity pertains not only to certain types but reaches from the lowest to the highest forms of being, and no one can safely attempt to annul this law by postulating a line of demarcation between the inorganic and the organic worlds.

Clifford is very definite in his support of this attitude. He says that "as we go back along the line, the complexity of the organism and its nerve-action insensibly diminishes; and for the first part of our course we see reason to think that the complexity of conscious-
ness insensibly diminishes also. But if we make a jump, say to the tunicate molluscs, we see no reason there to infer the existence of consciousness at all. Yet not only is it impossible to point out a place where any sudden break takes place, but it is contrary to all the natural training of our minds to suppose a breach of continuity so great .... But as the line of ascent is unbroken, and must end at last in inorganic matter, we have no choice but to admit that every motion of matter is simultaneous with some ejective fact or event which might be part of a consciousness".  

De Tunzelmann also would give a place to the psychical element not only in animal life but in all Nature as well. He says "there is no way of evading the conclusion that a determining cause must be sought for beyond the molecular scheme. There is one and only one such course known to us - our own will or mind; and the fundamental principles of scientific investigation lead us therefore to seek in the extension of mind for the determination of the molecular scheme, and further, of the whole order of Nature. We find
that the mental scheme, introduced simply as a working hypothesis, proves satisfactory at every point where the molecular scheme is found to be insufficient, and the attempt to ignore it in the development of any scheme attempting to account for the order of Nature, will invariably be found to necessitate its introduction in some disguised and unscientific manner, which very commonly takes the form of personifying natural law, one of the worst of pseudo-scientific absurdities. 9

Royce very earnestly argues against setting the lower types of being off to themselves and denying to them psychical activities. He says the doctrine of evolution helps to bridge the gulf between the two extremes in Nature - mind and matter. "Between what seems to us, from our ordinary social point of view the highest of accessible mental life, and what we take to be the manifestations of lifeless matter, there is, in the process of mental evolution apparently no breach of continuity anywhere .... it is precisely this apparent continuity which is the most impressive of all the inductions that the study of evolution has
lately forced upon the attention of all who have taken Nature at all seriously".\textsuperscript{10} "When we see inorganic Nature seemingly dead, there is, in fact, conscious life just as surely as there is any Being present in Nature at all".\textsuperscript{11}

The same elements are represented in minerals, plants, and animals; they are simply organized differently. Minerals get their subsistence by feeding on materials about them in just as real a sense as the highest developed forms of life, only the method is more crude. There is a general process of feeding going on all the time. It is a very fundamental fact in agriculture that the soil gets its nourishment from plants, animals, etc. Plants depend for nourishment on the air, moisture, and soil. Animals in turn feed on plants and other animals. Most plants, however, "feed at a lower chemical level than do animals". "It has been recognized that the beech-tree feeds and grows, digests and breathes, as really as does the squirrel on its branches; that in regard to none of the main functions (except excretion, which plants have little of) is there any essential difference".\textsuperscript{12}
In science illustrations of analogy are not wanting which show that the same deep principles which prevail in the organic world are found in the inorganic as well. We see this analogy in the fact that if a block of any one of the thousand minerals known to science, quartz for instance, were broken into myriads of pieces, every particle would be found to be a perfect crystal, just the same as the original, which suggests a similarity to the fact that if a starfish were torn into shreds, every piece would regenerate itself and form a starfish again. If we were to take this same piece of quartz and put it into running water it would become sand-grains. If then these sand-grains were put in the proper environment where they would have access to food, they would regenerate themselves and go back to crystal forms.

Science discusses this whole question as the tendency of all things, inorganic as well as organic, to adjust themselves to their environment, the only difference between the two being that the inorganic is slower than the organic in this respect. In concluding a lecture on
evolution in general and life in particular Kay says "there is then a continuity in the development of the earth, and the inorganic world is just as wonderful as the organic". If scientific thinkers of this attitude are correct, and we have no reason to disbelieve their findings, then even in the inorganic world there is not teleology, and immanent teleology is difficult to conceive apart from a psychical activity.

So it is evident that in science and philosophy there is strong opposition to the idea of separating the inorganic from the organic world; it is just like trying to divide the bud from the blossom. If evolution is right in teaching that higher forms come from the lower, that the organic has evolved from the inorganic level, then the inorganic world has always held wrapped up within itself the potentialities of higher developed life, and even today must have in itself possibilities yet to be unfolded. The only difference between the two is that in the organic we have a higher development or organization of energy units. Thus it seems reasonable
to believe that what holds good for the organic world, holds good for every form of being; if psychical energy is dominant in one type, it is dominant in all.

Psychical Energy as the Only Reality

The dualist, however, might suggest the possibility of spirit being the directing element and matter the thing directed, without making spirit the only reality. But the materialist and dualist, in clinging to matter as a final reality will have a difficult task in endeavoring to harmonize their philosophy with the modern belief in the energy concept, for the conception of matter as a static, fixed substance will not stand in the face of progress made by science in recent time. Modern thought points the other way. "It is the discovery of living processes of incessant adjustment and adaptation, rather than of sequences purely mathematical and mechanical, which has in recent years been the source of philosophical reaction". And this attitude is endorsed by Woodbridge who says "this is the one valuable and significant thing in modern philosophy".
So the question arises at this time as to what that something is, which has been designated as physical or material and which seems to be the means by which the psychical achieves its ends. As the psychical is understood to unfold itself in every part of the organism, it makes us wonder whether the old hypothesis of mind and matter is not wrong after all. The relationship between mind and body seems too smooth, too perfect for two different entities to be rubbing up against each other. Facts point to the existence of a single substance.

In Part I we showed the strong monistic tendency of scientific thought, culminating in the belief that reality is energy. Science today is inclined toward a monism, a monism of energy. It has been found that in the last analysis of things we come face to face with the electrons which are but charges of electricity, a form of energy. No such distinction is made as psychical and physical energy. All the electrons are the same no matter where found. The atoms differ only in the groupings of electrons constituting them.
If monism is correct, then, it would hardly be possible for everything to be material because modern thought, as has been shown in detail, believes in the presence and priority of psychical activities, of spirit. On the basis of a monism of energy it is perhaps reasonable to doubt whether there is such a thing as physical energy. In other words we now come to that place where it is fair to question the existence of genuine matter. But on the other hand it would seem inconsistent to question the reality of psychical energy; we have found facts pointing to a psychical energy at work and should feel kindly disposed toward a belief in its reality. We are therefore inclined to believe with Huxley that "Matter and Force are, as far as we know, mere names for certain forms of consciousness". "We find ourselves forced to interpret Nature .... as an orderly realm of genuine conscious life, one of whose products, expressions, and examples we find in the mind of man". This is equivalent to saying that the something which has been called body or matter and through which mind seems to find expression is also of a psychical nature. These things being
true, it is in a spiritualistic monism then that
Nature seemingly finds its correct classification.

Organized Psychical Energy as a Theory of Reality

Facts indicate that Leibnitz was working
on the right principle. He resolves everything
into monads, centers of psychical, spiritual
force. In the very lowest types of being we find
a group of monads clustering about a governing or
central monad. This group with other groups gather
about a still more important central soul; and so
on until we come to the highest type of being as
found in mind and represented by consciousness.
The monads surrounding the central monads or
souls are continually changing but the governing
souls never change. Here we have a world alive
with thought, ranging from the lowest, confused
perception, up to mind as consciousness.

The further we go into the study of
reality the more it seems that it is a program
something like that of Leibnitz which will stand
the test of time. Science finds that there are
central cells something like those to which
Leibnitz refers. "There is a popular fallacy in lay minds that the whole human body is replaced by fresh material in a period which by some whimsical fancy has been fixed at seven years. As a matter of fact some cells are formed, pass to maturity, and perish almost daily, while others last as long as the animal itself .... These master cells are to be found in the brain and other parts of the central nervous system, in arterial walls, and in mechanisms which control the heart".\textsuperscript{16} Starbuck says "the parts in the finer anatomy which are especially essential to mental activity are the cells for generating and storing nervous energy, and a rich network of nerve fibers with fatty wrappings for conducting the energy from one part of the brain to another".\textsuperscript{17}

Hence we are led to a new conception of the human body, seeing it as an intricate organization of psychical energy, in which can be found many minor groupings or systems of more or less importance. Probably in the lower organisms of the body we could find energy units of the simplest organization gathering about the most inferior cells, and in coming up through the
more complex systems connected with the more important cells, finally find the whole system culminating in the cells having to do with the brain.

This is not unlike Hughlings Jackson's theory of "levels" or Flechsig's "associated centers". With Jackson the lowest level heads up in the spinal cord, medulla and pons and has to do with the simplest activities of the body. The second level represents a higher organization of relationships; and the third, the highest, is supreme in heading up the entire nervous system and represents mind.

We have shown that science believes that the same principle of psychical activity is fundamental to all being, animate and inanimate; to all bodies, organic and inorganic. It seems reasonable then to accept that system which sees in all Nature a vast organization of psychical units of energy, which amounts to saying that energy operates as a spiritual force. According to this conception we meet in the lowest types of being the most inferior organizations of energy units, the units of every single body
clustering about a governing nucleus or cell. And as we come up through the series we meet the more complex groupings of energy units until finally in the consciousness of mind is met the highest degree of organization in all Nature.

Having come thus far it would seem consistent in this hypothesis to take another step and suggest a great Mind or Spirit, in which is realized absolute consciousness, dominating the world of spiritual energy. This over-belief being accepted, we should have a common meeting ground for scientific thought and those religious beliefs which represent the deeper intimations of humanity. Here then the religious devotee would be led to speak in terms of energetic Spirit instead of an absentee God, and the scientist in terms of spiritual energy rather than materialism and mechanism.
1. de Tunzelmann, The Electrical Theory and Problem of the Universe, p. 454
2. Creative Evolution, pp. 110-112
3. Dewey, Creative Intelligence, pp. 63-66
5. Perry, Present Philosophical Tendencies, p. 69
6. Perry, Present Philosophical Tendencies, p. 153
7. Bowne, Personalism; Royce, The World and the Individual; Ward, Naturalism and Agnosticism; Richardson, Spiritual Pluralism and Recent Philosophy; Aliotta, The Idealistic Reaction Against Science; Newson, The Limits of Evolution.
8. Clifford, Lectures and Essays, pp. 283-284
9. de Tunzelmann, p. 461
11. Ibid, p. 240
12. Evolution, Thomson and Geddes, p. 76
13. Adams, Idealism and the Modern Age, p. 96
15. Royce, World and Individual, p. 242
17. Starbuck, The Psychology of Religion, pp. 149-150
Bibliography

The Electron by Robert Andrews Millikan
The University of Chicago Press, Chicago, 1917

The Origin and Evolution of Life by Henry Fairfield Osborn
Charles Scribner's Sons, New York City, 1917

The Causes and Course of Organic Evolution by John Muirhead Macfarlane
The Macmillan Co., New York City, 1918

Matter and Energy by Frederick Soddy
Henry Holt and Company, New York City, 1912

Plant Response by J. C. Bose
Longmans, Green, and Co., New York City, 1906

Man - An Adaptive Mechanism by George W. Crile
The Macmillan Company, New York City, 1916

Evolution by Thompson and Geddes
Henry Holt and Company, New York City, 1917

A Treatise on the Electrical Theory and the Problem of the Universe
by George William de Tunzelmann
C. Griffin and Company, London, 1910

Creative Evolution by Bergson
Translation by Arthur Mitchell
Henry Holt and Company, New York City, 1911

Bodily Changes in Pain, Hunger, Fear and Rage by Walter B. Cannon
D. Appleton and Company, New York City, 1915

Mind - Energy by Bergson
Translation by H. W. Carr
H. H. Holt and Company, New York City, 1920

Present Conflict of Ideals by Ralph Barton Perry
Longmans, Green & Co., New York City, 1918

The Riddle of the Universe by Haeckel
Translation by Joseph McCabe
Harper & Brothers, New York City

The World and the Individual by Josiah Royce
The Macmillan Company, New York City, 1901

The New Rationalism by Edward Gleason Spaulding
Henry Holt and Company, New York City, 1918
The World as Will and Idea by Schopenhauer
Translation by R. B. Haldane & J. Kemp
K. Paul, Trench, Trubner and Co., London, 1887

Human and Animal Psychology by Wilhelm Wundt
Translation by Creighton & Titchener
Macmillan and Co. New York City, 1894

Social Psychology by William McDougall
John W. Luce & Co., Boston, 1914

Body and Mind by William McDougall
Macmillan & Company, New York City, 1911

Fundamentals of Psychology by Walter Powers Pillsbury
The Macmillan Company, New York City, 1916

The Principles of Psychology by William James
Henry Holt and Company, New York City, 1899

The Spiritual Message of Dante by William Boyd Carpenter
Williams & Norgate, London, 1914

The Philosophy of Kant Explained, by John Watson
James Maclehose and Sons, 1908

The First Philosophers of Greece by Arthur Fairbanks
Kegan Paul, Trench, Trubner and Co., London, 1898

Phenomenology of Mind by Hegel
Translation by J. B. Baillie
The Macmillan Company, New York City, 1910

The Metaphysics of Aristotle,
Translation by John H. M'Mahon
Henry G. Bohn, London

Leibnitz - The Monadology,
Translation by Robert Latta
Clarendon Press, Oxford, 1898

De Rerum Natura by Lucretius
Translation by W. A. J. Munro
George Bell and Sons, London, 1910

Heracleitus of Ephesus On Nature by G. T. W. Patrick
H. Murray, Baltimore, 1889

The Dialogues of Plato, Translation by S. Jowett
Oxford University Press, American Branch, New York City
From Religion to Philosophy by Francis Macdonald Cornford
Longmans, Green and Co., New York City, 1912

Present Philosophical Tendencies, Ralph Barton Perry
Longmans, Green and Co., New York City, 1916

Early Greek Philosophy by John Burnet
Adam and Charles Black, London, 1908

History of Materialism by Frederick Albert Lange
Translation by Ernest Chester Thomas

The Philosophy of the Present in Germany by Oswald Kulpe
Translation by W. L. and G. T. W. Patrick
George Allen and Company, London, 1913

History of Modern Philosophy by Harold Hoffding
Translation by B. E. Meyer
Macmillan and Co., New York City, 1900

A History of Philosophy by Johann Eduard Erdmann
Translation by Williston S. Hough
Macmillan and Co., New York City, 1890