THE SCIENCE OF THOUGHT

AN INTRODUCTION

TO THE

SCIENCE OF THOUGHT.

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PREFACE.

Knowing how little interest the present age takes in philosophy, I have compressed this book into the smallest possible compass. What might well have been expanded into a volume, I have condensed into a chapter, and often into a page. I shall probably be accused, upon this very account, of a slight and presumptuous treatment of great themes. It is right, therefore, for me to add in self defense that I have spent a quarter of a century in the discovery and demonstration of what is here presented in less than a hundred pages.

S. S. HEBBERD.

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CONTENTS.

SCIENCE OF THOUGHT.

CHAPTER I.

SELF-CONSCIOUSNESS.

All thinking is a relating of cause and effect. The present treatise is designed to demonstrate this simple principle — to show that every perfect thought, from the simplest to the most complex, contains two elements related to each other as cause and effect; and that whenever either of these elements is suppressed, thought thereby becomes vague, one-sided, fatally defective. In this synthesis, the very nature of thought consists.

But although this principle is so simple, it will be found to be of immeasurable value. It will put an end to the chief disputes which have heretofore divided and distracted human speculation; it will furnish a basis for true theories of science, morality and art; it will explain the course of human civilization and so provide a genuine philosophy of history.

To verify our principle we must begin with self-consciousness, the most immediate and universal of all forms of thinking.

Seeking an unassailable definition of self-consciousness, I affirm it to be the immediate knowledge of our mental states *as our own.* They are thought of as our

own, not only in the sense of mere possession but of active control; up to a certain point they come at our call and go at our bidding; we are, partially at least, their producing and controlling cause. It is this immediate reference of mental states to self as their cause, which forms the very essence of self-consciousness, distinguishing it from all other kinds of activity, mental or physical. And in this process are manifestly the two factors which our law demands. Self-consciousness is the relating of self to mental states as the one, permanent cause of many, transitory effects.

It follows, therefore, from our principle, that neither of these two elements which together form the conception of self-consciousness, can be fully thought or known apart from the other. The cause can be known only in and through its effects; and conversely, the effect only in and through its cause. Self in itself, a mental state in itself, each of these is but a half-thought, vague, mutilated, unintelligible. Every theory of self-consciousness which attempts to suppress either of the two elements must end in incoherent and divisive thought. This deduction is wonderfully verified by the history of speculation, as we shall show by two leading instances.

(1). Hume's famous formula that there is no consciousness save of a series of mental states, attempts to eliminate the causal element. But his statement, in the effort to expunge the conception of self, has taken all meaning out of the conception of conscious states. For, firstly, it ignores memory, the very core of consciousness—the power present in every mental state

of reproducing the past; secondly, in suppressing the sense of identity, it takes away all that can distinguish a conscious from an unconscious state; thirdly, it is in the last resort an altogether unintelligible statement—to speak of a disconnected series as aware of itself as a series, is to utter a combination of sounds without a shred of meaning.

But why waste time in arguing against a definition of conscious states which even its author has confessed to be unintelligible? "All my hopes vanish," Hume said, "when I come to explain the principles which unite our successive perceptions in our consciousness." J. S. Mill, although adopting the same view, goes even further and admits that the theory "involves a paradox;" that "it cannot be expressed in any terms which do not deny its truth." He does, indeed, attempt to qualify this confession by adding that self-consciousness is an ultimate fact and therefore inexplicable, but even if a fact is ultimate and inexplicable, it by no means follows that the statement of the fact must be unintelligible. By no such salvo can Mill break the force of his admission that any exposition of conscious states which does not refer them to self as their cause, is so utterly unintelligible that it cannot even be expressed in any terms which do not deny its truth. Effects cannot be known except in and through their cause.

(2). Kant's exposition, on the other hand, wonderfully confirms the second part of our law, that in regard to the knowledge of causes. He affirms, in a somewhat bewildered way, the unity of self-conscious-

ness. But he hastens to add that this unity is purely "logical," or "formal," that "the notion of self is an altogether empty one." And to prove this, he argues long and laboriously that self cannot be conceived as substance. But when he has established this point, he has done nothing but confirm our law that a cause cannot be known in itself, but only in and through its effects. A substance can be known not in itself, but only through the sensuous attribute or effects which it produces. And similarly, self can be known only in and through its effects—through that vast and varied host of mental states which it creates or controls. It is in vain, therefore, that any one attempts to define self in terms of substance, or in any other way, except as the one permanent cause of our many transient, mental states.

Our law is verified in both its parts so far as self-conciousness is concerned. It is necessary, however, to lay the chief stress on that part which relates to the knowledge of effects. Ever since the days of Kant, thinkers have found it easy to perceive that a cause in itself—self, substance or thing—is unknowable. But they have not been taught to perceive also that effects in themselves—conscious states, sensuous attributes or phenomena—are equally unknowable. The future of philosophy depends upon the clear recognition of the fact that no complete thought or real knowledge is possible unless both elements—the cause and the effect—are combined in that synthesis which the nature of thinking demands.

CHAPTER II.

PERCEPTION.

Philosophy in its search after a true theory of perception has been driven to a strange pass. The most universal and unconquerable conviction of mankind—the belief in the reality of an external world—proves to be the very one which most completely defies philosophic explanation. Speculation has finally split into two schools, the one regarding the belief in external reality as a mere illusion, the other regarding it as an utter mystery, an inexplicable intuition or instinct coming no one knows whence or how. No wonder that philosophy is in disgrace.

But surely there must be some way out of this wilderness of controversy and bewilderment; and we hope to show that there is.

Certain of our mental states are, mainly at least, the products of our own activity; we imagine, we remember we will this thing or that as we please. But our perceptive states are not thus self-produced; we are conscious that they are given to us, not formed by us; there is a regular recurrence of the parts and a fixed order of the whole which no mental effort can change. And therefore we are compelled by the very nature of thought to ascribe these perceptive states to some causality not our own.

This conviction of an external causality is absolutely universal, immediate and primordial. It is not an

intuition—one of those instinctive beliefs or innate ideas of which the world long since grew weary. It is not an inference, since there is before it, no prior judgment from which it has been derived. It is but a restatement of the fact given in consciousness that certain states are *not* produced by self; and the equivalence of the two statements is involved in the very nature of thought. It lies at the beginning of consciousness; it is enfolded in the first completed act of perception.

Let me not be misunderstood. Consciousness in itself, gives us nothing beyond this fact of a causality not our own. What that causality is—what are its defining characteristics—cannot be thus primordially and infallibly determined, but must be learned through the processes of the understanding. This external source of perception may be the supreme spirit of the Berkeleian metaphysics; it may be the famous "Thing in itself" of the Kantian philosophy; it may be that bright world of living reality which common sense is so loath to give up. These questions pure consciousness does not pretend to settle.

It may seem that we have made but slight progress towards the attainment of a complete theory of perception. But at least we have put an end, forever, to subjective idealism. This paradoxical doctrine, under whatsoever elusive forms it may veil itself, is essentially nothing more than a denial of all external causality. But as we have seen, the fact of a causality not our own, is immediately and universally given us in self-consciousness; and therefore it cannot be

really disbelieved by any one. Hence subjective idealism is but a verbal negation of what no one can actually doubt; its doctrine cannot be fully thought out or expressed except in terms which deny its truth. All the subjective idealists—like Fichte for instance, with his "limitations of self-consciousness"—have been finally compelled to assume what they were attempting to contradict.

To recognize that external causality is immediately given us in consciousness—this is the first step towards a true theory of knowledge. The second step consists in clearing away the difficulties and perplexities that have been raised by objective idealism. That doctrine,—at least in the fully developed form given it by Kant,—denies, not the existence, but the knowableness of external causality. It teaches that substances, things in themselves, lie beyond the limits of human knowledge. We can know only phenomena, attributes, the effects produced by the unknowable cause or causes.

We can gladly accept that part of the idealistic doctrine which affirms the unknowableness of substance or things in themselves; for that is but an anticipation of our own fundamental law. A cause can be known only in or through its effects. Nothing is more utterly unknowable than "pure existence," a "thing in itself," a substance divested of all its attributes.

But idealism has been utterly blind to the other half of this fundamental law; it has not seen that

effects also are known only in and through their causes. While insisting that substances or things in themselves are unknowable, it has silently claimed to have a clear, sun-lit knowledge of effects—attributes, phenomena, sensations — in themselves. But this, as I shall now show, is an amazing illusion. So far as there can be any difference of degree, the sensation or effect in itself is even more inscrutable than the cause in itself.

Firstly, let us consider sensations in their general nature. In vision, for instance, we have some dim glimpses of a process of causation passing from the object seen to the mind. But this causal process ends in complete mystery. We have not the slightest knowledge of the effect finally produced upon the mind. The perfected perception has no character of internality or ideality; on the contrary, the vision appears to be entirely external and spatial. Somehow, the cause and the effect have come to be inexplicably conjoined.

Secondly, consider sensations in their specific characteristics. Do we know aught of the difference between them? The effect produced upon the mind by a round object, for instance, is this sensation itself circular? Is the sensation of sweetness itself sweet? Is the sensation of a mountain any taller than the sensation of an ant-hill? In a word, sensations in themselves have no definable characteristics; they are knowable only when related to their causes. In a complete and distinct perception, two vague, unin-

telligible half-ideas—the one of a producing cause, the other of its effect—are inseparably combined.

Thirdly, consider the grouping of sensations. Two or more sensations are brought to the mind through different channels; one, for instance, through the sense of sight, another through that of touch. Their union in one perception must ever remain unintelligible, unless we conceive of them as different effects of a common cause or object.

Fourthly, the same fact is shown in the recurrence of sensations. Every sensation carries with it the conviction that it will be invariably repeated under similar circumstances; and this characteristic also remains incomprehensible except we regard all these actual or possible sensations as the many transient effects of one permanent cause.

It has been proved, then, in this four-fold way, that we have just as little knowledge of effects or phenomena in themselves as we have of causes or things in themselves. Thus the whole ground of idealistic agnosticism is swept away. We see that so long as we disrupt the two elements of thought and insist upon regarding either apart from the other, we can have only mystery, confusion and unknowableness. Knowledge begins when we combine substance and attribute, the "thing in itself" and its phenomena, in the relation of cause and effect. To doubt the existence of the one is as irrational as to doubt the existence of the other.

A third step still remains before reaching a complete theory of perceptive knowledge. The question is continually asked: How do we know that our perceptions correspond with external reality? The question is unanswerable; and that for the simple reason that there is no such correspondence. Perceptive knowledge does not consist in the tracing of resemblances between objects so diverse as mental states and the external world.

Perception, on the contrary, is a process of discrimination. Consciousness, as we have seen, gives to us the infallible assurance of an external causality. It is the province of perception to break up this causality into its constituent parts, each duly related to its appropriate effects.

But what guarantee have we, it may be asked, of the accuracy of this discriminating process? I answer that the guarantee is five-fold. First, there is the uniform recurrence of precisely similar perceptions, and thereby we are enabled to relate them to the same permanent cause. Secondly, we are able to repeat perceptions at will, and thus to experiment, as it were, upon their producing causes. Thirdly, we can compare perceptions received through one organ of sense with those received through another—those of sight with those of touch, for instance. Fourthly, and most important of all, we soon learn to discriminate with ease and certainty, between our own bodies and the rest of the external world; and thus are provided with an instrument and an unerring test of all subsequent discriminations. Fifthly, all these guarantees may be combined so as to strengthen and support each other.

The evidence of the senses, then, is strong and overwhelming, but let us remember that it is not infallible. Too great confidence in perception has ever been one of the chief causes of human ignorance. And a certain idealistic distrust of the senses, as will be shown hereafter, has been the indispensable preparation for that scientific research which changes the first crude perceptions of mankind into a more exact but still defective view of the universe.

Corollary 1. A certain school of philosophy declares perception to be an ultimate, indecomposable act defying all analysis. But we have now analyzed it. And besides upon its very surface perception appears as exceedingly complex. There is first the idea of a perceiving self, then of a peculiar mode of mental activity, then of an object perceived; and all these interacting in an endless variety of subtile implications. To pronounce all this complexity to be simple is plainly the last refuge of distressed philosophers.

Corollary 2. Sir Wm Hamilton and others assert that they are conscious of external objects. This amazing doctrine must not be confounded with that of these pages. I have taught that we are conscious of a certain element in our perceptive states as not produced by self; and that, therefore, we are compelled—not by any instinct or intuition, but by the very nature of thought—to instantly and infallibly ascribe this element to a causality not our own. But that is very different from teaching that we are conscious of stars, or sticks, or pictures upon the retina.

CHAPTER III.

SPACE.

The idea of space has long been one of the chief battle-grounds of philosophy. By one party it has been regarded as a mere mental creation, by the other as the idea of something actually existent; and even the last must be conscious that their conception of space as a reality is, somehow, exceedingly vague and elusive. Let us see now what light our principle can throw upon this darkened field of debate.

The conception of space is evidently compounded of two elements. On the one side is the idea of pure space, one, continuous, unchanging, unlimited; on the other we have the idea of positions, distances, figures and all the other countless spatial relations.

Furthermore, these two elements are related to each other as cause and effect. All possible spatial or geometrical relations can be reduced to one general formula; each of them is, essentially, a separation of points or things *by space*. These countless separations between bodies cannot be thought of or made intelligible save as resulting from the existence of one continuous and infinite space; they are the many, transient effects of one permanent cause.

But it will instantly be objected that spatial relations are not effects, but merely parts of space. A figure, it will be said, for instance, is but a certain definite part of space cut out from the indefinite re-

mainder. But the objection is grounded upon a strange, although quite universal oversight. It is forgotten that space can really have no parts; we are compelled to think of it as absolutely continuous, and, therefore, indivisible. If space could be separated into two or more parts, what would separate them? The so-called parts of space are pure fictions, invented by the mind for its own convenience in measuring bodies; but, while using these fictions, the mind is fully aware that parts of space cannot really exist. Therefore, spatial relations cannot be clearly and exactly conceived as parts of a whole, but only as effects of a cause. Distances, positions, dimensions, directions and all other geometrical properties are the many, ever-changing relations established between bodies by infinite, continuous and unchanging space.

Once again then our doctrine has proved impregnable. Every spatial conception has been shown to contain two elements. And only thus does space—that obscurest and most perplexing of words—gain a clear, consistent meaning.

Is space then actually existent? May it not be, after all, a mere abstraction—an ideal phantasm which floats in nothingness? The mind, it may be said, establishes spatial relations between bodies, and if the bodies cease to exist, so will the relations between them. All that is true enough; but it shoots far and wide from the mark. The bodies may vanish and with them their spatial relations. But the space which produced that relationship will remain undis-

turbed. Two stars might burn themselves out; but the immensity of distance, the extent of space which once separated them would not be changed a hair's-breadth. And if the whole material universe should be blotted out, infinite space would still remain, one, continuous, unchanging, as before. In fact the objection serves only to bring out vividly our view of spatial relations as the many transitory effects of one permanent cause.

It is then absolutely impossible to think of space as non-existent. Let us understand the full force and sweep of this declaration. If it was merely some mental instinct or "intuition" or Kantian "form of sense" that compelled us to think of the world as spatial, then it would be easy enough to conceive of some higher grade of mind as free from this mysterious compulsion imposed upon us; and so it would be very far from being impossible for us to think of space as non-existent. But we have shown that we are compelled, not by any intuition or form of sense, but by the very nature of thought, to conceive of space as a cause of all spatial relations. And to think away whatever is demanded by the very nature of thought, is, in the fullest sense of the term, absolutely impossible; not even archangels could accomplish that feat.

Any thoughtful reader arrived at our present point of view, can readily meet Kant's proofs of the ideality of space. But it may be well to briefly notice one of these alleged proofs—the geometrical argument.

Experience, Kant urges, concerns only the contingent; it can therefore never give the universal and necessary judgments of geometry. It can assure us, for instance, that two lines are parallel so far as we have examined them, but not that they would continue to be parallel if prolonged through infinite space. Such judgments are possible, only because space is not objective—for then we could know it only contingently through experience — but purely subjective, a merely ideal construction imposed upon things by the mind.

But this, besides being paradoxical, explains nothing. It is flat tautology. It simply asserts that that must be true for us which we are compelled by the mysterious conformation of our minds to think as true.

From our present point of view the real explanation is easily found. Pure space is never the cause of change; on the contrary it is the cause or ground of the very opposite of change—that is, of separation and position or relative fixedness. Therefore, the ideal relations of pure space, with which geometry deals, are invariable; and that for the simple reason that by hypothesis *all causes of change are excluded.* Two parallel lines will maintain their parallelism through the whole infinitude of space, unless we should somewhere mentally change the direction of one of them and so make three lines instead of two.

Geometrical necessity has long been the great stumbling-block of both the rival philosophies. The sensationalists' doctrine that necessary truths come from "irresistible association" seems almost farcical.

The idealists having generally lost faith in their "innate ideas" and "intuitions," have taken refuge in Kant's paradox that space is ideal. Dispensing with all such strange devices, we have found geometrical necessity to depend solely upon the nature of space as neither changing nor causing change.

Corollary 1. Dugald Stewart pointed out and it is about the only real gleam of light heretofore thrown upon the problem—that we more readily and clearly perceive the truth of the particular instances embraced under an axiom, than the truth of the axiom itself. Now, if axioms were intuitions the converse of this would surely happen. But our doctrine explains the fact just as it stands. We clearly and instantaneously perceive the truth of the particular instance because it depends upon nothing but the nature of thought dealing with the idea of space. The axiom, which is but an abstract and generalized statement of the particular instances, comes later and is less clearly recognized.

Corollary 2. Time is to be explained precisely as space has been. By following the explanation of space just given, the reader can readily work out the problem of time for himself.

CHAPTER IV.

CONCEPTS.

Every concept has two meanings. The one is its meaning in intension, pointing out the characteristics of the class; the other its meaning in extension referring to the different individuals or objects included within the class. All logicians have recognized and used this familiar distinction; but they have been strangely blind to its supreme importance as disclosing the inmost nature of the concept. It remains for me to show that these two meanings—these two constituent elements of every general notion—are related to each other as cause and effect.

For, firstly, the intension of a concept *determines* its extension. What objects may be included within a class, depends upon the attributes of that class. The extension gives us objects classified; the intension points to the ground or cause of their classification. This by itself would be sufficient to prove our thesis; but we can go farther. We can show that the intensive meaning points to a dimly disclosed unity and permanence, the properties of causality; that the extensive meaning points to a clearly apparent multiplicity and change, the properties of effects.

For, secondly, the intension is always a *unit*. That is so, of course, when the concept has but one attribute. And although a natural kind may have a countless number of attributes, they are always con-

ceived as one set—as a co-ordinated system—as a unity so definitely fixed that from the presence of a few of the attributes we can always infer the rest. The extension, on the contrary, refers to a mere multiplicity, a multitude which never has been and never can be brought together at one time or place.

Thirdly, the intension is *permanent*. The set of attributes does not change from century to century; it is a combination of qualities fixed and uniform for every possible member of the class. But the extension of a concept is the very type of variableness; it includes both the actual and the possible, things past, present and to come; it designates a multitude in continual flux.

Fourthly, the intensive meaning is *less apparent* than the extensive. Hasty and superficial thought always conceives of a class merely as a collection of objects; it continually loses sight of that deeper meaning of the concept, without which the first would be but mere nonsense. The history, of logical speculation for centuries has proved that.

Every concept, therefore, contains two meanings related to each other as cause and effect.

The exposition just given of the concept, has many uses. But above all else, it puts an end to that most ancient and perplexing of all logical controversies—the dispute between the Realists or their modern successors and the Nominalists. For it can now be shown that both of these rival systems are equally at fault, both equally one-sided and defective.

Each of the two meanings of a concept must, by it-

self, be vague, elusive and incomplete. Each forms but one-half or one side of a perfect concept; each becomes fully intelligible only when related to the other. Now, both of the rival logical systems ignore, so far as possible, this double import of the concept. Nominalism lays an exclusive emphasis upon the meaning in extension. Realism or Conceptualism—for the two differ in degree, not in kind—lays its emphasis upon the meaning in intension. Each, therefore, fails to give a true and adequate explanation of general notions.

Realism and Conceptualism, revolving around the intensive meaning of the concept, have spun an amazing web of subtilties. But the incomparable skill of Berkeley proved long ago that we cannot form any clear and complete idea of any attribute or set of attributes, isolated from the idea of some concrete object possessing that attribute or set of attributes. By no effort of thought can we form a full and distinct idea of "man" or of the human attributes apart from the idea of some individual man; or of "motions" independently of the idea of some moving body. All that is irrefragably true; and thereby the whole ground of Realism is swept away. These isolated abstractions, —these scholastic universals and "quiddities" and the more modern "bundles of attributes"—are but half-ideas which can exist in thought only in conjunction with their complements. Causes in themselves, unrelated to their effects, are unknowable and unthinkable.

The Nominalist goes to the other extreme. In his zeal for the meaning in extension he paradoxically affirms that there are no general notions—only general terms or common names for different objects. He forgets that a name could not be common to different objects unless they resembled each other in certain respects. Therefore, even the common name has a double import: on the one side it points to different objects; on the other to the respects in which they resemble each other. All this the Nominalist ignores; and so offers an explanation of the classifying process as utterly inadequate as it is paradoxical.

Both the rival systems, then, are equally defective. Their controversy is a wrangle over opposite sides of the same truth. We shall never gain a true theory of classification until we recognize the double import of the concept, and remember that each of its two meanings is fully intelligible only when related to the other.

We have proved our law, then, so far as concepts are concerned, and this would be sufficient, by itself, to prove it in regard to all processes of thought. For all thinking is carried on by means of concepts.

Corollary 1. This law of the complexity of concepts explains why language is indispensable for genuine thinking. On account of its double import, a concept cannot be clearly held before the mind, except through the intervention of a verbal sign.

Corollary 2. Brutes have no language because they have need of none. They receive impressions from the outer world and doubtless these impressions

are combined and transformed by something like the laws of association. In fact, I am inclined to believe that what "the association-philosophy" describes and explains as thinking, forms a pretty faithful picture of what takes place in the brain of the animal. But there is no shadow of proof, or even of probability that a brute can form an idea—that is, a general notion with its synthesis of cause and effect. Therefore animals have no need of speech; nor could use it if possessed.

CHAPTER V.

SCIENCE.

In considering the theory of reasoning, I shall pass by many minor questions to come to the most difficult and important one. What is the inductive or scientific method? That question has been often asked and never answered. Although the scientific method has been used so long and with such magnificent results, there is something about it that has heretofore eluded description and defied analysis. And it may seem mere arrogance to attempt in four or five pages, the solution of a problem that has baffled the logical skill of centuries. But the light which has led us so far, will not desert us here.

There are but two kinds of reasoning, deduction and induction; and both of them have a certain appearance of imperfection and inadequateness. Deduction, as every logician knows, has long labored under the reproach of being essentially nothing more than a begging of the question. The inference, it is said, really infers nothing; all that is affirmed in the conclusion has been already affirmed in the premises. The objection is difficult to answer; and even if we set it aside, we must still admit that deduction is an incomplete and inadequate process. The chief value of syllogistic reasoning depends upon the accuracy of the premises, and with that the deduction has nothing to do. The deduction by itself is a singularly simple, a

purely formal and mechanical act which could probably be done by a machine as well as by a human being. In mathematics, indeed, deductive reasoning has done marvelous things; but the marvel is due to the human ingenuity which has combined a great number of simple and trivial deductions into a complicated and splendid chain of reasoning; just as a beautiful building may be constructed out of rude and diminutive stones. And the whole history of thought proves that outside the mathematical sciences, pure deduction tends to vain disputations and idle subtilities rather than to the discovery of truth. Thus logically and historically a syllogism is shown to be by itself a most imperfect and futile act of reasoning; it takes its premises for granted, and then does nothing but formally and mechanically assert in the conclusion what it had already assumed in the premises.

Pure induction is still more obviously defective. It carries a fallacy upon its very face; to conclude from particulars to universals is a plain violation of all logical rules. The ingenuity of ages has failed to clear induction from this appearance of utter irrationality. No one has yet shown how in the actual, physical world purely contingent experience can be logically transmuted into universal and necessary law. Moreover, history proves that pure induction is fatally misleading: the greater part of human ignorance and superstition has sprung from this tendency of the mind to conclude from particulars to universals.

Both deduction and induction, then, are equally defective and misleading. Logicians have long been

dimly aware of this fact, although for the credit of their science they have been inclined to ignore it or to obscure it by futile explanations. But there is no need of being alarmed at this, as if the very foundations of truth were about to be undermined. On the contrary, by the recognition of this fact, we are brought face to face with that fundamental law which governs the whole realm of thought and gives it perfection. Both causes by themselves and effects by themselves are unknowable; the effort to know them thus, results only in vague, inadequate half thoughts. And it inevitably follows from this, that both pure deduction, or reasoning from causes alone, and pure induction, or reasoning from effects alone, are essentially imperfect and invalid processes.

And thus we arrive at the long-sought definition of the scientific method. Exact knowledge or science can be attained only by a synthesis of deduction and induction whereby each of these two processes, by itself defective, is strengthened and supported by the other. The scientific method consists in such a synthesis.

The first process is one of pure induction from particulars to universals. We observe that a certain coexistence or sequence of phenomena is uniformly repeated; and this observed uniformity we boldly transform into a law. Thus empirical rules are formed, often crude and dubious, but sometimes attaining to a high degree of certainty. But still something is lacking. The deep chasm between an empirical rule and

a universal law can be closed only by the second process of the scientific method.

The second process is deductive; it seeks the *cause* of these observed uniformities; in other words it strives to deduce the empirical rule from some more universal law. Now, if this wider law has been already established, the matter is simple enough; but in many cases this is not so. Often the cause is but hypothetical, merely a mathematical formula from which the empirical rules or facts may be deduced. And the question arises, how scientific certainty is gained through this subsumption of the minor laws under the more universal one? I answer, firstly, a wider interdependence of phenomena is thereby established; and thus mere co-incidence is less apt to be mistaken for invariable and necessary order. Secondly, exceptions are gotten rid of; what is inexplicable by the minor empirical rule, often admits of ready explanation under the light of the universal law. Thirdly and most important of all, qualitative laws are thus converted into quantitative ones. It is the noblest characteristic of nature—one to which we owe almost all our real knowledge of her secrets—that her deepest and widest laws are mathematical. In chemistry, for instance, the most intricate and obscure qualitative differences have been almost magically resolved into simple equations of quantity. Thus, a vast increase of certainty is gained. For uniformities of quantity, of weight or distance can be measured with the utmost minuteness; so that a single observation agreeing with

a mathematical computation becomes of far more value than a hundred co-existences of mere quality.

Such then is the scientific method. It is compounded of two elements or processes—induction and deduction—each by itself imperfect and invalid, but together forming a perfect act of scientific reasoning.[1] In a word, the scientific method is like an arch, neither side of which could stand if it were not supported by the other.

To follow out all the applications of this theory of science would demand a volume instead of these few pages. I can pause only to note that our doctrine will be signally verified in the chapters upon civilization. It will then be found to solve that chief problem in the history of science—the utter failure of artiquity except at Alexandria, in the study of Nature; and the swift, wondrous triumph of modern scientific research. But our present object has been fully accomplished. The principle that thinking is compounded of two elements, each inadequate without the

[1] It may be objected to our doctrine of the inadequacy of deduction; that mathematical science is entirely deductive. But, that is, although a very common, an erroneous view. The chief toil of the mathematician is inductive or inventive, the finding of his premises. In algebra, for instance, and generally in the higher and applied mathematics—the work is nearly done when the proper equation is formed; that is, when the particular instance or problem has been put under some universal formula or equation. And the resolution of a common equation—that is, the deductive part—is an almost mechanical process. In geometry all this is greatly obscured, because its ordinary study is confined chiefly to following and memorizing what has been already done. But in the formation of geometry—and in its proper study too—the chief matter was the statement of its problems, the finding out by experiment of the premises from which to deduce.

other, has been vindicated so far as scientific reasoning is concerned. All perfect thought from the simplest act of perception up to the most elaborate processes of scientific research, has been found to have a common nature and to be governed by one fundamental law.

CHAPTER VI.

MORALITY.

Morality is compounded of two elements—the consciousness of causality and the foresight of consequences. A true ethical system would hold both of these elements in that perfect synthesis which the nature of thought demands. But instead of that we find moralists divided into two rival schools, each of which emphasizes what the other ignores. On the one side are the realists ignoring and even denying the consciousness of causality ; on the other are the idealists eager to construct an ethical theory that shall ignore, so far as possible, the consequences of conduct. Thus both systems become equally one-sided and defective ; controversy and confusion reign everywhere in ethical philosophy.

Seeking now a way out of this confusion, let us begin with the doctrine of the realists. These deny the human consciousness of self-causality, upon two general grounds which we will consider in turn.

(1) The realists assert that self-causality is inconceivable. The self, according to Jonathan Edwards and others of his school, cannot be the determining cause of its own volitions, because "it is inconceivable that the same cause in the same circumstances should produce different effects at different times." The mind can act only in that way in which it has been determined to act by antecedent circumstances.

But this alleged inconceivability is a mere prejudice and an utter delusion. It is true enough that no material thing can act in different ways under the same conditions ; for, being unconscious, it cannot present before itself the two courses of action between which it would have to decide. Its act must be determined for it by something beyond itself. But it is simply absurd to assume that because this is true in regard to unconscious being, it must also be true in regard to conscious being. Does the fact that beings without eyes are unable to see, prove that beings with eyes are also unable to see? No more does the fact that the unconscious cannot determine itself, prove that the conscious cannot determine itself.

The assertion that self-causality is inconceivable, has its origin in a double error. In the first place, the realist mistakes the incomprehensibility of a method for the inconceivableness of a fact. It is, indeed, incomprehensible *how* a conscious being determines itself to either one of two possible courses of action. But it is equally incomprehensible how the unconscious is determined to act by something without itself. In the last resort it is always inscrutable how things happen ; we only know that they do happen.

The realist, in the second place, is infatuated with a passion for annulling all distinctions between mental and physical phenomena. It is unendurable, he thinks, that there should be such a contrast between physical and moral causation. But he forgets that this difference is necessarily involved in the difference between the unconscious and the conscious. The first, as we

have seen, cannot determine itself, because it is unconscious; the second can determine itself, because it is conscious. Surely then, there is nothing anomalous —and much less anything inconceivable—in this difference between physical and moral causation.

There does not appear to be the slightest ground, then, for the assertion that free causation is inconceivable. And yet this assertion is continually being made as if it were a self-evident truth.

(2) A second argument exultantly used by those who deny self-causality is the argument from motives. They affirm that every moral act must be preceded by a motive; as Sir William Hamilton has tersely said: "A motiveless act is rationally and morally worthless." All that may gladly be conceded. But because every moral act must have a motive, it by no means follows that the act must be determined or necessitated by the motive. And secondly, if it were thus determined, it would have no moral worth. If an act without a motive is morally worthless, so also is an act mechanically determined by a motive.

This refutation is summary, but it is unanswerable. The object of this volume, however, is not to merely refute fallacies, but to explain them; and so something must here be added. Every volition contains, in fact, is developed from, a motive[1]; but the mind itself de-

[1] This explains that favorite catch used by the determinists as a last resort: I cannot act so and so unless I wish to; the wish or desire therefore is the antecedent (See *Mills Examination of Hamilton's Philosophy* II. 285 and *Logic* 524, for examples). Of course I cannot will unless I wish to; since the volition is but the developed wish. But it by no means follows that I cannot will unless I am compelled to.

termines whether that development shall take place or not. This the necessitarian denies ; he considers the development of a motive into a volition to be a problem in mechanics. The motive, he thinks, passes into the volition mechanically, because it is "stronger" or "weightier" than any other desire present in the mind. But why does he make this strange assumption? Conscious experience certainly tells him nothing about the mechanical strength or weight of motives, or that they are thus mechanically developed into volition. It teaches the exact contrary.

Why then, I repeat, does the necessitarian make this assumption? Simply because he is still entangled in the meshes of the first fallacy treated in this chapter. It is inconceivable to him how the conscious can act differently from the unconscious—how the conscious self can act at all unless it is mechanically determined to act by something not itself. And therefore he goes on repeating that it *must* be the superior "weight" or "strength" of the desire which compels the mind to develop it into a volition.

The whole necessitarian argument thus resolves itself into a single fallacy. All its elusive proofs and winding subtilities revolve around the assumption that conscious or free causality is inconceivable. In a word, necessitarian morality is but a phase of that one-sided realistic tendency which ignores the cause and dwells only upon the effect.[1]

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[1] I have not noticed a third necessitarian argument — that from the predictibility of conduct—on account of its excessive vagueness. It is true that when a person's character is known his future conduct

The idealists, then, are right in affirming that the mind is conscious of its own causality. And in affirming this they furnish the basis, at least, of a true moral system.

For, the idea of right and wrong, as distinguished from the idea of the expedient and the inexpedient, is necessarily involved in this consciousness of self-causality. Because we are the free causes of our actions, we know that we are responsible for them ; and that not in the merely legal sense that we are liable to punishment, but in the moral sense that we *deserve* punishment. We not only fear that we shall be punished, but we recognize that we ought to be. To the mere fear of consequences is added the bitterness of remorse or self-reproach. We say to ourselves : It is just ; I deserve this suffering ; I have brought it upon myself. In this feeling of moral responsibility or desert, the idea of right and wrong is rooted.

No system, which denies our consciousness of self-causality, can ever logically pass from the idea of the expedient to the idea of the right. It can give to us the foresight and fear of consequences, but never the sense of desert and true moral responsibility. All its ingenious sophistries can never bridge the impassable chasm between the mere fear that we shall be punished and the conviction that we *ought* to be punished. If we are driven into suffering, as the winds and stars

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may be guessed—not by any means predicted in the scientific sense of the word. But this proves only what no one denies. The mind is continually yielding to these influences, habit, heredity, or environment. But the sane mind is never compelled thus to yield.

are driven in their courses by causes beyond their control, we may shrink from the pain, but we shall have no more sense of guilt than the winds and stars have. Recoil from pain is not the sense of desert.

Up to this point then, idealism is abundantly justified. But it is fatally defective and one-sided in that it ignores, so far as possible, the other element of morality, the foresight of consequences. For moral laws, just as much as physical ones, can be established only by experience, by the study of effects or consequences. One cannot but smile at the futile endeavors of the idealists to evolve ethical precepts from their inner consciousness, from "intuitions;" or some other mystical *a priori* process of thought. All history demonstrates the vanity of such endeavors. Everywhere, among different races and in different ages we behold a vast diversity and variation of moral judgments. And such uniformity as we do find, is manifestly the result, not of "intuition," but of that moral training to which society subjects its members from childhood to old age.

The utilitarians or realists, then, are right when they insist that the only test or criterion of conduct is its consequences. The consciousness of causality gives us the universal idea of right or wrong; but it does not tell us how that universal idea is to be applied to particular actions. In regard to that, experience is our only teacher. True moral laws can be established only by closely observing the effects of conduct upon human happiness. A morality that attempts to establish its precepts in any other way, will necessarily be

weak, vague, confused and fantastic. It will lack a correct appreciation of the different virtues. It will not have that moral vigor which comes only from clear and exact perceptions of moral truth. It may be pervaded by a deep sense of sin and of responsibility to the higher powers, but it will be very poorly fitted to meet the actual needs of human life. All that is clearly evident from the very nature of the case ; and it will be remarkably verified in the chapters upon the history of civilization.

Our fundamental law, then, is again vindicated. Both the old ethical theories are mutilated, one-sided systems, because each ignores one or the other of the two indispensable elements of thought. The true theory will combine both elements, cause and effect. It will recognize the consciousness of causality as furnishing the only basis of morality ; and the foresight of consequences as establishing moral rules and thus providing the ethical superstructure. The result will not be a barren eclecticism selecting its doctrines at random, but a true ethical system governed by that law which rules the whole world of thought.

CHAPTER VII.

ART.

Hardly any one will deny that there is as yet no science of the beautiful. Many æsthetic theories have been advanced, received with favor by some, rejected by others, and then have passed into oblivion. But despite all these failures, an æsthetic science is still possible. The principle which has been found to rule in every other realm of thought, rules here also. And it will enable us to define the nature of beauty, to discover that common characteristic in all beautiful things which imparts to them their charm. Thus we shall have, at last, the basis of a true æsthetic science.

We have seen that there are two intellectual tendencies, each representative of one side or element of perfected thought. The one tendency is absorbed in the contemplation of effects, is intent upon that appearance of multiplicity and change so visible upon the very surface of things; the other tendency seeks rather for causes—for that manifestation of power, unity and permanence which is not so apparent indeed, but still is exhibited in every part of the universe. Both of these forms of mental activity are to a certain extent pleasurable; and the pleasures attendant upon them, we may call for lack of better terms, the one, realistic, the other, idealistic emotion.

Let it now be noted that each of these pleasures is, by itself, transient, and so essentially imperfect that

it is ever liable to pass into a pain. We are pleased, for a while, by variety and novelty ; but the mind soon grows bewildered, distracted and irritated by the confusion and din of mere change. There is a certain charm also in the recognition of causal power with its unity and invariableness ; but very soon this uniform order becomes for us a tedious, oppressive and insufferable monotony. Each feeling, then, by itself, is defective, spasmodic, powerless to impart full and abiding enjoyment. But when the two feelings are combined, so as to relieve and support each other, we have that most exalted of all emotions—tranquil and sustained delight in the beautiful.

These two balanced feelings, it will be remembered, differ ; firstly, in their objects, power, unity and permanence upon the one side, multiplicity and change upon the other ; secondly, in the fact that the perception is more obscure in the one case than the other. This understood, we have the definition so long sought but never found. *The beautiful is that which harmonizes realistic and idealistic emotion.*

It remains now to verify this æsthetic theory by showing, first, that it will explain the chief æsthetic rules and convictions which have long been empirically recognized in the world of art ; and secondly, that it will also satisfactorily account for the emotions of the ludicrous and the sublime—those half-sisters, as it were, of the beautiful.

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(1) The curve has always been recognized as the line of beauty. This first and most comprehensive

rule of æsthetic form has heretofore been empirically accepted as an ultimate, inexplicable fact ; but from our present point of view it readily submits to analysis and explanation. For, the curve has two essential characteristics; first, it is a line continually changing its direction; second, these incessant changes are governed by a simple and invariable law. It is thus the perfect type of that balance between the two elements of thought which our law demands. It is neither straight nor crooked, nor partially the one and partially the other, nor any other absurd equation of contradictories. It is perfect order and perfect change related to each other as cause and effect. The curved line, in a word, is the visible embodiment of the principle of all beauty and of all perfected thought.

We may go farther in our analysis and thereby explain the different æsthetic values of different kinds of curvation. Thus, according to Hogarth, "the serpentine line" is pre-eminently beautiful; while straight lines are too lean and poor and circles or lines nearly circular are too gross. The rules thus laid down by the great artist are manifestly true; but the explanation of them is rather that of a portrait-painter than of a philosopher. Circles displease not on account of their grossness or fatness, but because they violate, in one chief respect, the principle of beauty. For, in them the element of uniformity is so obtrusively manifest as to completely obscure the element of variety and change; it requires no little thought to perceive the continuous change of direction involved in a circle. Thus the law of beauty is exactly reversed. That

law demands, as we have seen, that the element of variety and change should be clearly and superficially apparent, while the element of unity and invariableness must be more obscurely presented. This relation between clear and dim perception is of the very essence of the beautiful.

(2) What constitutes that charm of color felt at once by the savage and the civilized, but which has never been explained except as inexplicably "organic" or "primitive"? But the scientific explanation is now not far to seek. For, firstly, color is the most vivid manifestation possible of change or contrast; in fact, all visible differences are exhibited to us, only through the medium of differently colored lines or surfaces. And, secondly, all these variations are governed by a simple law of unity or *gradation* whereby one shifting hue passes into another with infinite grace and delicacy. The rainbow revealed that to the commonest mind, long before there was any science of optics. And color is beautiful because it is thus capable of fully satisfying the realistic delight in change or contrast and the idealistic passion for unity and order.

We can also easily explain why savages, children and the uncultivated take such delight in gaudy, glaring colors. For such minds are captivated by the realistic element in beauty ; they love the contrast and novelty so vividly displayed by bright colors. But the idealistic element, that obscure revelation of unity, gradation and repose can be fully appreciated only by the thoughtful and the artistic. Compare, for instance, the gradated tints of the rainbow or of a blush

mantling a fair cheek with the paint on the face of a savage.

(3) The beauty of sounds manifestly depends upon the same law of synthesis. Music gives us, on the one hand, an ever changing succession of fleeting sounds ; on the other, a sense of regularity pervading, more or less obscurely, this mass of vocal changes. The first element, by itself, would be but mere *noise*, irregular and flitting, which would soon become intensely irritating; the second, by itself, would soon pass into a dull and oppressive monotony. But the two are combined even in the crudest forms of savage music, and far more perfectly in the triumphs of modern musical art. And the eternal charm of music consists in its wonderful capacity for thus combining those realistic emotions which stir and excite the soul, with those idealistic ones that soothe and tranquilize it by their suggestions of power, unity and repose.

(4) Our law is then fully verified in regard to those three grand divisions of æsthetic theory, the beauty of figure, color and sound. We come now to the theory of the Fine Arts. And here we need only to complete Schiller's celebrated definition of Art as play. That definition precisely expresses one side or element of all artistic production.

For, play has three essential characteristics, first, it is unconstrained; if it was carried on not for its own sake, but under the constraint of some useful end, it would be work. Secondly, play is imitative, it cares only for appearance, lives in a feigned world copied from the real one. Thirdly, its pleasure is that af-

forded by change, novelty, release from the dull toil and monotony of common life. Now, we have already seen that these three characteristics—delight in freedom or in the absence of constraining and regulative power, delight in appearance or show and delight in novelty—are precisely the characteristics of realistic emotion. This is the philosophic truth involved in Schiller's definition.

But the Fine Arts are something more than play. They contain also an element of *seriousness*, of profound thought, of strenuous although exalted toil. True art must give at least some suggestion of that regulative power, unity and repose which obscurely pervades the apparent world of hap-hazard, show and change. It was the recognition of this deeper element in art which made Aristotle say so grandly that poetry was a more serious and philosophic matter than philosophy itself. In a word, Art must combine the spirit of play and of seriousness ; it must gratify both realistic and idealistic emotion.

I can here note, very briefly, a few of the many applications of this doctrine. First, it avoids the fatal defect of Schiller's theory, in that he was never able to precisely define the difference between the Fine Arts and other kinds of play that are anything but artistic. Whatever gratifies merely the delight in freedom, mimicry and change, is play and nothing more. Beautiful play or art begins when the deeper and more serious element is added.

Secondly, it shows that art is something more than imitation. There may be the utmost realism, the

most vivid and photographic copying of nature and still no genuine art. Beyond the mere play or imitative fancy, there must be that creative work of the imagination which idealizes common things, imparts the charm of unity and order to apparent chaos, breathes, as it were, upon the dead, incoherent mass of details and transforms it into living and immortal beauty. As a corollary to this, comes also Lessing's famous law that the more perfect the imitation effected by any art, the narrower is its range. Sculpture, for instance, is thus confined to a very narrow class of objects. And the explanation is now easy : the more perfect the realistic imitation, the less chance for idealistic suggestion.

Thirdly, another essential characteristic of art is that its noblest efforts transcend all rules and technical processes. This too, can now be readily explained. The realistic imitation of the apparent is largely mechanical. But the other, or idealistic element, is more dimly perceived, and therefore in the treatment of it rules and mechanical processes are of little avail ; it can be known and expressed only by the subtle power of artistic genius.

(5) That distinction between fancy and imagination so much discussed by modern criticism, can be fully explained only by our theory. The difference between them I find to be that the one clings to the realistic element, the other to the idealistic element in beauty. For, firstly, fancy is pure play; she has no depth of feeling or earnestness ; but imagination is ever serious, intense, speaks from the heart to the heart. Secondly,

the fancy is imitative; she delights in appearance, sees and pictures the exterior. The imagination is creative, reveals the inmost nature of things. Thirdly, the fancy is clear, brilliant; her metaphors play like lambent flames over the mere surface of things. But the imagination is prone to obscurity; with a word she dimly suggests things unutterable; with a few grand strokes, she opens up exhaustless thoughts that flow on forever. Fourthly, the fancy works by rule, is accurate, elegant. But the imagination cares little for laws or conventional forms; she breaks the casket in order to get the jewels. Fifthly, the fancy delights in multiplicity and details; the imagination has the secret of unity and comprehends the whole with a glance. Sixthly, the fancy is fond of change; is restless, feverish, thirsts for startling effects. But the very essence of the imagination is a sublime repose, quivering with the pulses of a hidden power.

No one, conversant with the great, incoherent mass of criticism about fancy and imagination, will deny that the essential differences between the two are correctly portrayed above. And they obviously correspond to what we have before seen to be the differences between the realistic and the idealistic element in beauty.

(6) The ludicrous has been generally defined as the incongruous. But there is evidently something lacking in this definition, for the incongruous is by no means always laughable. Many unavailing efforts have been made to supply what is so plainly missing here. Bain, for instance, following in this other

eminent thinkers, has described the essence of the ludicrous as consisting in the degradation of something worthy. But that plainly is to confound pure and sweet laughter with hateful derision and ghoulish glee. Evidently the true definition remains still to be sought, and I now define the ludicrous as that which produces an *excess* of realistic emotion.

Realistic emotion, as we have seen, depends upon the perception of variety and change. When both of these are in a certain excess, when variety has become incongruity and change has become sudden, even abrupt, we have the ludicrous. A tumble into the mud is made ludicrous by the incongruity of the position and, above all, by its abruptness and unexpectedness. A skilled jester wears a grave face, in order to make the perception of incongruity as abrupt as possible. We smile at a momentary discord, but when long continued it becomes a torture. A drenching is ludicrous, if sudden and unexpected enough. We laugh at an unexpected act of folly, but not at persistent foolishness. Wit must come in flashes. Repetition wears away the point of every joke, and converts the ludicrous into the painful.

Laughter, then, is intense realistic emotion—delight in variety and change, carried to the extreme of abrupt, unexpected incongruity. The full force of this definition appears in its explanation of humor or laughter made beautiful. Humor is intense realistic emotion tempered by idealistic seriousness. The true humorist is quick to perceive the incongruous and unexpected, but he is equally quick to perceive

that latent power and ideal unity of human nature hidden beneath these superficial and fleeting aspects of weakness and folly. And among all the fine arts there is none finer than that which thus harmonizes the spirit of laughter and play with a genial, loving sympathy for mankind.

(7) What, now, is the sublime? The definitions heretofore given seem almost ludicrously inadequate. Many, including even so great an artistic genius as Hogarth, have described the essence of sublimity as consisting in magnitude. But a whale is not sublime. Others assert that the essence of sublimity is heighth. But the sublimity which we find in the Pyramids we should not find in a pole twice as high. Passing by other equally unsatisfactory answers, we present the solution given by our fundamental law.

Idealistic emotion we have found to be delight in the dim perception of power, unity and permanence. Sublimity is this feeling carried to the highest intensity, but still relieved by the counter-feeling. The delight in power, unity and permanence—the ideal of action, space and time—must be relieved by delight in change and contrast; otherwise we should have only the dull, depressing sense of laborious effort, sameness and monotony. Instead of a sense of sublimity we should have only an unbalanced and painful feeling. The sublime, then, is that which produces the *utmost intensity of idealistic emotion* compatible with realistic emotion.

Countless examples might be given to show that both emotions must be present. The ocean, per-

fectly and perpetually calm, would be but a "big pond"; but with its ever changing waves and storms, it becomes ineffably sublime. The immeasurable vault of heaven would be dull enough, if its sameness were not relieved by the glitter and seeming disorder of the stars. The mountains are made sublime by their eternal repose amidst scenes of incessant change. Acts of heroism and self-sacrifice gain their grandeur from their contrast with the common level of human action. The thunder-storm, above all else, with its awful display of illimitable power, producing the most vivid changes and contrasts—its sudden outburst of tremendous energy throughout the whole vast and stable vault of heaven, its thick darkness relieved by swift flashes of lightning, the deep roll of the thunder gradually dying away in the far distance —all this furnishes a perfect type of sublimity. But perpetual thunder and lightning would be anything but sublime.

It may be well to specially note one element of sublimity—mystery. The objects of idealistic emotion, as we have repeatedly seen, are dimly perceived; and as dimness passes into mystery, that emotion rises in intensity. Therefore, mystery promotes the sense of sublimity; and on the other hand, clearness is essential to the ludicrous. The obscurity which would be fatal to the excellence of a joke, intensifies the sublime.

Still another gleam of light must be thrown upon the relation between the sublime and the ludicrous. The sublime we now know to be that which produces

the utmost intensity of idealistic emotion delicately balanced by realistic feeling; and that evidently must be a state of most unstable equilibrium. In other words, it is a state extremely liable to sudden collapse. But from the definitions already given, it is obvious that the sudden collapse of the sublime would form a perfect type of the ludicrous. This is the philosophic explanation of the proverb that it is but a step from the sublime to the ridiculous.

The opposition between realism and idealism in art has long been recognized: but only in a vague, empirical way which has resulted in nothing but endless disputes. But now for the first time these two tendencies have been analyzed and their respective characteristies fully described. Now also the exact relation between them has been stated—not of antagonism but of reciprocal need of each other in the perfect balance of thought. And thus a law of the beautiful has been formed whereby we have been able to explain those æsthetic judgments and principles of art which have heretofore been despairingly regarded as ultimate, inexplicable facts given to men by some magic of instinct or intuition. And this law of beauty we have derived from a still wider law, simple and universal as gravity.

CHAPTER VIII.

PAGAN CIVILIZATION.

The nature of thought, then, is everywhere the same. All processes of thinking, from the simplest perception up to the splendors of physical, moral and æsthetic science have one common characteristic and obey one universal law. It remains now to show that this law will explain the course of human civilization and thus give to us a true philosophy of history.

Beginning with ancient civilization, we find there two distinct types of development, the Oriental and the Classical. The first of these is ruled by the idealistic impulse, the other by the realistic: each thus unduly emphasizes one element of thought and ignores the other. And each thus becomes fatally defective, because it is the development of a one-sided and exaggerated tendency of the human spirit. To prove this let us consider, first, the characteristic features of Oriental civilization.

(1) It has long been well understood that the prevailing philosophy of the Orient was an extravagant idealism. For Oriental thought, the whole visible universe shrivels into Maya or illusion. Even personality is recognized only as a transient form of being, which finally fades into the abstractness of Brahma or the nothingness of Nirvana. Everything is sacrificed to the passion for gazing into the depths of pure existence, the absolute cause, the unity and per-

manence underlying all multiplicity and change. Along with this go all the minor marks of an excessive idealism. The disdain of experience, the constant appeal to intuition or ecstacy or some other mystic, *a priori* process of thought, the slavish deference to authority, the absence of free inquiry and of the critical spirit—all these are well known features of the Oriental mind.

(2) Oriental religion has six essential characteristics. First a pantheistic conception of the universe; all finite existence is but a mode of the absolute. Secondly, fatalism; human life is everywhere enmeshed in the bonds of an infinite causality. This is very different, however, from that modern denial of moral freedom which is based upon the ignoring of all conscious causality whatever; the two opposite tendencies of the human spirit frequently reach the same abyss, through different roads. Thirdly, sacerdotalism; for man, a mere waif of weakness and sin, there is no way of salvation save through priestly intervention. Fourthly, the sacrificial element overwhelms the moral; man's weak striving after righteousness is in vain; piety consists not in virtue but in sacrifice, not in what we do, but in what we surrender to the Infinite. Fifthly, the complete subordination of reason to faith; the soul cannot attain to truth through its unaided efforts, but only through revelation and ecstacy. Sixthly, a wild supernaturalism; man disdaining the present world of illusions and changes, gives himself up to dreams of futurity. These are the manifest characteristics of Oriental religion; and they all are the evident products of that idealistic tendency which sacrifices the individ-

ual, the many and the transitory, in order to lay all emphasis upon the thought of one, unchanging and eternal cause.

(3) Oriental morality is under the same pitiless law of one-sided development. The sense of causality is pushed to fatal excesses. The feeling of responsibility to the higher powers forms the almost exclusive rule of action. The practical consequences of conduct are so completely ignored that the moral ideal is made to consist in the sacrifice of happiness, in the cruel tortures of asceticism.

At the conclusion of the chapter upon ethics we have described the inevitable results of a morality which ignores the consequences of conduct; and the Orient is a living witness to the truth of that description. The Oriental spirit, weighed down by the sense of sin and responsibility, is manifestly lacking in moral tone and vigor. It is obedient, very scrupulous about minute things, but strangely neglectful of the weightier matters of the law. Veracity in the East seems hardly to be numbered among the virtues. Justice is but another name for the whims of a despot. Benevolence, confining its care to bugs, monkeys and other beasts, has but slight concern for the misery and agony of men. In a word, Oriental morality, vitiated by the lack of the utilitarian or realistic element is unpractical, incoherent and fantastic.

(4) Idealism, as we have seen, is essentially deductive. The Orient has consequently made no slight contributions to mathematical science, wherein deduction preponderates. But in physical or experimental

science there has been but little progress on account of that disdain for experience, lack of free inquiry and the clinging to the authority of the past which are so characteristic of extreme idealism.

(5) That Oriental art is intensly idealistic, probably no one will deny. Its straining after the sublime in the guise of the colossal, the aspect of repose and permanence which pervades its creation, its passion for mystery, for Sphynx-like obscurity and the dim suggestion of deep truths—all these we have seen to be the essential marks of idealistic art. But it is idealism in excess. Its seriousness often sinks into a dull, depressing solemnity. It lacks that realistic sense of measure and proportion which comes from exact observation. It cares little for the close imitation of reality. And thus its vague and shadowy conceptions are always apt to become painfully grotesque.

The chief triumphs of Oriental art have been architectural. And the reason is now evident. For architecture, employing the most rigid materials in great masses, and forced to adapt itself to utilitarian designs, gives less chance for the vagaries of an extravagant idealism, while affording full scope for the idealistic delight in power, repose and mystery. This is the truth which is partially and empirically recognized in Hegel's famous formula of architecture as the symbolic art—the art best fitted to express "the obscure ideas" of the Orient and the Middle Ages.

Another characteristic—and a very noble, although little noticed one—is its idealistic love of Nature. Of

this we shall have more to say in treating of classical civilization.

(6) Social organization in the East is ruled by the same one-sided impulse. Its aim is the complete subordination of the many to the one. The freedom of individuals, personal rights and private interests are all ruthlessly sacrificed to the idealistic demand for power, unity and permanence in the social system. Hence came the colossal empires which once ruled the East. Hence, also, the institution of castes, that overwhelming sacrifice of the individual to the universal. And hence the peculiar character of Oriental laws, which are minute restrictions imposed upon every detail of human conduct; secondly, are divine revelations, as the institutes of Menu, for instance, declare; and thirdly, must from age to age be sacredly preserved from all change or innovation. In the land-laws there is even a communistic tinge; the right of property floats loosely between the individual holder, the village community and the state. Everywhere the tendency is to centralize; the centripetal forces completely over-power the centrifugal. In a word Oriental society caring solely for unity and permanence, is the very incarnation of an excessive and unbalanced idealism.

As Oriental life was idealistic, so classical life was realistic to excess. This is the philosophic formula for that deep and wide contrast between the two, which has been universally recognized.

(1) Greek philosophy is essentially realistic. Platonism, at first view, seems to directly contradict this

statement; but the genius of Plato was diametrically opposed to the ruling tendencies of classical thought. That is proved by several considerations. First the Platonic philosophy did not thrive until after many centuries it was transplanted to Alexandria where Oriental influences were supreme. Secondly, the great master himself seems to have been a somewhat wavering supporter of his own principles; in his later dialogues there is an evident recoil from an idealism so repugnant to the native bent of the Greek mind. Thirdly, his absolutism and contempt for liberty, his communistic scorn of all individualism, and above all, his disdain for art, show how far he had separated himself from the ruling impulses of his race. Plato, indeed, is a protestant against, rather than a representative of the prevailing tendencies of classical life.

Looking then at the entire movement of Greek and Roman speculation, we see that it became more and more realistic and at last ended in thorough skepticism. The protest of Plato and his few followers was but an eddy in the current.

(2) The realistic impulse engrossed with the phenomenal, neglectful of those higher conceptions which bind all things into unity and permanence, can give but a feeble support to religion. And such was signally the case in Greek and Roman history. We have there presented before us the unique example of a religion without a revelation. The supernatural is reduced to its minimum. The idealistic conception of the Infinite is almost wholly wanting; the gods are immortal men, glorified types of humanity, but as

thoroughly finite, especially in morals, as any ordinary mortal. Religion became merely a function of the state; the priests were simply public officials; and worship a beautiful custom to be maintained in the interest of law and order. Under such condition criticism and doubt had an easy triumph. The simple child-like piety of earlier times was saved from utter extinction only by that counter-tendency—that idealistic or causal impulse—which, however repressed, still obscurely pervades the human mind, because it is involved in the very nature of thought.

(3) Classical morality also was ruled by the realistic impulse. Socrates always indentified virtue with wisdom; and from that thoroughly utilitarian view classical thought—even among the Platonists and Stoics—never departed. There is hardly a trace of that Oriental conception of virtue as obedience to immutable law supernaturally imposed. The Greek gods, in fact, were very poorly fitted to act as teachers of morality. The wisdom in which virtue consisted was to be gained by experience, by study of common opinion and immemorial custom, by free and critical inquiry into the relative worth of sensuous and intellectual consequences.

The morality thus attained had many charms. It had hardly a tinge of the hateful Oriental asceticism; its aim was not to repress but to educate, not the ascetic sacrifice but the free, artistic development of human nature. By patient processes of observation and free inquiry, the moral code became clear, precise and practical. And there was imparted to classical life, for a time at

least, that moral tone and vigor which can be gained only by vivid perception of the consequences of conduct.

But it was still a fatally defective morality. It was narrow and inadequate, in that it had no place for those virtues of obedience, patience, humility and loving sacrifice which form the nobler half of human aspiration. It was superficial in that it did not satisfy the deepest needs of life. It was almost a stranger to the idealistic sense of desert, responsibility and guilt; from the days of Homer downward, sin was but folly, or a passing fit of madness. In a word, it was a morality without a basis—without any deep laid conviction of the eternal difference between duty and self-interest, the right and the expedient. And hence it soon succumbed to the mighty forces of doubt and human passion.

(4) We have seen in a previous chapter that the progress of science depends upon the equilibrium of the realistic or inductive and the idealistic or deductive tendency. Hence realistic Greece and Rome made such slight scientific advance. Something more was needed than intellectual ardor and the acutest powers of observation; great thinkers like Aristotle for instance, might go on forever, scrutinising the obvious and superficial aspects of things without gaining the least insight into the hidden laws and secret processes of nature. But at Alexandria the needful equilibrium of impulses was, for a brief period attained. That great city, lying at the gateway of ancient commerce, became the focus of the Oriental influen-

ces, that were streaming in upon the west; and in her schools there was, for a time, an eclectic commingling of the two tendencies of the human spirit.

Hence it happened, just as our law would demand, that classical science was almost exclusively Alexandrian. We need only point to the immortal discoveries of Hipparchus and Eratosthenes in astronomy and geography, of Euclid in geometry, and Archimedes in mechanics—to show how much was done for science in that eclectic city, and how little outside the circle of her influence.

But this synthesis was purely fortuitous ; it was the temporary product of fortunate but fleeting conditions. Alexandrian idealism soon passed into the wildest Oriental mysticism and was cast aside by the realistic common-sense of the Greek and Roman mind. Henceforward classical life went on in its own empirical way and science made no farther progress.

Thus our law is not only verified, but it solves one of the chief enigmas of history—the failure of the acute, inquiring intellect of antiquity to make any scientific progress except under the Alexandrian influence.

(5) Classical art also was intensely realistic. It has, of course, an idealistic element, or else it would not have been genuine art ; but the idealism is suppressed, suggested rather than boldly presented. There is no taint of Oriental extravagance and dreaminess, no straining after the sublime, the mysterious or the profound. Greek art was content to imitate reality exactly as it appears ; with critical and observant

gaze, it strove to see things in their true measure and proportion. The Orientals failed because they attempted so much ; the Greeks succeeded so gloriously because they attempted so little.

Our doctrine illumines the whole history of classical art. But I can only note a few particulars. First, it explains the peculiar charm of classical mythology —the fading of the wild, grotesque dreams of the primitive nature-worship before a realism which cared more for the correct imitation of actual life than for the mystic meaning of the myth. Secondly, it explains the position of sculpture as preëminently the classical art ; for that is the most imitative of all the arts, the one which depends most upon realistic accuracy of observation and least upon idealistic depth of thought. Thirdly, it explains the Greek lack of that intense, sympathetic feeling for Nature which is so vivid in Oriental poetry and art—that slight sense of the mysterious power, unity and tranquil order pervading all natural phenomena. The Greeks regarded all natural scenery with a practical, utilitarian spirit, not with reverent idealistic love. The landscape formed but a minor feature of their art. Fourthly, our doctrine accounts for the quick decline of classical art. The period of artistic perfection lasted for not much more than a century, in those early Greek times when Egyptian and Oriental ideas were making their first, strong impression upon the native realism of Greece. But thenceforward, from century to century, art became more and more realistic—precise, mechanical, imitative. Roman elegance took the place of Greek beauty.

(6) Classical society incarnates the realistic impulse toward individualism. The rights of the individual were not sacrificed, as in the Orient, to the demand for social unity and permanence; on the contrary, they were made the supreme consideration. Government, in theory at least, was reduced to its minimum; it existed solely for the protection of personal liberty and private rights.

Classical law thus became the exact reverse of Oriental. First, its origin was not revelation, but human reason; it was the concentrated wisdom and will of the people. Secondly, its object was not to lay minute and grievous restrictions upon human life, but simply to protect the rights of the many against the violence of the few. Thirdly, its form was not rigid and immutable; without the Oriental dread of innovation, it was continually changing to adapt itself to the varying needs of human life. These characteristics—of origin, object and form—fully describe classical law, and the essence of them all is evidently realistic emphasis upon the rights of the individual.

The intense patriotism of classical antiquity in its best ages can also be readily explained. The Greeks regarded the state as the citadel of his rights and liberties; the Oriental regarded it as an altar upon which he must sacrifice all individual claims and interests. Obviously, a far more fervent love of the state would arise in the former case than in the latter.

The social development thus attained was for a brief period, very grand and beautiful; but it was one-sided, fatally defective and doomed to speedy decline. Among many proofs of this I can note only the existence of slavery. That has always been regarded as an anomaly, but, in fact, it was a natural and necessary product of the classical spirit. The fierce passions of an unchecked individualism will always reduce the weak to some form or other of servitude. When all emphasis is laid upon rights rather than upon duties the strong will never doubt their right of property in human flesh.

It was also inevitable that the classical régime should end in a military despotism. For realism is purely divisive. No wisdom or patriotism can long restrain the strife of individualism, the bitter struggle between the rich and the poor, the strong and the weak. For a social system like that of classical antiquity, brute force is the only enduring bond of union.

CHAPTER IX.

CHRISTIAN CIVILIZATION.

The law of Pagan life, then, is the unchecked, exaggerated development of one or the other of the two conflicting impulses of thought. Christian civilization is under an altogether different law. Its aim is to convert, to regenerate, to transform the human spirit. Finding one impulse abnormally developed into fatal excesses, it arouses the counter-impulse of human nature ; it awakens a new spirit, a new life to struggle with the old, and thus effects the intellectual and moral regeneration of the race.

Mediæval or Catholic civilization found itself confronted with a life thoroughly realistic. The realism of Germanic savagery differed from that of Latin culture only in being cruder and fiercer. Therefore, according to our law, Mediæval Christianity must seek to arouse the counter-impulse, the idealistic spirit; in a word, it must strive to Orientalize the West. That it did so we shall now attempt to prove.

(1) The dominant philosophy of the middle ages, despite the misleading name which it happened to assume, is thoroughly idealistic. Orthodox scholasticism, caring little for the individual, the phenomenal, ever soars away into the super-sensuous realm of universals, ideas, causes. Its long struggle against

Nominalism was a battle in behalf of the logical principles which underlie a true Oriental idealism.

The other features of Mediæval thought are of the same idealistic or Oriental cast. Subordination of reason to faith, slavish submissiveness to the authority of the past, endless commenting upon ancient works, delight in abstraction and in the spinning of subtile distinctions, credulity, dread of criticism and free inquiry—all these intellectual traits are as prominent in the middle ages as in the Orient. Catholic Christianity had completely transformed the intellectual life of Europe.

(2) Mediæval religion is marked by every one of those six essential characteristics, which we have found in Asiatic faith. In fact, there are so many striking resemblances between Catholicism and Oriental religion—especially Buddhism—that some have thought that one was copied from the other. But this is historically absurd. The two systems have so many points of similarity, because they are creations of the same idealistic tendency.

I can note here but one other distinctive feature of Mediæval religion, but that a most significant one. In the East religion has ever been in harmony with the ruling tendency of popular life, in fact, one of the forms of its development. But Catholic religion began as a reformatory and regenerating movement against the realism that had ruled the Germanic and Latin races; and for many centuries so continued. Hence came that long struggle between the temporal and the spiritual power that forms the most unique

and striking feature of Mediæval history. On the one side was the Catholic church, that marvelous creation of the idealistic craving after unity and permanence —all its chief institutions, the hierarchy, the monastic discipline, the celibacy of the clergy, the confessional and the inquisition being inspired with the common design of repressing individualism and infusing into the Middle Ages a true Oriental spirit of unity, obedience and faith. On the other side stood the temporal power, the military class, the anarchy, first savage and then feudal, the heresies and unbelief—all the secularizing forces of such realism as still survived. From century to century the struggle went on, until Christendom had been completely transformed; and then the mission of the Mediæval regime was at an end.

(3) The revolution effected in European morality was equally sweeping. Classical utilitarianism perished utterly; conduct was judged not by its practical consequences, but by its conformity to a divine code upheld by supernatural sanctions. For the Greeks, the essence of virtue was wisdom; for the Middle Ages, it was emotion. Ecstasy took the place of reason. The estimate of different duties was exactly reversed. Benevolence, which Plato had not even named among the virtues, rose to the highest place of all; while prudence, justice and veracity sank correspondingly in the scale. The Asiatic ideal of ascetic repression was substituted for the Greek ideal of free self-development.

Still the moral revolution did not reach to the full

height of Oriental excess. The idealistic impulse was reacted upon by the counter-impulse which it was subverting.

(4) Mediæval idealism, deductive and averse to experience, could make no scientific progress; but it furnished the indispensable preparation for such progress. There was first needed an idealistic age which should train the European intellect to distrust mere appearances, to understand that the inner constitution of things is seldom revealed by their most obvious characteristics, to seek with unconquerable faith after the unity and unchanging order hidden within the seeming chaos of Nature. Then scientific research became possible. Without such a preparation, the modern age of free inquiry would have ended just as the Greek age did, in crude and barren empiricism.

It has long been recognized that alchemy was a sort of forerunner to modern science. But this is only a dim, empirical recognition of the law here, for the first time, disclosed. Alchemy and the other occult and mystical arts were but incidents in that idealistic development which ruled the Middle Ages and prepared the way for modern science.

(5) The parallelism between Mediæval and Oriental art seems perfect at every point. In both architecture is the supreme art, the one attracting the greatest attention and reaching the highest excellence. In both there is the same striving after sublimity, an aim more fully attained, perhaps, in the great cathedrals than in any other work of man. In both there is the same spirituality, depth of thought and vagueness of

expression that together form what Hegel calls symbolic art. In both there is a high degree of that idealistic love of Nature so strangely lacking in classical art. In both there is the same obscurity which seeks more to stimulate the imagination than to clearly and closely imitate reality. The poetry of Dante and the forest-like gloom of a Gothic cathedral are the most perfect types of this idealistic delight in dim suggestion.

(6) Mediæval society was based upon three principles. The first principle was that of a true, Oriental absolutism which must be understood as the exact reverse of the military despotism with which classical life ended. The latter was purely materialistic, the crushing of the human spirit by brute force; the former sprang from a voluntary surrender to the idealistic craving for social unity, permanence and order. The Mediæval régime began with social chaos. But from century to century the idealistic desire of unity increased; the thought of a common language and country grew more potent; the Oriental virtues of obedience, resignation and faith or loyalty were more firmly woven into popular life; and thus the great kingdoms of Europe were founded, not by force of arms, but by a universal impulse.

The second organizing principle was feudalism, which consisted essentially in the feudal tenures of property. These are obviously the outcome of an idealistic sacrifice of rights to duties and services. As in the Orient, so in the Middle Ages, a full right of property is lodged nowhere; it floats about like a mist

between the crown, the feudal lord and the vassal. The abstract right was restricted and belittled in every possible way, and it was made entirely dependent upon a complicated network of services, aids, reliefs and other feudal duties.

In practical life, the Mediæval impulse could not go farther than this mere restriction of the rights of property. But at heart idealism is always communistic. The great idealists of antiquity, Plato, Pythagoras and their followers were all communists. The same theory ruled the higher types of Oriental religion, preëminently Buddhism. So it did in Mediæval religion, which glorified poverty and felt that men really owned nothing and owed everything. And this theory working darkly upon practical life as best it could, gave rise to the feudal tenures so strangely hemmed round about by all manner of restrictions.

The third social principle was that of serfdom. Slavery we have found to be the natural product of realistic individualism with its fierce emphasis upon the rights of property. As these rights dwindled, slavery perished. But the freedom thus gained was restricted in every way; the serf was even fixed to the soil, and had no legal redress against his lord. In a word, serfdom and the Oriental system of castes were of the same essence: both were grievous restrictions upon human rights in the interest of social order and stability.

The three essential characteristics of the Mediæval régime, then, all have the same origin. The idealistic and Oriental demand for order, unity and permanence

had triumphed over the old classical and Germanic delight in individualism and change.

The Mediæval movement had fulfilled its mission. European life had been transformed; the West was being rapidly converted into a new Orient. If the movement had gone on unchecked much longer, absolutism, superstition and a true Oriental torpor would have enslaved Christendom; and human progress would have been at an end.

But Christianity was true to its fundamental law of regeneration. Against the old order of things, there suddenly rose a mighty outburst of protest and reform. The tendencies of European life were reversed; individualism and progressive change became the ideals of civilization. Thus began that modern period whose characteristics we have now to describe.

Before going into details, however, one general characteristic must be noted. Although the pendulum oscillates from one side to the other, it marks a continuous, forward movement of time. The Mediæval period formed an indispensable preparation for the modern. The really valuable results gained in the Middle Ages were not lost; the conquered handed over many treasures into the possession of the conquerors. This retention of Mediæval results has caused that *complexity* of modern life which every observer has noted. It is a complexity so great as might seem to render all analysis impossible; but the exceeding simplicity of our fundamental law will enable us to unravel it all.

(1) The complex movement of modern speculation can be reduced to a very simple formula. The realistic impulse has passed through four phases of ever increasing power; the idealistic impulse has passed through four correspondent phases of waning. Modern realism began as a sober protest against the wildest vagaries of the scholastic idealism then dominant. Thence it passed into the sensationalism of Locke; then into the crude materialism of the French Encyclopedists; fourthly and lastly, into the abject agnosticism of Mills, Spencer and the great mass of modern thinkers. The realism which began as a modest, reforming impulse, ends as pure destructiveness and negation.

The four waning phases of modern idealism are as follows: It began as an *ontological* idealism, thoroughgoing and mystical, which had been inherited from the middle ages. The second period was ushered in by Descartes and Leibnitz, who gave up the ontologic basis for a merely *psychologic* one, confining themselves to the defense of "innate ideas," or "intuitions," or "universal and necessary truths." Kant introduces the third period, teaching a merely *ethical* idealism founded upon certain postulates assumed by "the practical reason," because they are supposed to be morally useful. In the fourth period, the ethical basis has been given up and idealism has become purely *imaginative*. This final phase is represented in England by Hamilton, whose doctrine is based upon "the impotence of thought"; in France, by Cousin, who rests everything upon "the spontaneity

of reason"—that is upon an unreflective and therefore unreasoning reason ; and in Germany by Hegel whose idealism is founded upon the amazing fancy that contradictories are identical.

This sketch of modern philosophy compresses into a page what might have well been expanded into a volume; but its truthfulness cannot be successfully impugned. How utterly idealism has waned before the counter-impulse is further proved, firstly, by the extreme smallness of the remnant who adhere to the doctrine; secondly, by the character of the practical conclusions finally attained, which do not seem to be essentially different from those of the rankest realism. But still let us give all honor to the genius of these great German thinkers—to Hegel especially, who dimly discerned the essential duality of thought, although rather as a dark prophet than as a discoverer.

(2) It is a mere common place to say that modern morality is intensely realistic or utilitarian. True, we have not wholly reverted to the naive child-like egoism of classical antiquity: our souls still respond, at least faintly, to the more spiritual influences which have survived from the Middle Ages. In fact, we seem to have two ethical codes—an idealistic doctrine of self-sacrifice, humility and resignation which we profess, and a realistic doctrine of self-interest and individualism which we actually practice. But it is to be feared that our sentimental professions serve only to blind us to the mighty power with which the utilitarian morality rules over our modern life.

(3) Modern religion began as a splendid protest

of individualism and realistic good-sense against mediæval priest-craft and superstition. The magnificent results achieved by this reformatory and regenerating movement are too familiar to need recounting here. Still, this realistic development was one-sided and long ago passed into fatal excesses. The old ideals of unity, obedience and reposeful faith have departed, although their shadows yet linger with us. The old content of religion—revelation, sacrifice, the supernatural—has gradually dissolved. Nothing appears to remain but the erotic element—the one word, love, which means anything from the spiritually sublime to the sensuously low. In a word we are drawing closer and closer to a secularism, like that of classical antiquity, wherein religion still survives as a sentiment and a social institution, but without depth or intensity of faith in spiritual things.

In the Middle Ages, morality was but a phase of religion: but we have completely reversed this, and reduced religion to a mere phase of the ethical. Piety, with us, is our utilitarian morality tinged with emotion. It is as a setting sun diffusing its radiance over those western clouds which after all are naught but the cold gray mists of approaching night.

(4) Out of the torpor of the Middle Ages, a new era of free inquiry, intensely practical and realistic, suddenly burst upon the world; and modern science began its swift progress. But mediæval idealism with its deep distrust of the phenomenal and its faith in the cosmic order hidden beneath the surface of things, furnished the indispensable preparation for

this scientific advance. The founders of science, Copernicus, Kepler, Galileo, Descartes and Newton, were all idealists—men who retained the best of the past while yielding themselves to the new spirit of free inquiry and observation. And ever since all the great scientific discoverers, unconsciously—or rather, through that instinct of genius which always shuns extremes and one-sidedness—have exemplified the law that scientific progress depends upon the harmony of the two conflicting tendencies of thought.

This law also explains the retardation of the scientific movement. The grandest triumphs of that movement, as every one knows, were gained in the first century of the modern era, while the influences of idealism were fresh and vivid. Ever since, as realism has increased, the rate of progress has been less and less. At present the age of scientific discovery has given way to one of mere mechanical invention. The purely empirical part of scientific work goes bravely on; the great mass of facts collected by patient observers, constantly grows vaster and more chaotic. But the further progress of true science depends upon a new out-burst of idealistic genius which shall reduce this chaos to the unity and order of universal law.

(5) Just as our æsthetic theory would demand, Christian art culminated in that period of transition when mediæval influences were still strong but were being pervaded and modified by the modern spirit. And ever since, as realism has increased, art has declined. Every one knows, for instance, that in this period of transition, painting and sculpture became more sensuous,

exactly imitative and classical; and what an incomparable splendor was thus imparted to the works of a Michel Angelo or a Raphael. But subsequent centuries have shown that this splendor was that of decay, the beauty of autumnal leaves, the soft hue of roses with which consumption at first tinges the cheek of its victim.

At the close of this age of transition when night and day intermingled, stood Shakespeare, the crowned head of all human art. Since then there has been idealism in art and life, but it has assumed a peculiar form. It has become purely emotional; driven from the field of thought, it has found refuge in that of feeling.

And herein lies the explanation of what is universally recognized as the chief characteristic of the modern mind—that passion for introspection of which the mad Hamlet was the wonderful prophesy. For all this painful brooding over the inner life is the evident result of that pitiable conflict between feeling and thought—between what men fondly dream of and what they really believe in. And out of this comes that lack of repose, that fever of unrest and discontent so perceptible in all our art and life.

Music, alone of all the Fine Arts, has made a glorious advance in the past two centuries; and the explanation thereof is now easy. For music is the most sensuous of the arts; it appeals to feeling rather than to thought; its office is to stimulate vague, although exalted emotion, rather than to express definite ideas. Therefore, it is an art peculiarly enchanting to an

age in which, as we have just seen, the lingering remnants of idealism are emotional rather than intellectual.

Other causes have aided the triumph of music, such as the great improvement of musical instruments in an inventive and mechanical age. But the cause given above is the primary and comprehensive one.

The supremacy of the novel in modern literature can also be now readily explained. For the very name, novel, is suggestive of the realistic element in art—of the delight in novelty, in variety of incidents, in mimicry of real life, in that restless play of "fancy which loves to follow a long chain of circumstances from link to link."

Another chief characteristic of the age is what a great critic calls "its mean and shallow love of jest and jeer;" and this is easily accounted for, by recalling our definition of the ludicrous. The passion for comicality is especially wide-spread in America, the most realistic of all countries. Burlesque and horse-play abound; but there can be no humor where there is no idealism.

(6) Our social life also has been completely transformed. The devotion to secular interests, the fierce assertion of rights rather than duties, the passion for liberty, the ever changing whirlwind of innovations—all these are the familiar characteristics of the classical spirit returned to earth again.

Leaving the reader to pursue this plain parallelism between the classical and the modern age, I shall dwell only upon what is at once the most conspicuous and

the most unique feature of our social life. I mean, of course, that great industrial movement which has brought such incalculable benefits to mankind. Hardly any one will claim that the origin of this movement has ever been satisfactorily explained; and if our doctrine is found to fully account for the mysterious dawn and the swift noon-tide glory of modern industry, we may consider our work as triumphantly ended.

The first great characteristic of modern industry is its motive. The love of wealth is, of course, natural to man; but only as one among many impulses. And the aim of the Middle Ages was to reduce this passion to its minimum, by glorifying poverty and teaching men to despise the fleeting and illusory vanities of earth. It is the same in the Orient where Brahmin beggars or the mendicant monks of Buddhism stand at the summit of the social scale. But modern realism, sensuous, utilitarian, has cast aside these ascetic ideas; it has developed the sordid passion into a madness burning in the very bones of mankind.

But why, it may be asked, did not the same spirit in antiquity attain to the same results? Because slavery rendered a true industrial system impossible; and therefore classical energy could find no outlet save in military life, plunder and prodigality. But since the mediæval abolition of slavery, the economic impulse has had full room to run its course unchecked. In the singleness, the intensity and the ever increasing power of its motive; the modern industrial system is unlike any other social system ever founded upon the earth.

Mechanical invention has been a second great factor in the industrial movement. A realistic age, unhampered by slavery, is experimental, inductive, inventive; it cares little for general principles and looks only to results. Mechanical genius abounds. And so by continued experiment, by minute attention to details and successive adaptation of means to a desired end, those wonder-working machines have been invented, which form the very bone and sinew of the industrial system.

A third factor is specialization; and this has two causes. In the first place, realism attends minutely to details and has an antipathy to everything wide and comprehensive; in the second place, it fosters individualism, cuts away the restrictions of law, or custom or caste, and leaves men free to follow their special aptitudes.

Fourthly, there is an ethical factor which has entered largely into industrial progress. As we have seen, realism tends to foster the practical virtues at the expense of the religious ones. And it was this development of such homely virtues as prudence, veracity and justice, that has rendered possible that vast and complicated system of credit so essential to modern industry. It is strange to see how minutely historians have described the rise of this system in its external features, without giving the slightest thought to the moral causes upon which it depends.

A fifth factor is liberty. Every one knows how much industrial progress owes to the removal of restrictions like the mediæval prohibition of usury, for

instance. It is a movement which appears to prosper most when regulated least.

Such then is the philosophy of the industrial movement; in its every part it is seen to be a product of the realism which rules modern civilization. Observe furthermore how signally our law of exaggerated tendencies is verified here as everywhere. Each of these industrial factors, after having so grandly benefited mankind, has developed into fatal excesses — the greed of gain which tortures mankind, the mechanical habit which stunts the nobler energies of the soul, the division of labor which converts men into machines, the cold, calm morality of self-interest which is proving to be a very Vesuvius of stony vices and red-hot passions. See, above all, how the passion for liberty, the struggle of individualism for its rights, has ended just as it did in antiquity, in industrial servitude — in a tyranny which does not beat or behead the unsubmissive, but merely starves them and their families. In a word, the stream of tendency which once enriched and rejoiced the earth has become a destroying flood.

The whole world awaits a change. Everywhere there is the presage of a new reformatory movement which shall check this evil development and open up new paths of progress. And in this universal expectancy is the final and supreme verification of our doctrine. For all genuine philosophy is but the scientific expression of what is vaguely felt by the common sense of mankind.

CONCLUSION.

All science involves a certain degree of prevision. We have discovered the law of human progress: and, beyond all doubt, that law will rule so long as progress continues. Every detail of our previous study has helped to demonstrate that the realistic impulse can lead henceforth to naught but evil; and therefore, the counter impulse must become supreme and begin its regenerating work. Not, by any means, that we will return to the dreams and torpor of the Middle Ages; humanity is not about to pass into a period of "second childhood." But the idealistic impulse, taught and chastened by the past, will once more hold sway over the human spirit. The search and reverence for causes will take the place of our present engrossment with the superficial, the multifarious and the transitory.

Let us see, so far as our narrow limits and the complexity of the phenomena to be investigated will permit, what the law of civilization promises for the future.

In religion we shall have a new age of faith. But let me not be misunderstood: faith is not credulity or superstition. Nor is it the foe or even the rival of reason; the past antagonisms between the two have been engendered by mental one-sidedness and lack of balance. Faith is a moral impulse whose office it is to preserve the equipoise of the reason. For, the human soul, weighed down by its connection with the body and the passions thereof, is ever inclined to take

the more superficial and sensuous view of things; and therefore there is always need of a certain moral effort to keep the reason balanced and leave it free for its highest work — the devout search for causes and eternal unity and order. True faith, then, is never the enemy of reason or does any violence to it; any more than one does violence to a bird when he opens her cage and lets her forth to sing and soar.

Superstition is a disease of faith. But normal faith is ever the *cause* of free inquiry. It was the idealistic faith of Copernicus and Kepler that led them to their great discoveries.[1] And above all, he who does not take pains to keep his reason unclouded by sensuousness, will never have any deep interest or think worthily concerning spiritual things.

A great moral regeneration is also impending. The ethics of duty and self-sacrifice will no longer be a mere sentiment, a pious profession: they will become the real standard of human conduct. Not that Comte's wild dream of altruism will ever be realized. Human nature will never be so transformed that men will live for others rather than for themselves; so stupendous a miracle is neither to be expected nor desired. But the incoming of idealism will gradually

(1) Copernicus expressly avowed his obligations to the Pythagorean idealism. See *De Revolutionibus Orbium Celestium. Lib. 1, Cp 7 et 8.* He was constantly inspired by his idealistic faith in the symmetry of the universe and the harmony of the celestial motions. So also Kepler, as see Förster. *Kepler und die Harmonie der Spharen, 4.* Frisch in his edition says, "nam per haec studia immortalem suam tertiam "legem invenit quae proportiones illas simplicissime exprimit et New-"tonii de gravitatione doctrinæ quasi fundamentum putanda est." (*Kepleri Opera, Tom. VIII, p. 1017.*)

close the present chasm between the law of self-sacrifice and that of self-interest. It will do so in three ways: first, it will teach men that even the present antagonism between the two principles is not so great as it superficially seems; that even now obedience to the universal law,—"the golden rule"—*tends* to promote the happiness of the individual, although too often this result fails through the interference of other causes. Secondly, it will weaken the sensuous motives and vastly strengthen the idealistic ones—the power of conscience and of the religious and social sentiments—and thus make self-sacrifice far more conducive to individual happiness. Thirdly, it will strive to so reorganize society that every man shall enjoy the reward of his own labors, that millions shall not bear the burdens in order that a few may reap the benefits. In that ideal state, the old contradiction between duty and self-interest will have vanished, virtue and happiness will be harmonized ; and the moral order of the universe will seem to all something more than an idle dream.

Art, in its present estate, can well afford to welcome any change—especially a change from mere play and mimicry to seriousness, imaginative power and depth of thought. Science, also, as we have already seen, stands in great need of a new out-burst of idealism.

The character of the social regeneration to come has been foreshadowed in our previous survey. The trend of idealism, in the Orient, the Middle Ages, and the speculations of philosophy, has ever been

towards solidarity, community of interests, the subordination of rights to duties, service, sacrifice. Its very aim is to unify or organize. And its triumph must inevitably lead us from an age of individualism to one of social and industrial organization.

But let us remember that organization is not interference or restriction or suppression; it is not a pressure from without compacting the many into one unresisting mass. It is a force acting from within; and so far from interfering with, it is the *cause* of the diversity, the changing activity and the freedom of the parts. To this ideal the coming organization of industry will strictly conform. Every member of the industrial order will take part in the administration of its affairs, and all will coöperate towards its common ends; and the world-wide unity and regulated concert of action thus attained will produce a fuller liberty and a more joyous activity than human toil, heretofore, has ever dreamed of.

These are but hints and vague outlines. The utmost power of the scientific imagination, even when guided by our demonstrated law, can do little more than to dream about the possibilities which are now beginning to open before mankind. This new age of faith, sacrifice and social order is like that new world which was first seen, just four hundred years ago, as a little island in the ocean, and which even yet has not disclosed the full extent of its treasures and its promise.

[THE END.]