

IS THERE A PHILOSOPHY OF EVOLUTION?*

(*First Paper.*)

I have no sympathy with those who complain because philosophy is forever unfinished and is always beginning its work afresh. In the eternal youth of human problems lies the assurance that we are in the great world of the Spirit, whose life only an eternity can fulfil, and whose concerns no human reflection can exhaust. To be sure, this eternal youth of philosophy never develops healthily in any generation of men, unless they look backward upon the history of preceding generations; and no fresh beginning is worth making, unless the ages have fertilized the forest soil where the new saplings are to grow. But the endlessly unfinished task of philosophy is still justified in its very incompleteness by the fact that philosophy itself is, after all, only an effort towards a passionless and yet truthful comprehension of the deepest passions of humanity; namely, of the passion for knowing the things that are in the world, and of the passion for serving the worthiest ideals.

These passions, which philosophy analyzes and reflectively criticises, are not dead things, but living interests. They grow with man. Their issues vary endlessly from age to age, amplify and complicate themselves as life expands,

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begin afresh where they had once ended, and so furnish an unceasingly altered world, wherein the philosopher has to find his way. He seeks (for so he says) eternal truth; but the truth *as* he seeks it is human truth,—God's ways seen in the flying mists of men's thoughts. His instantaneous photographs of human passion have, indeed, a fixed and unalterable appearance about them. The most transient desire or hope of his age, fixed by the technical devices of his system, pretends to be something demonstrable and unalterable; and, because this particular shadow of passion, this one attribute of mankind, is not found in some other and later system, whose photograph is equally the product of the moment, critics declare that no two philosophers see the same truth in the world, and that all these expressions of humanity are alike worthless. In fact, however, if it is worth while to live, it is worth while to reflect upon life; and philosophy, which is merely the most thorough-going reflection possible upon the presuppositions of human thought and passion, exhibits, in the variety of its doctrines, only the wealth of the life-treasures of humanity, not, as some have supposed, the poverty of the reflective skill of the philosophers.

I will not make too much of an imperfect parallel; but, suppose (since, after all, artistic and philosophical reflection upon life are not absolutely opposed to each other) that poets were accused of cultivating a vain art, merely because not one of them had yet written the whole secret of man's heart in one final lyric: would not such an accusation resemble the fashion of those who scorn philosophy because the human spirit has not yet finally unlocked its heart with the key of any one philosophical system? Nay: in each truly philosophical age, the great thinker, who is master of his passing world, *does* unlock this heart, and become possessed of many of its choicest treasures. But in the times between, when passion lives intensely, and the heart is darkened from reflection by the serious toils and travail of life, humanity stores new treasures of experience in the mysterious hoarding-places; and, when a reflective age

comes again, the house is still there, but that which is within it has been altered. Hence each constructive period gives us its own philosophy. The work is indeed endless, but it is not therefore in vain.

Our own time, one of peculiar energy and of considerable reflection, seems to me to stand in the presence of philosophical problems which, without being altogether novel, have assumed unexpected and even highly surprising forms. I feel myself wholly unable to set forth these problems, either exhaustively or worthily, in any brief space; but the opportunity which this paper affords me must not be allowed to pass without an effort to suggest what seems to me to be the shape assumed in our day by the most fundamental of philosophical problems,—that of the ultimate nature of Reality. To this end, let me introduce my discussion by a brief historical sketch, which may seem to most of you a tedious, because a far too familiar, preliminary, but which I shall find useful, I fancy, in trying to make clear my views in the concluding division of my paper.

I. NATURAL LAW: THE MECHANICAL VIEW.

Modern Philosophy, as it began in the Seventeenth Century, worked under the influence of the presuppositions of a time when success meant despotic mastery, and when tradition was of less importance to the nations than were intellectual skill and physical force. The Seventeenth Century had forsaken Mediævalism, and had not yet invented the ideals of national unity or of popular government. Men asked, "Who is our master?" In the Middle Ages, such questions had answered themselves. The emperor is our master, or the pope or the feudal lord: so people had said according as time and land had determined. But now the question was more doubtful; and yet the people could not say, as in our time they have learned to say, "We, the nation, under our chosen King or Parliament,—we are the masters," since men were looking up to that master whom external fortune preferred. The master, then, was the tri-

umphant Protector, or the king by right divine, or the successful conqueror; in short, he was the despot, the Leviathan, the man on whose side were by chance the strongest battalions. Armies were often constituted of mercenaries. War was an affair rather of money and ambition than of national passion. People hated the soldier as an alien, even when he fought under their own flag. A king might have to conquer his own land as if it were another's. A conqueror annexed a province as he would have appropriated a treasure, not because he thereby built up a national unity, but because he thus increased the sum total of his revenues. Political affairs were too often divorced from national feeling. In Germany, the battle-ground of Europe, national feeling was indeed for generations almost extinguished by the physical forces beneath which this age of despots buried a suffering people.

The philosophy of this age is usually and wrongly characterized, by those who undertake to describe it, as a philosophy whose principle was Self-consciousness. Too much, I think, has been made in just this connection of the Cartesian "COGITO, ERGO SUM." That was a weighty saying; but one may complain of its development in the Cartesian system, much as Socrates in the *Phædo* complains of the abortive teleology of Anaxagoras. "I read in Anaxagoras," says, in effect, Socrates, "that the *Nous* causes all things. Herein I rejoiced. But I read further, and found that, when he came to speak of man, he explained him by describing his bones and sinews, which are surely not the *Nous*." Even so Des Cartes appeals to self-consciousness as the norm of truth. But ere long he begins on his physics; and we find that now he has altogether given the go-by to self-consciousness, which has no more to say in a world where all is voiceless and geometrically unreal.

In Spinoza, Self-consciousness not only has no voice, but clearly sees why it has no business to break the everlasting silence. At the outset of the search for truth, it indeed eloquently longs, as at the beginning of Spinoza's *Tractate on the Improvement of the Understanding*, for rest and self-

realization. Erelong, however, it discovers that truth must not be reflected upon, but must be merely seen and accepted. At this Self-consciousness takes its solemn resolve, "From this time forth I never will speak more"; and, in fact, no torture ever opens its lips thenceforth until its mystic euthanasia in the Fifth Part of the *Ethics*.

Self-consciousness, then, was *not* the principle of the new philosophy, any more than freedom was the guiding angel of the atrocious Thirty Years' War, or any more than democracy in the modern sense was the creator of Cromwell, or any more than patriotism or a true national consciousness found expression in the wars of Louis XIV. The principle of the new philosophy was one of dictatorship, of despotism, of absolute mastery. To be sure, just as Europe no longer went on crusades, or gave true allegiance to the Emperor, Cæsar's successor, so modern philosophy was no longer the handmaid of theology. But when the traditional master gives place to the Leviathan, when you behead Charles I. and find in his place Cromwell, when you forsake the Holy Roman Empire and submit to Louis XIV., you are not any freer for the change. On the contrary, the freedom of tradition is gone; you are in bondage to the last chieftain who has found the way to make war nourish war, and who has sacked your city. So, too, in philosophy you may be free from the scholastic forms of disputation, but the geometrical method, with its armed array of hungry propositions, devours all the interests of your life that chance to oppose its leading axioms and definitions. Is it a Hobbes who conquers your citadel? Lo! his system has chained every impulse of your heart. You are a hopelessly selfish creature; a member of a race that, save for its possession of reason, is worse than the wild beasts; a race whose natural state is an inconceivably horrible warfare. Is it some Cartesian occasionalist whose principles have bound you? Well, then, animals are unconscious automata; and, as for you, you have no part in raising your own arm. God's miraculous power interferes in every one of your acts, and your daily life is clearly and distinctly shown to be a mys-

tery more perplexing than the doctrine of Transubstantiation. Such is the fortune of philosophic warfare. You may be disheartened, but you must submit.

The first significance, then, of this initial age of modern philosophy lies in its development of the conception of merciless philosophical demonstration on the basis of assumed principles. The model of philosophy was that very method of coercion which characterized the political life of the time. As the *de facto* Ruler called God to witness that heaven was on his side, and that all good men were bound to submit to his will, so the *de facto* Principle in a system of philosophy assumed a divine right to rule with absolute and unsparing consistency in every region of human life. But I hasten to add that a second significant feature of this age related to something much deeper than the form of the philosophic system as such. Deeper than the outward show of despotism in the political world was that longing for an absolute solution of the problems of confessional and political sovereignty, which led people thus to serve arbitrary leaders in the hope of finding at last the strongest leader, and so of accomplishing a final conquest of all pretenders and heretics. Even so in philosophy, the pretentious geometrical method which in Spinoza's *Ethics* so often wearies us with its mere simulation of necessity, and which so often gives us empirical generalizations under the guise of rational demonstrations, is, after all, only an effort to express, even in the external shape of the system itself, a profound belief that the true world is absolutely fixed, necessary, motionless, eternal. Absolutism in the form is only the phenomenal manifestation of a faith in an absolutism of the content. Government *ought* to crush, *will* crush, all heresy and treason. There is only one ideal state. If we but conquer the provinces long enough, extinguish the enemies vigorously enough, we shall some day reach the ideal, and Europe will be organized. Even so, the truth about the world is that it is one objective system, complete, everlasting, necessary. Only try long enough, with your geometrical method, and you will at last come to rest in the contemplation of this world of Law.

Yes, LAW, that fundamental conception of the Philosophy of Nature, first assumed its modern shape in the philosophy of the Seventeenth Century. The growth of science since Galileo gave the empirical basis for the new notion. The ancient synthetic geometry had known what law meant as applied to space. The nature, that is, the one simple law of the structure of a geometrical figure, could be developed by the addition of auxiliary constructions in such a way as to exhibit, in necessary and orderly sequence, a vast number of apparently diverse and disconnected properties of the figure. Even so, for the Galilean method of induction, the law of nature was to express, in the form of a simple principle, many empirical facts. At the outset of science, nothing was sure to the investigator but that nature was the expression of principles. These principles appeared in the doctrine first as hypotheses. Deduction developed the consequences they ought to have if they were true, and experiment verified these consequences by the study of facts.

The Columbus's egg of Galileo's method lay in his discovery of a plan by which the necessity of geometry could be applied to the examination of natural facts. In earlier speculations, either the principles assumed had been vague, mystical suggestions, or the investigators had been obliged to collect facts without being able to discover more than the most insignificant principles. In the age preceding the development of modern science, such theories as the doctrine of signatures in medicine show us what was necessary, so long as principles unapplied to facts were the only resource of speculative science; while, on the other hand, rough, imperfect observations, which could be of value only to the artist or to the artisan, constituted the whole of growing empirical science. It was Galileo's discovery that, if principles were stated on the basis of suggestions already given by the facts of nature, if they were stated with the exactness of which the Euclidean theorems were already the model, and if the geometrical method were applied to deduce such consequences from these principles as could be tested by experience, then, and then only, natural science could assume

a form at once well founded in facts and rational in its expression. The success of Galileo in elementary mechanics first showed men what the possibilities of science were; and very rapidly the speculative thinkers of the Seventeenth Century seized on the suggestions of the new method. A sort of romantic delight in mathematical necessity characterized the whole thought at the time. "We have wandered so long in mysticism without knowing how to question nature, we have revered so long the rigidity of geometrical science without being able to imitate its clearness! Now at last," men said, "we have found the royal road to truth. A nature whose laws the Galilean method can investigate must be a nature where necessity is universal. Surely, the distinction, then, between science and mysticism lies in the fact that science is geometrical in its form and verified in its content, whereas mysticism is inexact in its form and unverifiable in its assertions."

The high hopes aroused by the early successes of elementary physical science rather grew than faded as the century advanced. The most picturesque triumphs of the modern intellect belong, in fact, to the period from Galileo to Newton. Never again will it be possible for human thought to seem at one stroke to conquer the heavens, as the Newtonian method did; and, although the great philosophers of the Seventeenth Century did not live to learn the scope of the Newtonian science, they were already able to anticipate that some such triumph was near. They were not slow to follow the model of the special investigators in forming their own philosophical systems. And so the conception to which the Seventeenth Century leads us is the conception of a world where an infinite number of facts are bound together as cases of simple principles, in such wise that if the principles are once discovered, through patient induction or skilful ingenuity, the most unsuspected connections between remote facts of nature may be expected to result, and the most minute data of experience may become explicable.

I think that in estimating the work of the Seventeenth

Century sufficient stress is not laid, in most historical studies of modern philosophy, upon the transformation thus given to the conception of natural causation. Modern discussion upon the nature of causation (especially in Great Britain and in our own country) treats the problem as if the idea of cause had not developed since the time of Plato. For instance, we have the old inquiry as to the nature of the efficient causation exemplified in human will, too often treated by philosophers as if it were the only question about causation. This inquiry, however, bears upon only one-half of the real problem. We find in so recent a writer as Dr. Martineau a disposition to ignore that side of the concept of natural causation in which this concept appears as satisfying the human desire for a simple *explanation* of the complex facts of the world in terms of unity. The Seventeenth Century, as most know, ignored efficient causation; or else, as in the case of Des Cartes, admitted the existence of efficient causation in the one case of human free will, but did so for theological rather than for genuinely philosophical reasons. Yet *why* the Seventeenth Century ignored efficient causation,—*why* for Spinoza necessity, and not freedom, seemed the only rational account of even the most passionate human life,—this question is seldom answered. The reason is not far to seek. The Seventeenth Century, as the age of absolutism in philosophy, knew only of sovereign principles; and the sovereign principle that was then in the air was the principle of a new mechanical science, which asked, concerning facts, "Of what law are they cases? what formula expresses their content?" and *not*, "How are they related to human will?" To interpret the world in terms of ideals was not the mission of this age; and every view of causation that dwells on ideal efficiency as its only fundamental characteristic ignores one-sidedly that whole conception of reality which we owe to the Seventeenth Century. It is true that the conception of causality which defines it in terms of that ideal efficiency which we seem to see expressed in the human volition is by no means worthless or unphilosophical. In fact, it is precisely the relationship

between these two views of causation that to my mind constitutes the fundamental issue of recent philosophy. But it is without profit that we study the history of philosophy, if we are unwilling to take a one-sided age, with all the defects of its qualities, and to comprehend, in order that we may transcend.

The idea of all-pervading law thus developed did not rest during the Eighteenth Century: it was the principle of the growth of the whole of modern physical science. But, to be sure, reasons which we shall soon further consider led the philosophers of the latter half of the eighteenth century to ignore in great part the later stages of the growth of this fundamental concept. For, by the middle of the eighteenth century, philosophy was no longer under the spell of the geometrical method, and it was no longer interested in reflecting solely upon the ideas of rigid scientific investigation. Absolutism had given place to skepticism. But meanwhile, in the scientific world, the conception of universal law grew, until it received that classic expression in Laplace's *Essay on Probabilities* which has in recent times so often been cited. I call this expression "classic," because, in all its one-sidedness, it has precisely the perfection which it is the privilege of a partial view of reality to attain. Every one has read the brilliant restatement of Laplace's view in the famous address of Du Bois-Reymond. Here you have a world-picture in which, indeed, there is no room for an ideally effective element, but in which the demand for explanation of all that is rationally and finally explicable is supposed to be fully met. There is no longer speech of an efficient causation: the facts of the world are cases of a universal formula. He who knew all things would know all these facts in their unity, and, having this unity, would have all things. The moments of the world would be to his mind only states of a continuously varying function. At each instant, the facts of nature express what happens in the formula, if you substitute some value of the time-variable t . A world of constant elements, of continuous variations, and of fixed

laws governing these variations, expresses all the wealth of the infinite life. There is no question of whence or whither. At each moment, the tale is complete.

“Of earth’s first clay they did the last man knead,
And in the morning of creation wrote
What the last day of reckoning shall read.”

In this suggestion of Laplace one finds the expression of a theory for which even Spinoza had known no sufficient words. The Laplacean World-formula is, after all, simply what the Spinozistic Substance aims to be. Spinoza’s God is, in intent, an incorporated world-formula, the objective unity of Law, wherein infinite things find their expression. This unity is complete, and predetermines all from the essence of its nature, just as the essence of a triangle determines absolutely even the least of the properties of the figure. Spinoza thus struggles frequently for a clear and simple statement of what Laplace, with the aid of mechanics, easily sets before us; and I can conceive Spinoza following with delight the growth of the conception of the unity of nature through the mathematical writers from Newton to Laplace. I could even fancy him finding still further satisfaction in seeing a similar theory applied by Fourier to the facts of the theory of heat, and in our own time, by a company of brilliant investigators, to the facts of the conservation of energy. It is the fortune of great conceptions that they wait long for a complete expression, and are the prophecy in the growing age of what less original periods develop with more rigidity and greater clearness, though frequently with less genius.

In fact, the Spinozistic system of the universe could never have been stated with its maximum of clearness by any thinker who lived before the modern development of physical science. This is the significance of Spinoza,—that he longed for that of which the conservation of energy is a partial but vastly imposing empirical fulfilment. And, when I say this of Spinoza, I do not attribute to him any supernatural prescience. I only say that the presupposi-

tion of his system,—the substantial, objective, mathematically perfect unity of nature,—as on the one hand it was founded upon the model of the Galilean physical science, so on the other hand received a fuller expression in the recent outcome of the same physical investigation.

II. EVOLUTION: THE HISTORICAL VIEW.

But now, having thus characterized the first great age of modern philosophy, I must for the moment skip altogether any mention of the great development from Hume to Hegel, and point out forthwith the remarkable contrast between the spirit of the Seventeenth Century and the spirit which has developed in Europe during the present century.

If Spinoza were alive to-day, with one portion of our modern science he would be not only at peace, but delighted; and what that portion is I have just indicated. In so far as we have discovered necessity and eternity in the world, and have realized this eternal necessity in the form of empirical laws, he would observe only an expected verification of his systematic presupposition; and he would rejoice to find the Divine Substance expressing itself so easily in sensuous forms. But with another element of our modern investigations Spinoza would be much puzzled. I refer in particular to the modern notions of EVOLUTION. If there is anything at which the Seventeenth Century philosopher would be surprised, it would be to find the people of this time investigating the past history of the universe. History was once for all disposed of in the Seventeenth Century. Of the world's history one knew very little, and cared still less. Creation was probably a myth. The social compact, on which so many political theories were founded, was little better than a myth. It served the purpose of a convenient construction for social institutions, similar to the mathematical construction of the ellipse and parabola as sections of a cone; but historically it had no significance. Even Hobbes or Locke might be found ready enough to admit that no definite moment could be mentioned in the past, when the "social compact" actually first took place. As for the

more recent history of humanity, the Middle Ages were lost, so men felt, in deserved darkness; and forgetfulness hid at once the bad Latin of unreadable scholastics and the decrees of insignificant popes and emperors. The new time had its own great issues, which were to be met by its own great political and military forces. The occult theories of the Renaissance period were also to be forgotten. The philosopher and the man of science worked for clear conceptions, for rigid demonstrations, for definite verifications, and for mathematical certainty. History concerned them not, except as a literary exercise, as the occasional amusement of an idle hour, or as a storehouse of moral reflections.

But now contrast this view of the world with the one to-day prevalent, when, as many men say, "the history of things is the explanation of the nature of things"; when, as many popular leaders assure us, "if Evolution is anything, it is everything"; when our first inquiry concerning any problematic fact of nature is, "What is its source?"

This view of the world stands in yet stronger contrast to the notions of the Seventeenth Century, when we reflect that it has given expression to itself in a pretended PHILOSOPHY, and when we perceive that the development of this view is contemporaneous with precisely that conception of physical necessity which has characterized modern physical science. Just at the very moment when the presuppositions of the Seventeenth Century have met, in the doctrine of Conservation of Energy, an unexpected realization of what were once their wildest hopes, a new view of nature, expressing itself in the so-called law of Evolution, has appeared in the world side by side with the doctrine of physical necessity; and those who uphold this theory of Evolution are curiously unconscious that *the world where history is the most significant of intellectual concerns is simply not to be reconciled with a world where there is no history, and where the world-formula has already expressed from eternity to eternity the transient facts of the flying moment.* I hold that in this appearance of the doctrine of Evolution, not merely in empirical science, but in philosophy, in this concept that the history of things

is a necessary part of their true comprehension, modern thought has reached, in a novel form, an ancient but profoundly important issue; and it is this issue which I regard as the Fundamental Problem of Recent Philosophy. The significance of the matter must, however, be made plain by a further analysis.

The difference between the Seventeenth and Nineteenth Centuries may first be expressed in general terms by saying that for quite a while our thinkers have been deeply interested in the history of things, whereas the thinkers of the Seventeenth Century simply felt no such interest. In other words, facts have become fascinating to us, which they ignored; and we have become acquainted with the existence of Evolution, not because we were so much more brilliant than our predecessors, but because we have been deeply concerned to discover the existence of Evolution.

This modern interest in the law of Evolution begins, in the first place, with the New Humanism of the last century; owes its origin, in fact, to Rousseau, whose sentimentalism, directing attention to human nature, forced upon men the examination of human life as life. From Rousseau to the Romantic School in Germany, in England, in France, there was a necessary progress,—a progress not unaffected by the intense life and the tremendous issues of the French Revolution. The year 1815 found the nations physically exhausted, and intellectually prepared for a fuller reflection on the problems of their life. As young people, after the first great experiences of passion, turn from the sorrows of life to an historical reflection upon their own destinies, and fall to writing diaries, so the new Europe, deeply concerned to comprehend its own heart, and deeply affected by the problems of the recent days, began to examine its own past, and to write the diary and the autobiography of humanity.

It is surprising how rapidly, after the period of the Napoleonic wars, one finds the historical movement growing throughout Europe. It not only concerned itself with political history, but seized upon law, institutions, literature,

language. Ere long it invaded the citadel of theology. In natural science itself it found an expression in the rapidly growing discoveries of geology. By the middle of the century the main interest of the world was historical. Darwin's work was only a culminating achievement, which bridged over in a measure the great chasm between geological and human annals. What triumph might not now be expected from the wonder-working historical method? If one can conceive the tremendous impression that would have been produced upon the public after the age of Newton by such a discovery as the Conservation of Energy, and if one compares with this the great indeed, but still relatively insignificant impression produced upon our time by that stupendous advance in physical knowledge, one sees indeed that our complex century had new concerns. This age was not merely destined to fulfil on the one side the highest hopes of the physical philosophers of the century of Spinoza and Newton, but it was also ordained to undertake new problems. The "Law of Evolution" has even displaced, in the popular imagination, the law of the Conservation of Energy itself, and appears as the great central doctrine, to which the doctrine of Conservation is only tributary. The aforesaid faith that the story of things is the only explanation of things has thus become almost an axiom of the popular mind.

If such is the general history of the doctrine of Evolution, the philosophical significance of this doctrine is not far to seek. Rigid mathematical explanation was the watchword of the Seventeenth Century; but Evolution, as such, is not, cannot be, a rigid mathematical explanation. For the content of things you can account in mathematical terms if you show how the positions, the velocities, the accelerations, present in one state of the system of bodies, must have given place in the lapse of time to just that new configuration of the system which constitutes the content to be explained. In Taylor's Theorem nothing truly historical about the function is comprehended when we see why a given value of $f(x)$ must give place to a fixed value of the same func-

tion of $x + h$. Even so, in the world-formula, no efficient causation determines why a given earlier state of the world passes over into a given later state; and for the same reason there is no true historical interest about this alteration. All these states are lost in the unity of a function; or, if found, receive their existence from that unity, have no significance save as cases of the unity. One cannot ask *why* this happens, or why that earlier gives place to this later. All such questions are made irrelevant by the absolute explanation which connects earlier and later by a rigid law of continuous variation. Evolution and the world-formula, therefore, are simply not coincident terms. In so far forth as the world needs to be expressed in historical terms, it is not the world of rigid natural law. It is precisely this aspect of reality which is lost sight of by those who hastily assume that the scientific doctrine of the transformation of species, and of the growth of the later world from earlier conditions, expresses forthwith a truth of which philosophy can make final use, without altering the postulates of the philosophy of the Seventeenth Century.

What science accepts, precisely that is the object of philosophical inquiry; and the facts of Evolution, as our historical age has determined them, raise for philosophy only a new problem. At the same time that the doctrine of Conservation of Energy would seem, from one point of view, to have verified in great measure the presuppositions of the Seventeenth Century, our age has discovered a mass of empirical facts which seem (as we nowadays interpret them) to go beyond mechanical necessity. And so the new issue for philosophy is: *What has Evolution to do in the world of the world-formula?* What relation can there be between facts expressible in terms of the geometrical method, and the facts whose explanation, such as it is, is their history? So palpable is the difficulty of discovering an historical element in the world of mathematically determinate laws that it seems to me most surprising to find the popular thinkers of our time entirely unaware of the incongruity between the mathematical view of nature, which they on the one hand readily and simple-mindedly accept, as the

legacy of the Seventeenth Century and as the outcome of physical science, and that doctrine of Evolution which expresses once for all an interest in things such as the Seventeenth Century could not have shared, and such as mechanical science could never have created.

In the world of the mechanical, historical conceptions indeed have a place, but only for the ignorant. The child, regarding the swinging pendulum, finds its behavior historical. He sees in it, if you will, an evolution or a regress, and rejoices in discovering that the pendulum now ascends, now descends, very much as Herbert Spencer observes in his *First Principles*, with a certain profound delight, that, in the world of the persistence of force, matter now "integrates," now "dissipates," while the physical processes are now those of "evolution," now those of "dissolution." But *if* all the facts are mechanical, *if* they are such as are capable of rigid statement in mathematical terms, no historical account of them has significance, except as an expression of our incomplete knowledge. There may indeed be historical sciences without number in the world of the world-formula, — for those, namely, who, not having the world-formula, are obliged to collect empirical data and to make of them what they can. For us, who cannot explain the stratification of the world's crust as we explain the motions of the planets, the earth's crust appears as a history. But it is for us a history, merely, because we do not understand the mechanical facts that here express themselves. If we understood the earth's stratification as we understand the eclipses, the historical element would vanish into the realm of the merely picturesque, precisely as the story of the eclipses forms no part of the facts set forth in a text-book of mathematical astronomy. The oncoming and the flying of the shadow are indeed interesting phenomena; and for the physical astronomer, whose facts are once more not yet mechanically explicable, the series of events in an eclipse may, as series, be significant. But for the mathematical astronomer all the motions of the planets are alike expressions of a universal formula. The historical interest of the events is

lost in their mathematical explanation. Just so with the crust of the earth. Were its formation something mechanically explicable in all respects, there would be no inductive and picturesque history of the earth's crust: there would be only mathematical explanation of why the earth's crust is as it is. And so, I repeat, the historical element exists in the world of mechanism only in so far forth as the world of mechanism is not understood. All this, to be sure, leaves an indefinitely great practical range for historical science. Empirically considered, the world-formula is infinitely remote from our definite comprehension, even if it should be universal and all-embracing. Therefore, there will remain, indeed, an indefinitely great scope for the historical investigation of the sequences of the world; and, as the child stands before the uncomprehended pendulum and rejoices in the story of its swinging, so we should stand in the dark world of physical complexity, and admire the sequences of events.

But now all this, while it gives us the indefinitely numerous group of historical sciences of an empirical sort, would still in no wise give us a PHILOSOPHY OF EVOLUTION.

It is one thing to say, "There are events in the world, such as the transformation of species, which, although they are mechanically necessary, have to be expressed by us in terms of historical sequence." It is quite another thing to say, "The history of the world is its explanation." And yet, if one declares that a philosophy of evolution is possible and necessary, he asserts precisely this. Instead of saying as he ought, "In a world of rigid mechanical necessity, history is not explanation, and we find the historical sciences important merely because we do not yet comprehend the mathematical necessity of the facts that they express,—instead of all this, the philosopher of Evolution insists upon it that the history of the world is in and for itself important; that not our ignorance, but our knowledge, is expressed in the discovery of Evolution; that Evolution is not an illusion of our partial view, but the essential truth of things; that the conceptions of struggle and conflict, of

the triumph of the good, or of the abolition of evil, of the moral importance of the world, of the transition from lower to higher conditions, are conceptions that express significant and ultimate facts of reality. Yet, surely, this *naïve* belief in the historical as nothing more, after all, than the mechanical — when joined, as it is, with this equally *naïve* insistence on the primary importance of the historical — forms an inconsistency in our modern thought which is distinctly a disgrace to the philosophical acuteness of our representative thinkers. The men of the Seventeenth Century said: “We do not know the ultimate laws of the world, but we know that there *are* ultimate laws; and, as all is necessary, therefore the historical is insignificant. Could we know the history of things, we should not care to learn it. Admit necessity, and for the philosopher all else becomes insignificant. The world of to-day is the world of eternity.” But the thinker of our time insists, on the one hand, that there is nothing but rigid mechanical necessity in the world, yet insists in the same breath that there is no knowledge so profound as the knowledge of the history of things. He unites in one book — yes, in one sentence very frequently — these two essentially opposing views of the world.

In all this statement, I am aware that I am running counter to current opinion; but let us observe the matter from yet another side. What is meant by the term *historically important event*? *It is an event whose significance lies not in its character as the case of a universal law, but whose importance lies in its place in the series of events; and this place in the series of events is for the historically important event itself no accident, and on the other hand no mathematically determinate truth, but simply a fact of ideal significance. That the world in which Hamlet is born, in which Hamlet is carried on Yorick's back, in which Hamlet loves Ophelia,—that this world, I say, at any stage explains mathematically, mechanically, the world in which Hamlet dies, is of positively no importance to the “History of Hamlet, Prince of Denmark.” The whole affair is a history, not in so far forth as the earlier stages exhaustively explain the*

matter, *not* in so far forth as the earlier pass over continuously into the latter, but in so far forth as the earlier stage has an ideal significance with reference to the latter. In case there is a game between the noble and the base, the seeker and the sought, between the world that is out of joint and the man that is born to set it right, then, and only then, is there a true story in Hamlet. That the given function of x passes over continuously from the state in which $x = x$ to that in which it is equal to $x + h$,—this is no history. This is only one way of expressing the eternal nature of the function. If, such as it is, the series is determined by the nature of quantity, it has no ideal character. On the other hand, the series of the states of the world-formula expressed by the successive moments of Hamlet's career are valuable, if at all, *not* as states of the world-formula, but as stages towards the glory and the defeat of Hamlet. One who simply predicted the dying Hamlet from the infant on Yorick's back would know nothing of the action of the play.

And now, to pass from the fictitious to the real, the world *has* a history, and Evolution *is* a reality, only if the real world is a world in which the ideals — not fictitiously, but genuinely — fight battles, prove effective in some portion of phenomenal reality, perform unexplained and inexplicable but ethically significant feats, and win or lose their battles from their own energy. I have nothing to say in this discussion of the empirical sciences of evolution. They are no doubt in the main successful in their inductions; but, from a philosophical point of view, either they are partially and essentially illusory because fragmentary views, relating to an eternal world in which there is no former and no latter; or, *if* they express not merely a transient, but a final element of truth, they do so because this is not merely a mechanical, but also an historical world. If there is not merely a group of sciences having evolutionary interest as empirical sciences, but a true Philosophy of Evolution, this philosophy must be justified by the existence of a true historical significance in reality.

To put the thing in other terms, I have said that philosophy is an effort to express and criticise the presuppositions of its age. Now the presupposition of an historical age is that there is history in the world, and the Philosophy of Evolution is an effort to give voice to this presupposition. If there is anything true in a philosophy of evolution, then there is something more than the world-formula in the world. If there is something more than the world-formula in the world, then this historically significant something must be the existence of efficient ideals. How an ideal can be effective, no causal explanation, no world-formula, can ever directly express. Complete explanation, as the Seventeenth Century saw, must as such be mathematical. In so far forth as causation means the existence of ultimate explanations, causation is as such not efficient. Efficient causation defies mathematical expression. The event that expresses an ideal, in case the ideal is a reality, and not a fiction, is something novel in the world. A world-formula never gave it. The function never admitted of this value. The continuity of its development is broken. There is something new under the sun. The ideal has arrested the "yet unfolding roll of fate," and has made "the stern recorder otherwise enregister or otherwise obliterate." No Taylor's Theorem is the model of the nature upon whose interests the ideals break in. But observe, just *such* breaking of continuity, just *such* incompleteness of absolute explanation, is involved in every assertion that there is any genuine historical element in the world's life. Those who have believed that the spirit of the doctrine of Evolution removed teleology from the world have failed to see that the presupposition of our historical age, ever since Rousseau and the Romantic period, has been that teleological explanations *have* their place, that history is worth studying for its own sake, and that the story of the significant ideals must form a part of every philosophical view of the world. Now here, I say, lies the deepest problem of recent philosophy.

It is wholly impossible to express exhaustively in what sense this view of things appears in genuinely novel form in

our day, and in what sense the problem is but the repetition of an ancient issue of life; but still in the time that remains I may venture to make a few suggestions as to the relation of this fundamental problem to the special undertakings of philosophy in our time.

III. CONFLICT OF HISTORICAL AND MECHANICAL VIEWS IN PSYCHOLOGY.

The science where philosophical interpretation and empirical investigation come into the closest contact is, as everybody knows, the science of Psychology; and it is precisely here that the observant student finds best illustrated the present aspect of our problem. Just here, in fact, the historical or evolutionary element, which the Psychology of our time constantly recognizes, is in most crying opposition to a mechanical conception of Reality.

The notion of natural law in Psychology is for that very reason one of the most complex and confusing of modern notions. It may be said that in the average text-book of Psychology one finds as many as half a dozen different conceptions of what constitutes the nature of the mental process and what constitutes the essence of psychological law. But in the most careful writers at least *two* concurrent and conflicting notions of the nature of psychological law are to be found side by side. I know, in fact, of no writer who more frequently illustrates these contradictions than the distinguished thinker Wundt, in all his psychological writings. The two notions in question may be thus expressed: The connections between mental states are first assumed to be in part of the type illustrated by the mechanical laws of nature. I have certain ideas in my mind now, because certain mental states preceded. Such or such being the mental phenomena, and such or such being the external conditions to which the mind is subjected, these or these changes must needs have taken place; and the past mental conditions *must* have given place, through associations, through revivals, through suppressions, to *this* present complex of ideas. So far, psychological law is conceived after the model of

the laws of moving matter. As one configuration of the system gives place to another, either with or without the introduction of new bodies and forces, so one condition of mental life mechanically produces subsequent ones, with or without the aid of external stimuli. Now, were mental life an unconscious process, which we only observed from without, we could be satisfied with such accounts. But, unfortunately, mental life not only occurs, but is *our own*; not only passes before us, but has *significance for us*. Our own conscious significance itself lies in the relationships between our successive mental states. The beginning of a thought and the end of the same thought, the premises of a syllogism and the conclusion of the syllogism,—these are indeed examples of mental sequence; but the doctrine which explains the sequence as mechanical or necessary, simply does not give any account of the *significance* of the sequence as such.

And this failure of the mechanical explanation to account for the significance of the mental life has a reason much deeper than many psychologists seem disposed to understand. In a mechanically determined series of events, the earlier configuration of the system passes over into a later configuration through a continuous series of intermediate states. At least, mechanical science so conceives the matter. The whole truth is told when the earlier configuration is described, and when the path by which it changed into the later configuration by a continuous passage through intermediate conditions is precisely indicated. In no sense, however, does the series of states *as a whole* form a truth which is in any wise distinct from the whole truth about the successive states as such. Describe the successive states, and you have described the whole series. The whole is the sum of its successive parts. But now, unfortunately, you in no wise describe the nature of a slowly formed judgment or of a syllogism, if you merely describe the successive mental states that pass through the mind of one as he reaches the judgment or performs the act of reasoning. Understand all these momentary states and the law of their sequence,

and this knowledge is no knowledge of the whole process, whose significance lies in its character as a successive *whole*, and not in its character as a sum of successive *states*. An illustration will make my meaning clearer.

A phonograph records and at pleasure reproduces an intelligible series of sounds. Reverse the motion of the phonograph, and the same series of sounds becomes an unintelligible jargon. The reversed phonograph gives you perfectly all the sounds, but loses their significance. Physically described, the two processes, the direct and the reverse, differ only by the substitution of a *minus* sign for a *plus* in the physical formula by which you describe the revolution of the phonograph cylinder. But, from the point of view of the intelligibility of the series as a whole, the alteration is much deeper, and cannot be described in terms of *plus* and *minus*. Even so imagine that the psychological series of the states of a conscious thinking person were described perfectly in terms of some world-formula, so that the earlier portion of the history of his mental life produced of necessity, according to mathematical laws, the later portions, due account being given of the external stimuli which interfered with the process. Having thus described in mechanical terms the whole psychical life of some person (let it be Caius), let us suppose that a physical process occurs in the world which differs from the processes that produced Caius in a way that may be described mathematically by substituting *minus* for *plus* throughout the mechanical formula that describes Caius. This condition of things is mechanically quite conceivable, just as a reversed phonograph is conceivable. The resulting psychical individual will now have in his life all the elements of the consciousness of Caius, but they will come to him in reversed order. In other words, Caius will live his life backwards. Beginning with old age, he will return through the whole series of his mental states to infancy. Observe, I do not mean that he shall repeat backwards the words and ideas of all his sentences, repeating each word and idea precisely as he did in the first place. This would be no true reversal. Not only each word, but

each element of each word, must be not only *repeated*, but *felt* backwards. Did he make love? He shall make it in all respects, sentimentally and logically, in an order precisely the reverse of that in which he made it originally, every element of every mental act being in every respect inverted in its connections. Mechanically, you see, the new Caius will differ from the old one in a perfectly simple respect (namely, by the substitution of *minus* for *plus* in his formula). Logically, consciously, he will differ from the old Caius absolutely. His life will be not merely inverted in significance. It will have *no* significance. The most chaotic flight of ideas of the most advanced maniacal patient will be nothing to the absolute senselessness of the inverted Caius's consciousness. The new mind, as conscious mind, will differ from the old mind in respects for which the difference between *plus* and *minus* is absolutely no expression. As the inverted phonograph is not English backwards, but absolute jargon, so the inverted Caius is not intelligence somewhat unworthily reversed, but the profoundest nonsense. No jelly-fish but will be superior to the inverted Caius.

Now I use this fictitious example not as if I supposed that a psychologist who believes in mechanism only would have to admit such an inversion of the life of Caius to be physically possible, but only because I want to point out that, *where* inversion of the series would produce absolute destruction of significance in its content, the significance of the content as read forwards must have been something different from the physically explicable order of the series. Physical processes as such are conceivably reversible, precisely as heat-engines are conceivably reversible. Our physical incapacity to produce absolutely reversible heat-engines in no wise prevents the conception of a reversible engine from having the greatest importance in thermodynamics. But mental life, considered as a consciously significant process, is *not* a reversible sequence; and the laws, whatever they are, that give it conscious significance, when read forwards, are not laws expressible in physical

terms. It is precisely for this reason that the laws of the Association of Ideas must always remain inadequate expressions of the nature of mental life.

And, when I say this, I insist, again, that the reason for my view lies deeper than the reasons ordinarily urged against the doctrine of the Association of Ideas. Wundt, as you know, ably opposes the doctrine of Association as an exhaustive expression of mental life. His ground is that there is another process, "active apperception," which works frequently against Association. In this, I think Wundt right; but my present point is not that there are more forces in mental life than the associative forces, but that no forces whatever which determine the existence of any sequence can ever express the source of the *significance* for consciousness of a given mental sequence. Some thinkers like to dwell on our immediate consciousness of the dynamic efficiency of the mind in producing its own states. Though they may be right in this contention, I am not just now insisting directly on *such* dynamic efficiency, although indirectly I myself hold that the facts upon which I am now laying stress require of us, if we accept them at all, the presupposition of a *sort* of efficiency in consciousness which cannot be physically expressed. It is, however, not our consciousness of any mental force at work, whereby (for instance) we fix our attention upon something, that I am now defending: it is the fact that, from a purely logical point of view, the significance of mental life is *not* a mere function of the sequence of its states. Consciousness, as consciousness, exists only in wholes of sequence, never in mere sequences as such. Its unity is a successive unity, which transcends time, and that, too, in every, even the least consciously, present moment. For, even while you attend to any sequence,—as to the sequence of these my words, or to the sequence of waves tumbling in on the beach as you sit by the sea, or to the sequence of the ticks of a watch,—several successive contents, whose sequences, for all that I care, may be mechanically determined, are united for your consciousness into one present fact. The sequence of the states

is not the same as your consciousness of the sequence. Hence the laws, whatever they are, which determine the existence of a consciousness of sequence must be *more* than the laws, whatever they are, which explain the nature of the sequence itself.

So much, then, for one aspect of mental life, in which we are obliged to consider it as illustrating a *double* character of certain natural facts. In this case, as you see, the mental facts appear to have not only a mechanical, but also an historical character. They are not only facts in a world-formula, but parts of a story. In the mind, former states are related to later states, first as causes (which might ideally, for all I now care, be expressed in terms of some world-formula); secondly, as forming with those later states wholes of direct consciousness in every moment of our lives. This second relation is not expressible in terms of physical causation or of world-formulas. The world of our mental states has from moment to moment its history, and this history is not reducible to mere sequence. In so far forth as the history has significance, it is more than a causally determined order of events in which the latter pass over into the former. For, once again, the reversed life of Caius, were it possible, would be a causally determined series, but would by chance have no significance, and would therefore be no true history at all.

But this is not the only respect in which mental life furnishes to the psychologist facts which cannot be described in terms of any world-formula, and which mere causation must necessarily ignore. It is, at all events, the universal assumption of every disputant and of every investigator—yes, even of every definite skeptic—that his thoughts have some relation to objects which are external to these thoughts. “A judgment,” says Ueberweg, “is a subjective consciousness concerning the validity of our ideas.” In every judgment, true or false or doubtful, there must be a reference to something beyond the judgment. As Mill says, “In order to believe that gold is yellow, I must indeed have the idea of gold and the idea of yellow, and something having refer-

ence to those ideas must take place in my mind; but my belief is not referred to the ideas: it has reference to the things." Let us consider for a moment the significance of this objective relation of our thoughts.

It is quite useless to declare, as the old-fashioned theories of perception used to do, that this relation between judgment and object is a purely causal relation. I can form judgments about the other side of the moon or about the nature of the space beyond the farthest fixed star, and yet these things stand in no present causal relation to my mind. In fact, if I assert that the number 23 is prime, neither the number itself nor my own activity in counting the number or in examining its properties can be said to be, as physical cause, a sufficient *warrant* for my judgment. The universal assumption of every thinker that his thoughts have some tendency to agree with objects is, then, not merely an assumption that objects cause his thoughts. On the contrary, every idea of causation presupposes this assumption of a primary tendency to an agreement between thoughts and things. I don't first say, "Objects are known to exist because my ideas need causes." What I say is, "There are causes, since certain of my thoughts — namely, my thoughts about causation — have a tendency to agree with objects, and are therefore a sufficient warrant for my belief that there is a causation." In fact, the causes of my judgments are admitted to be psychologically very complex, and to include many conditions besides the existence of the objects about which I think. Moreover, objects might cause judgments that had absolutely no resemblance to those objects. Causation and resemblance, where the resemblance is of a logical nature, are simply not identical terms. So, then, the necessary resemblance of my thoughts to objects cannot be expressed in terms of physical causation.

In fact, then, the universal assumption of thought is that certain properly tested opinions have an ideal, a teleologically describable, relation to things; that is, that these thoughts are fitted, valuable, significant imitations or representations of these objects. It is impossible to express

the theory of truth in other than teleological terms. Unless the relationships of thoughts and objects is such that the significance of the thought bears a teleological relation to the nature of the object, is not merely in physical, but is also in ideal relations to its object, consciousness is a dream, and has no objective significance.

Now, in asserting this, I do not appeal to mere common sense to demonstrate the objective validity of our thought. I point out merely that deeper than the assumption of the truth of the world-formula is the assumption that our thoughts about the world-formula are true. Deeper than the assumption that the psychological laws are in one aspect purely physical is the assumption that in another respect they are ideal, and have a teleological value incapable of expression in terms of the world-formula, or of any physical causation, or of any such Seventeenth Century concept. I do not say that a skeptic is yet answered, who should declare that *no* thought has objective significance. I only point out that, *if* one is dogmatist enough to assert the existence of one kind of objective truth,—namely, the truth of a determinate, describable, mechanical, and causal sequence,—he has already admitted for mental life the existence of an entirely different relationship among the facts of the universe; namely, a teleological relation between thoughts and their objects.