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THE LOGIC OF REASON,

UNIVERSAL AND ETERNAL.

BY

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P R E F A C E .

PHYSICAL SCIENCE and Speculative Philosophy are fast forcing to the result, that knowledge cannot be made so positive as wholly to displace sincere scepticism by any modes of logic or dialectic hitherto applied. Through all past ages an assumed knowledge has been able to find some ground on which to maintain its own convictions, but never with so clear a title that scepticism has not interposed its honest doubt of entire validity. In the present age, the ultimate sources for both conviction and doubt are so closely examined, that the crisis seems approaching in which the two cannot stand together on common ground, and longer dispute the right to possession, but one or the other will attain an acknowledged exclusive ownership. The admission must ere long be made, that nothing can be truly known by the human mind, and that consciousness itself is but a seeming, as in hallucination or a dream, or that we do know absolutely some truths universal and eternal; and such exclusion of all question in the case must come by the use of our own intelligence, for even revelation cannot help us till it shall be put on ground

which our intellectual faculties can reach, and unanswerably test the validity of its authority.

A strong conviction that modes of logic at present used can never attain to absolute knowledge, but must stop short in confirmed scepticism, puts an imperative upon us to seek out a better logic, by which known truths may be held forever sure. And although few, comparatively, now see that such better logic is the only way to escape an all-pervading scepticism, yet the full belief that the period is not far distant when this must become a general conviction, and a new and better logic be a wide-felt want, lays an additional claim upon us to do what we may, not only to hasten on this certain issue, but also to do what we can to meet this coming want. Whether more or less shall thereby be contributed to such hopeful results, precisely these considerations have pressed to the present undertaking.

AMHERST, MASS., 1874.

CONTENTS.

| | PAGE |
|-----------------------|------|
| INTRODUCTION. | 13 |

Facts of matter and facts of mind to be connectively determined in One Philosophy. This universal Philosophy is in Reason, and hence the necessity of an ultimate logical rule, comprehending all experience in pre-requisite conditions. Abstractions from experience cannot give law to experience, and only by a comprehension of experience in the concrete can we attain its law. And this requires Two Parts: I. That we note the prominent forms of Abstract Logic. II. That we attain a Logic concretely universal.

PART I.

PROMINENT FORMS OF ABSTRACT LOGIC.

I.

| | |
|-------------------------------|----|
| LOGIC OF MATHEMATICS. | 20 |
|-------------------------------|----|

Mathematic is mensuration of Quantity. This has two parts: Equation of known and unknown magnitudes by applying a unit of measure, and the Calculus of value by a numerical computation. Rational Mathematic has pure diagrams, any one of which includes the universal of the same kind. The Algebraic and the Arithmetic Calculus. The Transcendental Analysis. The grand error is that Mathematic is made an Abstract Science. Cannot be both Abstract and Universal, the latter of which it must be. It has its necessary restrictions in itself and its exclusions from philosophy; but its pure constructions stand the very first in concrete logic, and thus the logic of Mathematics is essential for philosophy.

II.

THE SYLLOGISTIC LOGIC. 25

Abstraction and Generalization convenient for classifying, and a pleasant mental exercise; hence the production of Aristotle's Logic. Altogether an abstract from experience, and never reaching the reason. Its Elements are,—1. Conceptions. 2. Judgments. 3. Laws of Thought. 4. Syllogisms. Inductive Logic is subsidiary to Deductive, the whole determined by fixed abstractions from experience. Its ruling is rigidly immutable, and all change or motion in one and the same thing is inconceivable. Its laws exclude chemical combination, conversions of Force, make matter inert, and illimitable Space and Time unknown. Science and philosophy have gone beyond it.

III.

TRANSCENDENTAL LOGIC. 36

Not the object determines the thought, but the thought determines the object. Outline of Kant's Logic; of Fichte's; more fully of Hegel's. Taking thought-activity as Absolute from his Phenomenology, and abstract Being, with its counterpart Naught, from the Old Logic, Hegel has preparation for his Science of Logic. This, produced into externality, gives his Science of Nature; and, returned to internality, gives his Science of Mind. His Logic shown to be deficient in the following points: 1. It is not self-developed, but is an empirical outgrowth. 2. Its attained Reason is ambiguous. 3. It can give no ultimate moral Rule. 4. Can admit of no communication in human experience, nor of a common Space and Time. 5. Has no other Force than the thought-activity.

When Aristotle's Logic and Hegel's are compared,—1. The former cannot move, the latter cannot rest. 2. Neither can determine universal experience. 3. Both together might determine, but neither can transcend experience. 4. The Transcendental depends upon the Old Logic. 5. The certitude to which either may arrive.

IV.

THE LOGIC OF FORCE. 77

This is diverse from the last, in that this connects all phenomena by forces, while that connected all thoughts in a counter-activity. It has been best systematized by Herbert Spencer. Its outline is given in assuming that the conflict between Religion and Science may be harmonized in the logic of Evolution; then showing what Evolution is; what its law, and the principles underlying the process. It puts "effect" for "phenomenon," and "persistence in consciousness" for the "real," and then finds force as the Ultimate in all relative realities. Other logical Elements are also given, but the essential is this "ultimate of ultimates" in the last analysis of Force, from which all logical synthesis must begin. Objections are noted in several particulars, but the conclusive refutation of the logic of evolution from Absolute Force, is, that it essays the self-absurdity of thinking relatively and knowing absolutely by one and the same faculty. Force is needed for both science and philosophy, but force and the logic applied cannot go together.

PART II.

LOGIC OF CONCRETE UNIVERSALITY.

PRE-REQUISITE CONDITIONS. 95

All preceding forms of Logic found to be abstractions from experience, while only the concrete integration of experience can satisfy. After experience, the insight of reason must find the pre-requisite conditions that made experience itself possible, and necessarily as it is. This in three applied directions: 1. Conditions without which the experience cannot be. 2. Conditions with which the experience must be. 3. Conditions evincing the experience to have been a purposed end. Experience includes, commonly, that which has come within consciousness, but properly, also, that which insight brings within reason-consciousness; and this is to be considered in Three States.

I.

PURE FIGURE AND INORGANIC BODIES.

1. EXPERIENCE IN CONCRETE PURE QUANTITY. 102

This is wholly limited to the subjective consciousness. Some of the prominent facts in which to find the pre-requisite conditions. Why reject the abstract construction for the concrete? There are two distinct activities — the subservient and the dominant — in all pure mathematical construction. The subservient gives merely place and period; the dominant determines places and periods in illimitable Space and Time.

2. EXPERIENCE WITHIN CONCRETE QUALITY. 114

Pure figure is here carried on to an object in sense. The prominent facts for attaining the pre-requisite conditions for such experience. Sensation, as first given by impression on the organs, is manifold. This must be, — 1. Distinguished intellectually. 2. Defined. 3. Embodied. Material bodies are apprehended, as in place and period, and known by reason, as in Space and Time. Why the capability of abstraction and generalization in man exceeds that in the animal.

3. EXPERIENCE IN CONCRETE RELATION. 122

Not merely relations as classified in place and period, but connections by intrinsic efficiency. Leading facts for the insight of reason. Communication of thought must be through sensation, and this is from organic impression induced by foreign force. The force impressing must express the thought, and thus must accord with the thought-activity. This must require counter single energies either in antagonism or diremption; the former is substantial matter, the latter is ethereal heat and light. The interaction of material and ethereal forces induces a revolving force, and these three varieties of force are essentially elementary for all phenomenal movements, connections, and dependencies. They may be known as real, distinct from ideal, by their determinate existence in one common Space and Time.

II.

ORGANIC LIFE AND ACTIVITY.

1. LEADING FACTS OF LIFE RUNNING THROUGH FROM
CONSCIOUS TO UNCONSCIOUS AGENCY. 134

An intrinsic urgency determines all living activity, and this urgency differs in different grades of consciousness. In all rational action, the urgency is imperative. In sentient activity, it is appetitive. In spontaneous action, it is instinctive. In growth and reproduction, the instinctive is also selective. In all organic action, there is force, and in addition, there is a feeling of need which uses the force. This combination of a want in possession of force is Life; the want prompts and the force executes, and the elemental want uses only its own possessed elemental force. The urgency has its respective intent in different life-powers, and is the instinctive source for its distinctive species. The grade of consciousness attained is the measure of the authority in elevated rule, and so determines the distinctive Kingdoms.

2. LEADING ORGANIC FACTS IN THE VEGETABLE KINGDOM. 139

In plant-life, the action is direct upon inorganic substance, and assimilates specific elements for the sole end of organic embodiment. Specific life-power manifested in sap-circulation. Propagation by section, by spores and tubers, by sex-generation. Ancestral type in the life-want is perpetuated in the species. The sole urgency in the Vegetable Kingdom is a want to the end of constructing an organism, and in reproducing its kind; and the individual exists in the organism, and is lost in its dissolution.

3. LEADING ORGANIC FACTS IN THE ANIMAL KINGDOM. . 147

The Animal body is built from previous life-assimilation. Brute-life is distinct from plant-life, in that its want is to the end of sensation through an irritable nerve-organization. Constructive action is instinctive, as in plant-life, and conscious sensation wakes in the organism, and thenceforward urges it as appetite. Sentient consciousness attains brute-intelligence, and the individual perishes in

the organic destruction. The unity of species is preserved by transmitting the parental type through the generative process.

4. LEADING ORGANIC FACTS IN THE HUMAN FAMILY. . . 151

The human Organism is constructed as instinctively as is that of animal or plant, but to the higher end of spiritual activity in reason. The reason-imperative is a counter-check to appetite, from which is self-determination and responsible disposition. The alliance of sense and reason makes the sentient soul immortal, and demands retribution, according to fixed disposition. Man crowns nature, and holds in himself mechanical force, instinct, sense, and reason. The mode of using the possessed force evinces that it is originally diremptive, and thus ethereal. The organic and inorganic are in universal connection, while the rational in man is competent to spiritual communion with its finite personalities, and with the Absolute Spirit. Man is thus both natural and super-natural.

III.

ABSOLUTE BEING ABOVE ALL FINITE EXPERIENCES.

GRADES OF EXPERIENCE. 162

Experience in the following grades: illusive, mental, phenomenal, scientific, and philosophical; giving in the last a knowledge of substantial Force and essential Life, the highest which human consciousness attains. Force and Life we are, but their Source we are not and cannot experience. Our reason may see in them what, as source, is conditional for them; and thus we may reach the Absolute in our knowledge with no participation in the Absolute Experience.

From the transcendental facts now attained, we may further find, —

1. PRE-REQUISITE CONDITIONS FOR FORCE. 169

Force, as antagonist or diremptive, is the universal substance, and the energizing source is adequate for all force, and so is *Omnipotent*. In all force, and so is *Omnipresent*. Through all periods, and so is

Eternal. All forces are reciprocal, and so in unity, making a universe; but their source is conditional for, and so independent of, the universe, and the essential laws of the forces were in the source when as yet the universe was not.

2. PRE-REQUISITE CONDITIONS FOR LIFE. 172

The elements of life must have each their source, and their combination to their end must be of one source. And so of sentient life, its combination in an organism must have its own one source, and the appetitive urgency, moving from place to place, must have its one source, and the reason, holding the human in personality, must have its own source; and hence, as ultimate source, we may say, as Revelation does, "In Him we live, and move, and have our being." Man, as crowning the universe, is embodied reason; the independent source of the universe is unembodied Absolute Reason; and while we may know the Absolute, our experience cannot be with his.

3. HUMAN REASON MAY KNOW WHAT IS ESSENTIAL IN
ABSOLUTE REASON. 178

Not an abstract, but a concrete Absolute; and man, knowing himself, may know much of the Absolute, in the image and likeness of which he himself is. Human experience is within, the Absolute is independent of the universe; and we gain knowledge of him, by successive steps, in his possession of the following attributes and perfections, viz., that he is self-essential, self-intelligent, self-sufficient; has self-possession, self-approbation, threefold activity in concert; is creator of substantial Force, one Being in threefold personality; "does all for his own glory;" governs nature by necessary connections, and free-agency by rational urgency; makes miraculous interventions; gives reasonably permission to free action, even in sin; maintains perpetual conscious tranquillity and serenity; and makes himself known as Absolutely Universal and Eternal. In this is the triumph and termination of Concrete Logic.

INTRODUCTION.

LONG since, distinction was made between that which appeared in consciousness through external organs, and that which entered by an activity within ; and thenceforward experience has had its division into facts of matter and facts of mind. Speculative philosophy, seeking to bind all facts in unity, has never been lacking in opposing theories, one striving to expound all experience as originating in matter, and the other in mind ; and the partiality arising from exclusive interest in one or the other side of investigation, while it has sharpened and extended inquiry in each, has also promoted prejudice and intolerance in both.

Comprehensive thinking cannot be satisfied till in some way both objective and subjective facts are recognized as standing harmoniously in experience together, and the master-minds of all ages have had their different dialectical processes for connecting all phenomena, outer or inner, into an orderly and consistent experience ; but it becomes increasingly manifest that, conditional for this, there must be the recognition of somewhat above and beyond experience, which may become pervasive and comprehensive of

all experience. True and adequate logical thought for a satisfactory philosophy must reach the Universal and Eternal.

The true and ever-living God alone is absolute reason, and holds all truth in himself, and thus God only can see all truth in its ultimate and absolute validity, and to him all truth is one and self-consistent in his own universal being and knowledge. But finite reason is in the likeness of the Absolute, and in its measure knows as God knows, and as thus in his image it can commune with him in his works and word; yet, so knowing God as he is, the finite can comprehend the Infinite no further than he makes expression of himself in creation and revelation. These expressive symbols will be read according to the measure of rational insight applied, and thus God and his truth will be known more or less completely by the different grades of rational beings who study Nature and Revelation. All truth that each in his reason knows will be fully consistent with the truths that others know, and with all that God knows; but to the more limited intelligence this consistency of the lower with the higher knowledge may be inexplicable, and apparently irreconcilable, yet ever will a more thorough and comprehensive vision certainly harmonize them. Reason in all its measures is each in each concentric, and all in full accord with the Absolute Reason; and it is moral obliquity, which determinately puts darkness for light, that can alone become hopelessly incorrigible; while even such minds, deceiving themselves

and deluding others, "can do nothing against the truth, but for the truth." They fulfil it in their wilful hostility to it. All true science must, therefore, within its own sphere, be valid, and can contradict other sciences only as it is pushed out of and beyond its sphere, when the appropriate remedy and sure corrective will be to remand the impertinent intruder back to his legitimate possession. Each in its own appropriate place and way helps to complete and perfect the one Universal Philosophy, and so all may work on hopefully and harmoniously.

This one philosophy is in and of the Reason, and reason must direct the lower faculties of intelligence in perception, judgments, and deductive conclusions, just as the life determines the plant in its buds, blossoms, and fruit. Not only is there a guiding reason diffused through human thought-activity, but a controlling reason is correspondingly expressed in all the connections of nature's phenomena, and so empirical observing, and logical thinking, and speculative philosophizing, are all to be held in strict agreement under the determinate sway of this supreme authority. There must, then, be attained in some way an ultimate logical rule imperatively controlling in all scientific research, and putting physical and metaphysical theories in mutual consistency, before their combined results can be accepted and adopted as having a valid claim to any place in the domain of Universal Philosophy. This is why we ask for a Logic of Reason, and insist that, in order to be trusted as true and suffi-

cient, its root must run deeper than sense-experience, and bind all facts of experience in pre-requisite determining conditions. Abstractions from experience and deductions from generalizations of experience still keep within experience, and no abstract logic can meet the demands of philosophy, or satisfy the want of the human mind for a science that shall hold experience itself in connected consistency. To take the observed order of experience as ultimate logical law is to leave experience itself without and above law, and hopelessly to shut out from human knowledge any sovereign that can give law to the universe. Nature and man's experience of nature must be seen to stand in reason, or nature and experience are but a mere seeming, and all appearance is still utter nescience. Science and philosophy live only as they take their vitality from reason, and the experience they attempt to expound must be ordered ultimately in reason, or it is left helplessly to unreason.

But even that logic which gives valid determinations to experience must begin in experience, and rule in and over universal experience, since a logic which had no experience would be empty and worthless, and a logic which could not justify experience would leave both itself and experience to be unreasonable. We need experience, not to make abstractions from it, and deduce general judgments out of it, but to see in it the conditions which have made it possible, and the principles that determine it to be reasonable. Logic is reason, and an experience unreasonable would be

intolerable. A true logic must satisfactorily expound the experience.

We must needs examine the forms of logic hitherto prevalent in the leading theories of science and philosophy, in order by the knowledge of what we have to know better what we want; yet as we seek not to teach their logic, but only to find how much or little their logic can teach us, we shall gain what we need by attaining their ultimate results in the most compendious way. Having seen what may be their deficiencies, or errors, we may the more readily attain the complete and true logic. We seek that which shall legitimate a science of both matter and mind, and by our finite reason so to know the Absolute Reason, as therein to comprehend the universe of conscious and unconscious being.

LOGIC OF REASON.



LOGIC gives law to thought, and therein legitimates the knowledge which thinking attains. It is not sufficient for this that the observed order of facts in experience be made logic, for this at last will be mere fact, and not law for anything. It is simple mode of appearance, without any reason in it, or for it; and were it to include universal appearance, it could not make of it intelligible experience. An adequate logic must get in the facts, a pre-determining law which would not permit their order in experience to have been otherwise. One is but an abstract from experience in the reflective understanding, the other is a determined concrete of experience in the comprehensive reason. To the former no experience can be made other than a seeming; to the latter it has been made veritable knowing, since a law in the reason has given entireness to it. Have we anywhere this latter form of logic? The inquiry determines for us our general method, —

I. To note, in this respect, the leading forms of abstract Logic.

II. To attain a Logic of concrete universality.

PART I.

PROMINENT FORMS OF ABSTRACT LOGIC.

I.

LOGIC OF MATHEMATICS.

MATHEMATICAL SCIENCE has application exclusively to the mensuration of Quantity, and deals with Quality and Essence in reference to their magnitudes only. It answers no inquiries of what? or from whence? but solely the question of how much? An empirical example of mensuration is given when one lays a rule of known length repeatedly along a line of unknown extension, keeping count of the applications of the rule and the fractions of it, if any; and at the end of the process of applying and counting, the two main divisions of all mathematical work appear. The unit of measure applied to the line has given an *Equation* of known and unknown magnitudes, and the computation in the counted numbers is the *Calculus* of value as the determined magnitude of the unknown length of line. Thus may any appropriate units of measure be applied to quantity of place, period, or intensity; and as solid, fluid,

or vapor; and thereby all accessible magnitudes may practically be measured. But a large portion of quantity desired to be measured is inaccessible, and then intermediate relative magnitudes are sought, whereby ratios of known to unknown magnitudes may indirectly be attained, and equations made and values calculated; examples of ingenious and exact solution are so presented of great complexity and great utility.

Rational Mathematics has its pure forms of quantity, including magnitude only, without other content; and thereby one pure form answers for all of its kind, and the measurement of one is virtually the value for the universal, and the science does at once what is common determination for all. In the constructed pure lines, surfaces, and volumes, the insight of reason detects relations and proportions between one and others, and thereby resolves unknown magnitudes of plane and curved surfaces into exact units of measure in straight lines and angles. Geometry so serves to interpose its relative media for effecting equations between known and unknown magnitudes otherwise utterly inaccessible to any application of units of measure. Motion and force admit of like relative interposition, and so Mechanics gives practicable equations else unattainable. The reason guides in the construction of the interposing diagrams, so that their lines and angles, or mechanical movements, places, and periods, present continuous steps of an intuitive process from the starting-point to the complete demonstration.

The calculus has two parts, viz., the *algebraic calculus*, so transposing by means of signs and letters the relations of known and unknown magnitudes as not to disturb their distinctive values, while ministering to the clearing of their relations ; and the *arithmetical calculus*, which follows the former in finding the values of the formula of equations. The numbers here are pure units, and for their computation there are four pairs of arithmetical *functions*, as Sum and Difference, Product and Quotient, Power and Root, Exponential and Logarithmic functions. The Algebraic refers solely to the *solutions* in the equation, and the Arithmetical solely to the *values* attained in the computation. The *Transcendental Analysis* has its varied methods of reducing magnitudes to infinitesimal differences, then taken as zero and disregarded in the calculus, reaching in the Differential and Integral to a broad field of otherwise inapproachable mensurations.

The Reason carries mathematical mensuration of particular magnitudes to absolute universality, and so determines for all coming experience rules which cannot be contradicted in any experience ; but a logic for this is little apprehended, and must needs hereafter be clearly presented, while the logic commonly applied is taken wholly from experience, and can give validity to no demonstration reaching beyond, and claiming to assert a necessity for what may or may not be subject to experience. Here is, in fact, the grand deficiency in mathematical science, in that

it is made to rest upon a logic that abstracts all it uses from sense-perceptions, while it assumes to make its demonstrations vouchers for absolute truth. It is taken as wholly an abstract science, while still claiming within its province to be a universal science. Points, lines, surfaces, and volumes are taken from empirical phenomena, and if nature do not furnish perfect figures they cannot be found. Like pre-Raphaelism in art, nature must be copied nicely and exactly, and the circles and spheres, cubes and squares, and other figures, must first be experienced and accurately observed. The places filled by solid bodies may be imaged as vacated of their content, while their outlines retain their empty forms, and so an abstraction may be made general, the point having position but neither outer nor inner particularity, the line having length but no breadth, and the surface breadth but not thickness. The particular so abstractly general is used as a universal, and though taken from experience is assumed to include all experience. The science serves itself by perpetual ambiguities, sublimating the phenomenal to abstractions for the reason, and putting them back into appearance for the sense; and neither method can serve both sides. The phenomenal body is too gross for reason, the abstract image is too thin for sense. The measure of bodies can only suffice each for itself; while in the sense-use of abstract points, lines, and surfaces, no possible aggregates of them can fill places and periods; and so a rational experience is impossible. Abstract place is

mere emptiness, and not Space, and abstract period is void moment, not Time; and thus neither places nor periods can be measured that are not already given in some experience. Mathematic, with this logic, must wait on experience, or do its work alone amid abstractions which cannot fit themselves back upon empirical bodies.

But aside from this defective logic of abstraction, and in place of which a better logic of concrete mathematics must be applied, there are large restrictions in the way of mathematical mensuration in its own province of quantity. Wherever known units of measure can be used, equations can be made; and where interfering disturbances and complications can be avoided or eliminated, calculations of values can be attained. This has largely been effected in reference to inorganic bodies and their motions, terrestrial and celestial, by exact mensurations. But organic quantities have been found less submissive. Life and its instinctive activities, its sympathies and affections, its thinking, and willing, and spiritual disposing, all have their quantities, but not their known and readily applied units of measure. And so places and periods have their readily applied measures, but space and time themselves are immeasurable. And so the being of matter and of mind must precede questions of quantity, and a philosophy and logic of being must come before mathematical measuring. Still the construction of pure mathe-

mathematical figure will be found to include the same activities as the clear apprehension of sense-phenomena, and thus among the very first processes in knowing both the ideal and the real will be the use of pure mathematical constructions and intuitions. A valid logic of mathematics is an essential condition for a valid philosophy.



II.

THE SYLLOGISTIC LOGIC.

AN object given in perception by the various special senses takes on an appearance modified by what has been received through each organ, and the whole becomes an assemblage of different qualities, as if interpenetrating each other in the place the object occupies, and all go to give the permanent characteristics of the known body. By a larger experience, varied objects are known as standing to each other in less or greater resemblance, and capable of classifications according to qualified similarities. The great utility for remembering, describing, and appropriating these objects by so classifying them, and the interest in the sorting and arranging of them among each other systematically, early secured such categorical arrangements, and almost the whole number of known objects have their

assigned place in scientific catalogues, ranged accordingly as their common attributes put them in their species and rising genera. In this interest of classifying, the Syllogistic Logic was invented, and the same sources of interest have perpetuated this order of thinking with but little improvement in details since the first production of the logic by Aristotle. His *Dialectics*, known as *First Philosophy*, recognized a *first mover* and *final cause*, but as possible in thought rather than by reason's insight, and his universal as the ultimate and absolute is but *the Thought of Thought*, not the "clearly seen Godhead in the things that are made." The logic of Aristotle, in his *Organon*, is solely a work of the understanding, and while the deductions and conclusions in syllogistic form are called processes of "reasoning," yet does the most general judgment in any first premise never rise to a rational, but merely to an empirical universal. The distinctive faculty of reason is never reached, nor does any part of the logic strike root within it.

The elements of which this logic is constituted are — 1. Conceptions. 2. Judgments. 3. Laws of thought. 4. Syllogisms.

1. CONCEPTIONS. — In reflection, the mind not only *turns back* upon an object of sense as it is remembered, but also carefully inspects and analyzes it into its constituent qualities and characteristics, and determines such as in experience have been found invariably and permanently connected in it, and considers

such as essential in the nature of the object; and abstracting these from all casual and variable qualities, they are taken as the true and appropriate attributes of that object, and, as so abstracted, that remembered perception is known as a *Conception* — a taking of the permanent attributes of a thing together as a whole. All individuals, having such attributes in common, are generalized as constituting a *species*; and the fewer attributes that are held in common by a larger number are again abstracted, and being put together they make the conception of a *genus*; and such generalization may be continued through rising genera, till all attributes common to any genus are exhausted, and the conception is then known as purely abstract. The attributes within the conception are its *content*; the sum total of the objects to which the conception refers is its *extent*; and such objects are *subordinate* to the conception. Of course, as the generalization rises, the content diminishes, and the extent enlarges. The conception is *identical* when taken in the unity of its essential attributes; *contradictory* when the conception is, and is not; *contrary* when some essential attributes antagonize; and *different* when some attributes differ while others are alike.

2. JUDGMENTS. — An attribute taken from the content, or an object from the extent, of a conception, and joined to it as qualifying or conditioning it, raises the conception to a *Judgment*; and as expressed in terms, it is a *Proposition*, the conception being the

subject, the qualifying condition the *predicate*, and the connecting verb is the *copula*. Fundamental Propositions are *axioms* and *postulates*; and Derivative Propositions are *theorems* and *problems*. Judgments have *Quality*, as *affirmative*, or *negative*; *Quantity*, as *general*, *particular*, and *individual*; *Relation*, as *categorical*, *hypothetical*, and *disjunctive*; *Mode*, as *problematical*, *assertory*, and *apodictical*.

3. LAWS OF THOUGHT. — There is, *first*, the *Law of Identity*, which has a twofold meaning, as that of *affirming* a thing solely as itself, and that of whole and all its parts as being the same. *Secondly*, the *Law of Contradiction*, as *negating* that a thing may be other than itself, or that whole and all its parts may be other than the same. *Thirdly*, the *Law of Excluded Third* takes the laws of Identity and Contradiction together, and requires that if we think at all we must think affirmatively or negatively, and there *can be no third way*. *Fourthly*, the *Law of Sufficient Ground* requires that all affirmation and negation must have an adequate basis; and this is known as *ground* when sustaining conviction directly, and as *consequent* when conviction is sustained by deduction from a prior ground. The logical ground is some *datum* of experience, not a necessity in reason above experience, of which this logic knows nothing. These laws rule in putting conceptions into judgments, and judgments into reasoning forms, which is, —

4. THE SYLLOGISM. — Conceptions contain the permanent natural attributes, which have been abstracted from the analyzed objects of experience, and a general conception includes all the particulars with common attributes embraced by it, and to them it is their Universal. From the Law of Identity, what may be predicated of the universal may be predicated of all the particulars, inasmuch as what is true of the whole is true of the parts, and so each individual, as one of the parts, is determined in the universal. And this determines the form which a deductive syllogism must take. Some generic proposition must be its *major premise*, some one or more of its particulars must stand in a proposition as the *minor premise*, and the formal deduction of the one individual, or more, must form the *concluding* proposition. This syllogistic formula admits of three modifications — the Law of Contradiction determining in the major premise, as affirmatively or negatively *Categorical*; the Law of Sufficient Ground, as *Hypothetical*; and the Law of Excluded Third, as determining the *Disjunctive*. Each of these has its respective rules for varying the order of ground and dependence, with the exceptional forms of *Dilemma*, or horned syllogism, *Enthymeme*, or defective syllogism, *Prosyllogism* and *Episyllogism*, *Sorites*, or heaped syllogism, and *Epichirema*, or super-induced syllogism in confirmation.

Subsidiary to the deductive mode of reasoning, and yet logically preliminary to it, is the *inductive* method, and which is used to fill and confirm the generic or

major premise by assuming an ultimate ground in reason, and introduces the reverse rule from the deductive, viz., that what is true of all the particulars is true of the universal ; and also employs the reverse order of thinking by determining the genus from the individual. The inductive method was largely elaborated and strongly recommended by Lord Bacon, in his *Novum Organon*, and has been made most admirably successful in physical discovery. By abstractly diminishing the content, and enlarging the extent of conceptions, the class might be elevated from species to rising genera, and at length to a pure universal for a confirmed major premise, if the experience could be carried out to complete universality. Such universal experience, however, is impracticable, and in place of it is taken the rational principle, that Nature is uniform in her laws of progression and connection, and that what has been found invariably to be fact in broad inductions of experience may safely be taken as Nature's law, and that so induction carefully and broadly applied may be taken instead of a universal experience, which is far beyond any finite accomplishment. Reason so helps the naturalist and positivist, even while they are ignorant of any such distinctive function.

The Doctrine of Method here follows Syllogistic Forms, and closes what may be termed the Old Logic by extending its laws over the whole process of continuous Discourse, and the preparing the way for Rhetorical Culture. The comprehensive outline here given

to the Old Logic will be sufficient for determining whether any, and what further use can be made of it.

The order of thought taken supposes the appearance in experience to determine the conceptions, and the sense-objects to have altogether guided and controlled the logical thinking. Reflection is meant as a retrospection with special care and design to analyze and abstract the permanent characteristics of observed facts as their stable truth, and these are made the attributes of the steadfast conceptions. The conceptions, then, condition the judgments, and the judgments regulate the syllogisms. Careful induction from experience makes the major proposition the truth of experience, and the classified species and genera are the permanent order of experience, and the abstractions taken from experience are ever after fixed as when they were abstracted, and as fixed facts become also logical laws for all coming experience. Nature is found in experience, and no interest is taken in any question why experience has been thus, but the observed invariable order is itself law, with no quest for a supernatural law. Then the logical terms hold the conceptions in their technical precision as invariable in meaning as the definitions of the Dictionary. Experience goes on from year to year, and down through following generations, but the order of nature is uniform, and the logical identities and contradictories keep their rule unbroken.

The conception of the same generality will keep from age to age the same attributes as its content, and

so, for example, man will be sentient and mortal as animal, and rational and responsible and immortal as spiritual, through all his generations. And so all the same generalized conceptions will have the same species and genera as the logical extent through the ages, and the genus man, for instance, will have ever out of and beneath him the mineral, and vegetable, and animal kingdoms as his subordinates. And even the individual conceptions keep their perpetual Sunderings each from each, for the limits of material bodies are in the bodies themselves, and no contact of bodies can abolish their separating surfaces, but rather put another spacial limit between their surfaces by coming together, and thus all bodies make and keep their own places. The logical conceptions so persist, impervious in matter, and imperishable in form.

This fixed rigidity of the logical conceptions gives to the logical system an iron frame, which can neither contract nor expand without breaking. It is exact in testing immutable truth, but necessarily introduces endless contradictions and absurdities when empirical facts are forced into it. Experience gives perpetual change and movement, but its abstract representatives in the logical conceptions are changeless and moveless. The abstract conception of motion itself holds it logically steadfast, just as the expressive photograph holds forever fixed the rapid light-vibrations. Logic is unvarying truth, and matter is continual motion and change ; hence, when logic and fact in expe-

rience are forced together, the logic crushes all life out of the fact, or the living fact breaks the logic. Locomotion and change are logical absurdities.

The body cannot move where it is, for it is now there ;

It cannot move where it is not ; therefore —

The same body cannot move anywhere ; and so the same thing cannot change its state without violating logic — for,

Everything is in one state or another ;

If a thing be in one state it is not changing, or if in another state it is not changing ; — therefore —

The one thing cannot change its state.

Just so with Kant's Antinomies, and the many detailed absurdities in Mansel's Limits of Religious Thought, and Herbert Spencer's "Unknowables." Sir William Hamilton imputes the contradictions to our mental impotence, and endeavors to elude them by most illogically laying down a ground for faith where there can be no ground for knowledge ; but it is not at all mental impotence, for omnipotence cannot make absurdities self-consistent. The contradictions and absurdities come necessarily when it is attempted to put fleeting experience into fixed logic. Not the human mind is at all in fault ; the logic and the experience are unequal, and any forcing of either must violate its integrity.

With this logic, matter is *inertia*, and therefore if it move or change, its ground for so doing must lie quite out from the logical conception. The change

from congelation to a liquid, and thence to vapor, cannot logically be allowed a change in any one thing, and thus ice, water, and steam must, for this logic, be each distinct in identity, according to their respective attributes. These, as content, are dissimilar in the three, and their logical extent is also wholly unlike: the genus of ice is crystallization, of water it is fluidity, and of vapor it is gas; the logic thus cannot go back to a chemical substance, standing under the three; and if it did, it would then be forced to hold the constituent hydrogen and oxygen as two identities which could have no middle-third. And so chemistry is perpetually breaking logical law. Salt is identical neither with acid nor alkali, and yet it is a middle-third; and it has no logical ground, but stands in rational cause quite beyond all logical rules. The old logic can nowhere stand with chemical science.

And so all physical science is breaking down logic with one hand, while holding on to it for support with the other. For the physicist of the present age, matter is force, and the one force is perpetually converting itself from the simpler to the more complex arrangements, and the complex are becoming the more definite; yet logic can tolerate no change in identities, nor allow any ground for passing from homogeneity to heterogeneity, and evolving the complex from the simple. But with the other hand, physical science is using all the abstract conceptions of species, and rising grades of genera, and holding on to both logical content and extent for its classifications and

systematic connections. When the higher abstraction comprehends all the objects of the subordinate, then, doubtless, logic will admit of a deduction of the particular and individual ; but if matter be an unsystematized Absolute Force, this old logic can allow it to be no ground for deducing either genus or species, particular or individual.

Thus, moreover, with Space and Time ; the old logic can make nothing of them. Reflection and abstraction can attain place and period from appearances in experience, and may put places in juxtaposition making a larger place, and periods in succession making longer period, but no extending of places gives space, and no succession of periods gives time, since all places must be *in* space, and all periods *in* time. So is it manifest that science and philosophy have out-run the old logic, the vigor of which was used and spent in the Scholasticism of medieval history. It can now have application to only that which is found permanent in nature, viz., its primitive molecules, and permanent substances, and perpetual species and genera. Thought, and speculation, and science, and history, and humanity, are advancing, and yet the progress cannot be lawless. A logic adequate to it must be attained, if the old is to pass away. We may, then, here, cheerfully leave the syllogistic logic, and turn with interest to see of what logic the progressive age is striving to avail itself.

III.

TRANSCENDENTAL LOGIC.

THE Old Logic had taken matter as dominant over mind, and made the object to control the thought, and yet this had succeeded so poorly, and its contradictions with experience had induced so much scepticism, that it was a matter of course that some clear and intrepid thinker should break away from this assumption of the object determining the knowledge, and assume the opposite supposition, that mind masters matter, and the thought determines the object. And this is the starting-point of the critical philosophy by IMMANUEL KANT. The shortest possible, but still a sufficient outline for our present purpose here follows.

Back of and conditional for all sense-appearance are the universal forms of space and time, and within these all possible pure places and periods may be figured. There are then postulated for thinking in judgments the well-known pure conceptions of the twelve categories. These are the primitive forms for the understanding, as the pure intuitions of space and time had been for the sense. Any pure places and periods in space and time might then be taken within the pure

conceptions of the understanding, and be wrought into all judgments of which the human mind was capable, and in this was given a universal *schema* for all possible human thinking. In order to apply this pure thinking empirically, the intuitions must, from somewhere, have content given to them, and such sense-content must be ordered in the understanding-conceptions; and for this empirical content an outer *thing in itself* was postulated, though this thing in itself could not be proved nor known, and as an incognizable object was called *noumenon*. One synthetic "I think" was also postulated as able to accompany every intuition as imagination and every conception as thought, in order to the unity of consciousness.

Such, substantially, is Kant's Transcendental Logic; following which is his Transcendental Dialectic, disclosing the impracticability of extending human knowledge beyond experience to the attainment of an existing soul, its immortality, and the being of God. The logic may regulate the thinking through its empty forms, but there is nothing coming from the supersensuous world to fill these empty forms and give a knowledge of any realities beyond sense-appearance. Theoretical Reason can do no more, but Practical Reason postulates a soul, immortality, and Deity, in the interest of freedom and "the categorical imperative."

FICHTE modified Kant's Logic, and extended it in one direction. He repudiated the *noumenon* as con-

fessedly unknowable, and so necessarily outside of a science of knowledge which must originate in one source, and be self-sustained and consistent with no dependence on any outer support. Kant had observed that the categories ordered themselves in triplicates, the first and second members standing apparently in conflict, while the third brought them into reciprocity, and of this Fichte took advantage, and applied the principle of *identity* for positing an ego, or self, and then, also, the principle of *contradiction* for positing over against the ego its representative as a non-ego, or not-self; and that one should not exclude the other from consciousness, he took the self and the not-self as meeting each other in a common limit, and so in the same ground, and therefore not excluding but reciprocating each other. One activity both posited the self, and opposed the not-self as its representation; and so the self as subject, and the not-self as object, were from one and the same source, and were both subject and object in one act. This one thinking activity is itself ultimate, since the deepest fact in consciousness is this moving act in self-recognition, and no capability is found to go back of the activity and attain a prior essence out of which the act has come. The self can be known only through its representing not-self, and the not-self can represent the self only as put over against it by the self-activity. This living, thinking movement is the one proper and true self so attained in consciousness.

And now, on one side, there is occasion that the

not-self be considered as active in limiting the self, in which case there is an opening to the Theoretic Part of the Logic. The thinking movement is in the infinite void, and that it do not spend itself uselessly and endlessly, its interest in its own behalf secures self-limitation, and a return upon its own activity, and such limitation of its own action becomes the spring to all objective knowing. The universal world of objects has in this its productivity in consciousness. On the other side, there is occasion for the self to be taken as active in this return, and determining its own being and working, and so opening the Practical Part of the Logic. The thinking ego, in the end of its own being, should pass on to its complete development, and whatever it *should* do, that also it *can* do. An intrinsic imperative prompts and guides, and in free spontaneity the law of order is obeyed, and full development secured.

A defect in the very root gave its objection to the logic, and secured its general rejection. It had put its standing at the start really on two principles, and the inner self was necessarily in bondage to the outer not-self. It might posit, but could not know except by opposing its representing not-self, and thus could never free itself from the domination of a not-self. It could make no difference in this respect, though the self did its own representing; if it came to self-consciousness at all, it must oppose, and be controlled by, its representing not-self, and thus this representative object was really as dominant as could have been

any material thing in itself. Fichte had begun in rejecting the *noumenon*, but he had finished by taking in as tyrannical an *eidolon*, and thus an absolute could never be gained in this Science of Knowledge.

The law of order as sovereign of the thinking, and which Fichte affirmed was the only God needed, was itself begotten from this opposed representative. He had gone farther, but had gained scarcely anything more than Kant.

HEGEL completed the Transcendental Logic. Profiting both from the attainments and deficiencies of his predecessors, he not only dropped out Kant's *noumenon* and Fichte's representative non-ego, but as preliminary for the construction of his logic he attained an assumed absolute thought-activity, ready at hand for the production of all logical categories in their primitive forms and relative order. This he had effected in his Phenomenology of the Spirit by starting from immediate sensation, and exposing all rising illusions in showing successively the only open way to the attainment of steadfast certainty. Appearances taken immediately as true are soon found fleeting and changing in consciousness through passing particulars, and no abiding truth is taken except in the more general conceptions that remain when the particulars disappear.

In the COMMON CONSCIOUSNESS, at its earliest dawning, we have the apprehension of affections in the special sense-organs as *mere appearance*, and the immediate assurance is only of an indiscriminate

somewhat of which we can only say "this," and in reference to place can then say "this here," and to period "this now ;" but the vague "this" anon becomes a *distinct perception* with a definite outline, as a tree or a house in place, or as night in period, and the immediate is other and more than the vague "this," even that which can take a common name as having already some thought and meaning in it. And yet this appearance, with a meaning, soon passes from consciousness, and another appearance with a different name and meaning comes in, and what was is not the true, but we are forced to find some general name which may cover any appearance that is here and now, since that only can be the abidingly true. And even such abiding generality can have its truth only in the conscious subject perceiving it, and so the stable certainty is in the subject rather than in the object ; and then, to be permanently true, the subject must be general enough for all the passing objects, and therefore a general consciousness can alone be the permanently true. The subject remains while the appearances come and go ; they are varying accidents, and the true is change in the abiding subject, and this abiding subject cannot be immediately perceived, and only reflectively thought. The true has thus passed wholly away from immediate perception, and can be found only in the *reflective understanding*.

The subject here reflects, i. e., sends out, gives utterance to, the appearing accidents, and so from it is a *force* which passes into expression as manifesta-

tion of the internal and abiding subject, and at the same time is a retroactive limiting force sending the phenomenal accidents back to the essential subject as their true source, and so in reflective thought this counterplay of the forces is the true activity which is continually giving to the thinking consciousness matter and form, cause and effect, substance and phenomenon, internality and externality, &c. In truth, "we here get behind nature," and see just how the thinking forces work to make the consciousness of nature's connections; and while the illusive understanding perpetually deceives with the semblance of the subject and object as two distinct determinations, we now see that they are but two sides of the one reflective activity, at once outsending and remanding its own manifestations. Beneath this deceptive and tumultuous counterworking of the respective forces, Hegel assumes there is "a quiet realm of laws," the steady image or type of which is constantly turned towards and throwing its sway amid the perturbations, and reconciling all seeming absurdities and contradictions. The laws in particularity are threefold, viz., 1. An externalizing impulse. 2. A reverting impulse to the inner essential subject. 3. An internal coalescing of the two in unbroken union. The comprehension of the first two in the third gives the one "infinite of law," and its great significance is manifest in his own characteristic description of it. "It is to be called the simple essence of life; the soul of the world; the universal blood everywhere

present; undisturbed by any conflict, and itself rather all contradiction and all reconciliation." In its sway the subject thinking has come to see that all ordered force and change, action and reaction, are its own doing. Consciousness has only its own subject as its content.

We have, then, a second phase of the true being known as SELF-CONSCIOUSNESS. The same sway from the placid empire of law beneath is maintained, and the activity posits, and negates, and coalesces these counteracts as before, but not now as in the *theoretic* common consciousness, where the object only was the true being, but as *practical* self-consciousness, where the object is thought as the subject itself. The law here becomes a conscious urgency to the full realization of its self-hood, in both freeing itself from all alien limitation, and also by standing out manifest in its own objective independence. This urgency is a logical want, a thought-appetite, constraining to the practical attainment of those two ends, which indeed are but the two sides of the same state.

The self-consciousness, though fairly thought, is yet not practically attained, and there must not remain any dubious questionings. The doubting comes from the logical law itself, which demands a distinctive counterpart or *alterum* to the posited subject, even if the subject-self be all that is true being in the consciousness. From the nature of the case, then, the consciousness must be in a perpetually militant state, for the self cannot assert and prove its freedom,

except by continual conflict and conquest. It must have an opponent, and must subdue and annul that opposition as well, or its certitude of its own free being is lost. Here is a life and death struggle, and only in perpetuating the struggle is the life persistent. One alien exterior after another must be grappled, and made pervious to its agency, and thoroughly assimilated to itself in its thought, and by such logical mastication and digestion, the self brings all that may seem foreign into its own subject, and shows itself both the rightful owner and user of nature. The urgency is to overcome and win, that in it its want of full consciousness of independence in itself may be satisfied.

But the other side of its freedom, the open manifestation of it, is quite as urgent, and this cannot be in conflict with and conquest over any objects which are destitute of self-hood, and only can be amid other subjects with each an independent self-hood like its own. The one self must stand in social communion with other selves, or he can neither himself be fully conscious of his own self-hood, nor make it extant for others. But how shall one only acting self-subject have associated subject-selves? This can logically be in no other manner than by conceiving that the universal discedes into the particular; but how this, and yet the one universal maintain his self-hood and the particulars have also theirs? The knot is cut and covered by representing it as "historically" presented. In some way, history has found its societies of particular intelligences, and though all require in

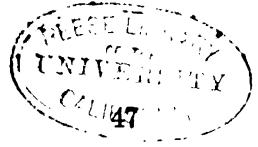
each a self-hood like their own, yet have not all come alike to the same cultivated consciousness of their free independence.

Each particular needs to arrive at the same independent self-hood among its fellows as amid the alien sense-objects around, but all do not attain this alike at the same time. One asserts and maintains his independence persistently, and will part with his freedom for no price; another will give in for a consideration, as a hireling for a reward, and a slave from fear. The first will make himself master of the two, and a fourth may freely yield his will to the first as his friend, or in loyalty as his proper sovereign. Complete identification of will at length in all puts the particular wills in one, and the bonds of love and virtue then hold together families, nations, and humanity. This universal does not see itself distinct from the particulars, but as a whole with the particular self-consciousnesses in itself, and itself as recognized by all in their wills identified as one. It is true personality, insomuch as it recognizes itself as known by others in community. The particulars all recognize themselves to be one in the universal, and the universal recognizes each.

The coalescing of consciousness and self-consciousness gives the third phase of true being as ABSOLUTE CONSCIOUSNESS, or REASON. All particular objectivity has become suppressed in universal subjectivity, which is its own object. It is thus both subject and object, real and ideal, for it is competent to recognize in

itself all thinking and all thought. It must still be the thinking activity, for the sway from the "calm realm of law" abides; it must state itself as its thought, for there is no true being but in its subject. Truth and knowledge are identical in it. And herein is the termination of the Phenomenology of spirit, since the scrutiny for lasting certainty has found all truth and all being in one absolute thinking-activity. The whole process becomes here a closed circle, whether necessarily or arbitrarily may be hereafter seen, and we have this absolute thinking-reason as the agency with which Hegel begins and completes his transcendental Logic; to which we now turn our investigations.

With the foregoing preparation, necessary to an intelligent consideration of it, we now come to Hegel's SCIENCE OF LOGIC. An outline without details is sufficient for our purpose, and any adequate reproduction of it would demand Hegel's own presentation. The thinking-activity, attained in the Phenomenology as the universally true by dispelling bit by bit all illusion, is to be the producing agency of the logical science, and this under the perpetual sway of the tripartite type, which the transcendental "infinite of law" constantly throws down upon the on-going process. If this attained thought-activity be itself the Absolute Reason as assumed, or if, as implied by the presence and sway of the transcendental law, this thought-activity is itself reflective only, and the law controls as Absolute Reason, we should in either case



TRANSCENDENTAL LOGIC.

have already the recognition of the distinctive faculty of Reason, and should have only the critical inquiry to make, How have we come by it? But as the whole question of the legitimate possession of reason is, we think, quite unsettled by the logic, we shall leave its consideration for a coming more appropriate position. The thought-activity attained ultimately in the Phenomenology is taken primarily in the Logic, and made author for every stated thought produced in the process. The subsistent law secures a perpetual repetition of two simultaneous counteracts as co-factors, or complementary elements, to be grasped together in a new and richer third, and this third conception becomes a new category at each repetition. The last, also, admits, and the law demands for it, an analysis of new co-factors for a new synthesis in a higher category. By invariable triplicate steps in a circuit, and triplicity of circuits in a higher cycle, the Logic rises to a stage where the process is assumed to close by shutting in upon itself. Hegel's name for this peculiar thought-activity is "Begriff," which German word expressively indicates its action in the repeated *grips* made of the recurring complementary elements. It has been difficult to translate it into a satisfactory English word with the peculiar meaning here attached, and hence the varied names given to it as Notion, Idea, Grasp, Clinch, Lock, Conception, Comprehension, &c. ; we shall therefore use it in its vernacular sense, untranslated.

For this "Begriff," there is also placed at hand an

abstract conception sufficiently general for a continual thinking process, till at least it may reach the universal of conscious experience if not to an assumed absolute. Abstract Being is a logical conception in which all *content* has been exhausted, but its *extent* reaches to the universal which has been taken from it. All sub-genera, species, and particulars, though not in it, are yet of it, and may again be thought as identified with it. These, as logically now standing out of it, are yet the counterpart to it, and constitute a universal Not-Being strictly complementary with it. As the abstract negative of Being, it is the logical converse of Being, and not its opposite as a *nihil negativum*, and may be termed *Naught* in the same way as the logical converse of abstract light is not-light, or darkness, and of sound is not-sound, or silence. With the complementary conception of Being and Naught, a universal logic is possible, having completeness and exactness from one systematic activity. Here, then, is Hegel's grand preliminary preparation for his great work, and its execution has been as full, and exact, and self-consistent, as was the original conception. He did all he designed, all he deemed possible to be done, not to say all that is really desirable and needful.

BEING. — Being and Naught, through beginning and ceasing, become determined existence, and stand in combined position as *Quality*. Through the continuous and discrete a *quantum* is attained, extensive in amount and intensive in degree, and limited in

the *quantitative ratio* the Quality becomes a completed *Quantity*. This, in union with Quality as Quantity externally qualified, is *Measure*.

ESSENCE. — Being is now lost to immediate appearance, and can manifest itself only reflectively, and be known not by perception, but only in the understanding. The essential reflective-force, as cause, expresses itself in phenomenal manifestation, and the reciprocity of inner essence and outer existence becomes the one *actual* thinking process. All the illusions of the understanding, as if matter and form, cause and effect, substance and accident, &c., were distinct determinations, here pass away, and Being and Essence stand combined in the thinking agency alone.

“BEGRIFF.” — The same agency all along working has now come to itself, and the category takes its proper name. The process is still under the same transcendent law, and so after the same trilogic method. The “Begriff” has its inner *subjective* working, giving to itself a complete internal logic; also a full external order of determination in mechanism, chemism, and teleology, as an *objective* activity. The combination of the subjective and objective brings the “Begriff” into entire *self-identity*. Yet, as one in thought and act, the counter-acts still proceed to further attainments. The urgency to think, and the theoretic thinking, combined, enter the stage of practical activity as *life*; the longing and knowing constitute the *good* in thought, and put in execution they become *will*. The good is yet in thought, and so pro-

spective, and the will is not for that which yet is, but which is to be; an infinite seeking of an infinite good; the struggle can cease in quiet serenity only as the good is perpetually known and perpetually possessed; in this the "Begriff" is Absolute — self-living, self-knowing, and ever self-blessed. Having found itself in intrinsic unity, internal determining is dismissed in self-liberation, and this dismissed totality of outer determinations is then the external world of Nature.

THE SCIENCE OF NATURE here follows the Logic, and takes this negative externality as a one-sided state of existence disceded from the internal, and the process of its return to unity with the internality is minutely described. The design of this is, that in thinking itself externally the "Begriff," may perfect the knowing internally. Internality and externality are one in *universal* thought — the discession to externality, with its negative determinations, is Nature in infinite *particularity* — the science of this is the process of identifying the particulars in *individuality* — the thinking-activity is thus present in the entire determinations of Nature.

At first, Nature presents a chaos of particulars, but it is, notwithstanding, a living universal. Abstract externality is *Space* — the abstraction of negative thought-determinations in it, inducing abstract instants and moments, is *Time*. The unity of instant and moment is *place*; and the activity thus uniting is *motion*; and the combination of space and motion is

matter, as position taken. Hence successive determinations in free movement go on in *absolute Mechanics*. The working out of the *general* individuality of the worlds, the *particulars* in them, and their *complete* individuality determined, make *physical science*. Free individuality, then, gives life in *Organics*, as *geologic* shaping, *vegetable* particularizing, and *animal* individualizing in determined subjects. An incapacity to become generic, and go on to the universal, is the wasting mortality of individuals, and their bodily death is the spiritual resurrection and immortality of Mind.

THE SCIENCE OF MIND here follows, and is a solution of all contradictions between the external and internal, since Mind unites all in *thought*, and is both subject and object, self-dependent, and therein substantial *freedom*, and in this it is *Subjective Mind*. This free individuality, then, manifests itself in its activity, gets and holds property, makes contracts, knows rights under the form of legality, and is thus ethical personality as manifested *Objective Mind*. Free, practical thought, self-directed to ends, becomes morality; and this in identity with general will is absorption in family society and state, and becomes *Absolute Mind*, having the beautiful in *Art*, object of faith and worship in *Religion*, and thinking and thought in *Philosophy*.

And now this short, but still sufficient notice of the Transcendental Philosophy will enable us fairly to estimate its value, by determining both its excellences

and deficiencies. The Phenomenology dropped off all sense-affectations, and retained, as the permanently true, only the conscious thought-activity. This occasioned a concentrated attention upon the thought-process, which made clear what had before been but vaguely recognized — that affirmation was at the same time a negation of the *other* of what was affirmed ; and this again was two counter-acts together, one affirming a matter, and the other denying its alternate ; and then again, that this negating the *alterum* was negating a negation, and so making the double-negative to be a true affirmative, and thereby combining the two as complementary elements in a new third conception made up from both. In this method of procedure there was seen at once a logical process transcending the old, the activity making the logic and determining the thought, and not as before, where the appearance was the object and that determined the logic.

An exclusive interest in the new facts, and a fond conviction that true philosophy, and so also a true logic must spring from one source, and stand on one principle, in order to become a complete self-consistent system, induced the discarding of what was quite true in the old logic, that there were opposites which could not be combined in any middle-third, and so constructing a logic altogether made up of middle-thirds. The result has been a large extension of valid thought quite beyond the old, but with a needless loss of much truth which was in the old. The tran-

scendentalist will have everything come from his one acting "Begriff," and logical thought must be in this way ever-flowing, while the old was ever-standing; yet past contradiction the truth of experience is, some things permanently "stand," and some other things ceaselessly "flow." Within the moving process, however, all is new acquisition, and the transcendental thinking is clear, exact, and self-consistent, and its attainments irresistibly valid. There may, perhaps, be occasionally a resuming of some rejected incertitudes, as forces and appetitive impulses beyond what can be legitimately derived from mere thought-activity; yet, substantially, the thinking is held strictly within its logical domain. If all needed were fairly included in the logical method, its validity might satisfy our conviction. But its deficiency must leave a comprehensive inquiry unsatisfied. We must push it beyond its limits, or force more into it than belongs there, or some unsupplied wants will remain that will prove quite intolerable. The following will give a clear recognition of the more important defects.

1. *The logic is not self-developed thought, but a manifest out-growth from experience.* — It assumes that the thought-process is absolute, and produces all its stated thought from within itself, and is both self-moving and thought-originating; and so much a satisfactory speculative Philosophy must some way ultimately attain, but so much is by no means attained in the Hegelian Logic. It fairly transcends the old logic, and

coalesces in a middle-third, where the old denies the possibility of any middle-somewhat; but the agency accomplishing the work is not adequate to it in its own unassisted efficiency. It will be utterly helpless if left to its own resources. A careful illustration of the process, by first following it out in lower abstract forms of universality after the same method as its own, will both reveal the point of its superiority to the syllogistic logic, and the point of its deficiency in itself, both as to what it assumes and what, indeed, speculation must require of it.

The old logical rule of contradiction holds ever valid between opposite conceptions. Of two universal opposites the truth must be with one or the other, and there can be no middle-third. But a generalized conception, from which all content has been abstracted, may be set over against its abstract extent, and the two will not be opposites, but counterparts of each other, and such counterparts may be combined in a third-somewhat, and of such cases the transcendental logic legitimately avails itself, and its method is with such only. We furnish examples from any cases of completely generalized abstractions of the special senses.

The sense of vision will have its most generalized being in the conception of pure light, and that of hearing its most generalized being in the conception of unvarying sound, and so of all sense organs. The purely abstract in the special sense has all attributes taken from within and put as outside species and

genera, and we then logically say of such conception that it is void of *Content*, but universal in *Extent*. The abstract for vision is pure light, and for hearing is pure sound, and in each case respectively there is void content with universal extent. Pure light has no attributes as predicates within, but they are absent as logical extent without, and the two are counterparts of the one generalized conception. One is Abstract Light, the other Abstract not-Light, or Darkness. They are really complementary each to each, and there can be no judgment conceived by either alone, for the counter reasons that one is subject void of predicates, and the other is absent predicates from their subject. Abstract the subject, pure Light, and there is only empty organ, and so utterly nothing. Darkness is not logically absence of light, but light with absent predicates; and so of hearing, silence is not absent sound, but sound with all attributes absent.

The old logic would rule light and darkness, sound and silence, as logical opposites, and deny any middle-third between them; the transcendental logic rules them to be complementary counterparts and co-factors, which, though analytically parted in thought, are but the two sides, as logical content and extent, of the same conception, and may blend in a middle-third as light and shade, sound and silence. Nothing can be perceived in either pure light or unvarying sound any more than in utter darkness or silence, but when a shade comes within the light, or a lull within

the dull sound, at once we begin seeing and hearing. The important note here to be taken is, that no possible combinations can be found but in just these conceptions of complementary co-factors. Silence will not blend with light, nor darkness with sound, nor any better can the emptiness of a void organ give blended light and shade, or sound and silence. We must have the complementary counterparts, or we cannot work the transcendental logical method. But with these, logic can at once begin its syntheses, and think Being to become Quality, Quantity, and Measure, and the thought-process may run through all the determinations of all the categories. Any one special sense, taken as an abstract universal, gives occasion for the full logic.

Hegel has taken a generalization inclusive of all pure sense, sight, hearing, touch, taste, and smell, in one universal subject, as "Being," and thus his "Naught" must be the universal abstract counterpart as the logical extent of the pure Being, only in which conception can the positive and negative co-factors be made to coalesce as is the necessity of his method. Were his Naught an utterly *nihil negativum*, he could never effect a single synthesis; nor have opened, in the two sorts of "becoming" in the *ceasing* and *beginning*, the determining movements between Being and Naught, which only can start in their complementary unity. We cannot even in thought progress from nothing to something, nor can we attain any truth by beginning at utter falsehood.

What we determine by either the Syllogistic or Transcendental Logic must be already involved in our generalized conception, either as content or extent. The merited glory of Hegel is in finding the complementary co-factors which may combine in negative unities, viz., Being and Naught, as strictly logical counterparts, and not that his thinking-process could be made creative. This abstract pure Being, generalized from experience even by the old logic, was as primitively necessary for him as was for Kant the "thing in itself," and for the same purpose.

If then there were granted for the thought-activity what is claimed for it, that it is "a living movement," it could not be author of an absolute logical process, for it can develop nothing from its own activity, and only evolve just what a generalized experience has already put within the abstract pure Being, and its abstract counterpart the universal Naught. There must be an absolute author of both universal thought and thing, but the "Begriff" is no independent author of even universal thinking.

2. *Hegel's reason is ever ambiguous.* — Kant recognized a special function for reason, and considered it as a higher form of the understanding. It sought to know God, the soul, and immortality, as it knows nature. For knowing nature there was a presupposed *noumenon*, or "thing in itself," which filled the sense-intuitions, and then replenished also the understanding-conceptions, but for the reason there could be found no such supply, and thus for the human mind

all thought about supersensual objects was empty and vain, for they never come within any sense-experience. But the Kantian Theoretical Reason was not ambiguous; it regulated the process towards the supernatural, but was insufficient to reach to it.

Fichte, also, philosophically posited an ego on the principle of *identity*, and a non-ego representative of the ego on the principle of *contradiction*, and thus the subject ego could know as object the representative non-ego, and in this representative mode, Fichte could expound both his *theoretical* and *practical* knowing; but he was obliged to admit that the Absolute was beyond knowledge, except as a transcendental "law of order;" but there was nothing ambiguous, and merely imbecility of faculty.

Schelling, too, whose logic we have passed as it was superseded by Hegel's, had his "identity doctrine," that subject and object were one and the same in the Absolute, and were thought to be distinctive polar potencies sent off by one throb of the Absolute; but he found it impossible to think this Absolute to stand in Consciousness, and could know it only through an inexplicable "intellectual intuition;" yet was nothing here ambiguous, but inconceivable.

Jacobi, as a Kantist, denied the possibility of knowing God through human faculties, yet gave to reason a *belief* in God for all practical purposes, and thus there was a ground for *faith*, but not for *knowledge*; and in this was no ambiguity.

But Hegel's logic is an assumed elevation of the thinking "Begriff," and extension of it over to Absolute Reason itself, and yet keeps with and in it the same "universality of law" and method of working, as reason, which it had as antecedent thinking-activity. Originally in its incipient action it is ambiguous in that it perpetually moves in double-acts, and never stands without its counterpart relations. At the same time it posits it also negates, and at the time it combines in synthesis it opens in a new analysis. Such is its normal method of working, and the inventing and persistent pursuit of this order of movement is the transcendentalist's grand excellency and merit. Its ambiguity as combining in logical judgments is no delusion, but a perfectly trustworthy form of carrying universal Being and Naught through the whole categorical process. But it assumes at length to become sole subject and object in one; to be universal knower and known, Absolute Reason in its own right and self-sufficiency; and here the ambiguity it still keeps is an intolerable contradiction and absurdity. Double-action here is duplicity that deludes and deceives, and cannot be permitted, and yet this ambiguity stands in every phase of the Reason. We refer here as evincive of this deceptive ambiguity to three of the most prominent exhibitions made of the ultimate reason-action.

i. *As the final reconciling law of all ambiguity in the understanding.* In the phase of common consciousness, in the Phenomenology, there is exhibited

the perplexity arising from the double-play of the forces in the understanding, and intended relief is afforded by assuming that we get "upon the back-side of Nature," and there see that what, on the fore-side, seem to be two activities making matter and form, cause and effect, to be two distinct determinations, really is but a double mode of one action, positive on one side, and at the same time negative on the other. Here we want the double understanding-play, and are not deluded when we stand where we see the two sides of the one action. But right here we have opened beneath us the "supersensual world" as a "quiet realm of law," turning its eternal type and image into human experience, and regulating the "weaving web" just as the pattern-card over the warp of the carpet-loom regulates the figure while the woof is passing in, and here as ultimate reason and rule, we can tolerate no ambiguous movement; and yet here in this highest point of sovereignty, it is still a law disceding into particularity, and then coalescing into an "infinite of law," and just as ambiguous in its own movement as in the thinking it is guiding.

ii. *In the attainment of self-consciousness by the reason.* When, again in the Phenomenology, free-thought has mastered nature, and brought physical phenomena to be intelligible, and must now attain its own conscious independence, and this can be effected only in communion with others of its own kind, the necessity then arises for the universal activity to discede into particulars, and each particular to both

know all and be known by all as thinking agency, and that all come in thought at length to universal unison, — such unison of thought is taken to be substantial unity of will, and therein a universal personality. The particular personalities began as sense-experience did, pre-historically and so inexplicably, and the consummated unity of personality is in universal humanity ; and so, where we must demand an Absolute Reason, originating and consummating action from its own behest and self-arbitrament, we have a universal thinking itself into particulars, and then combining the several particulars in joint universality as one Personal Absolute Reason.

iii. *In the assumed closing of the circle of the thought-process in Absolute Reason, the necessary ambiguity still continues.* The Logic closes in Thought as the highest good, not attained but eternally attainable, and so Reason is contemplated as self-living, self-blessed, absolute fulness. We anticipate and demand henceforth for the Reason a life and activity solely in the end of its own excellency, and answering only to what is known as due to its own dignity. Yet we find this Absolute Reason urged on still by the same old triplicate positing, negating, and re-combining ; pushing its agency into externality and working out Nature ; and working Spirit from Nature ; and then Spirit into congenial society and state regularity, and thus as Universal Mind coming to know itself better as object of Beauty in Art, Worship in Religion, and Eternal Truth in Philosophy. And the law is still

upon it that it may no more cease than at its beginning, for its Infinity is but the potentiality of an endless series, with no other freedom than persistent unhindered movement and change. It presents a mode of endless motion, and the modifier of the mode is ultimately held to the same method in the "infinite of Law." The last word is still Ambiguity of Activity. The conception is insufficient for Absolute Law, Absolute Person, Absolute Freedom. Proposing it as satisfactory end is but amusing the imagination while deluding the intellect.

3. *The universality of thought is empirical, not absolute, and can give no ultimate rule for morality.* — Kant recognized in humanity the consciousness of an irrepressible claim, and though theoretically inexplicable, was utterly inseparable from the conviction of human freedom, which claim was an enjoined *ought* that unconditionally must be obeyed, and which irrevocable obligation he termed the "categorical imperative." It was ultimate rule, though coming from an indeterminate source, and to give it intelligent practical application, he expressed it nearly after the manner of the Gospel Golden Rule, viz., "Act as if the maxim of thy will were to become an universal law of nature through thy adoption of it." And Fichte also recognized a transcendental "law of order" which man was conscious *ought* to be obeyed, and therefore *could* be; and this was for him ground for both morality and piety, and as categorically imperative as in Kant's Practical Reason. Neither had

recognized in reason itself a ground of obligation, but both could inculcate an immutable morality.

But Hegel's ultimate rule is a *logical* law taken from the experience of universal humanity, and though it be admitted effectually to control cannot ethically bind either the particular or the universal. The ultimate good is thought-activity, and its substance is in universal thinking-humanity. The thinking-activity can come to self-conscious independence, and so be self-sufficient Reason, in no way but by thinking in communion with others, and never in solitary cogitation. Hence the necessity for the one thought-movement to discede into particular activities, and these particulars must think among themselves in communion, and so one must know each and each must know all as thinking-activities, and then the particulars must recombine in universal thought-agreement. The necessary process is, to induce each particular to make thought the end of action and live in obeying the thinking impulses, and this identification of thinking and action is unison of thought and will, and so secured in the particulars it becomes a substantial totality as accordant thought and will in universal personality. Thinking humanity so comes into full self-consciousness, and thereby becomes substantially one thinking Person, and the logical truth literally is, "the will of the people is the will of God." The rule of thought can tolerate no activity outside the sway of logical law, and equal and exact justice stands in the one issue, that every man think

as all think, and that each execute his thought in a manner that violates no other's thinking, and no man's thought and will can have freedom except in such universal concordance. Any thought in collision with the universal comes thereby necessarily into helpless restriction and hopeless bondage. The experience of all the particulars gives a universal experience, but in practical operation the accordance must be in the more limited communities of family, social neighborhood, and especially state-regulation and national sovereignty. Within the community the prevalent thought and will is ultimate umpire.

J. H. Sterling has made a masterly presentation of Hegel's "Science of Right" in his Edinburgh Lectures on the Philosophy of Law. The object of a Science of Right is affirmed to be, "The human will, with special reference of the *particular* to the *universal* will;" and he assumes that there is free-will only as it hears and implicitly obeys the universal, let the interest of the particular be what it may. He illustrates by a special striking example how individual thought and will may be absorbed and disappear in the universal.— "There are times when such disappearance becomes the one historical fact. During the French Revolution it was the *universal* of will alone functioned. Every *particular* accordingly was nought—even the particulars, particular after particular, then and there suggested—and madness ruled the hour, destruction was the lord of all. Not a single particular, not one *difference* could

be tolerated, whether rank, or birth, or fortune, or talent, or virtue, or even beauty. That will can withdraw itself into the abstract universal and become *actively* the universal void, is here evident, just as it is evident that it can become also — in the worship of Brahma, for example — the *passive* void.”

Perhaps a stronger example of the fact of merging particular thought and will in the universal can nowhere else be found than in this frenzy of the French Revolution, and surely no clearer instance need be asked for the utter inadequacy of taking an empirical universal for an ultimate moral rule. How little particular freedom, how horrible the public wickedness, when this “madness ruled” and “destruction was lord!” How terribly manifest was it here made, that instead of holding universal thought and will to be ultimate moral rule, the moral must itself be over the universal empirical thought, and that it cannot be sufficient that the universal will be one, and that be known, but that also it must be known by every man to be right before he can ethically be allowed to adopt it. In Hobbes’s Leviathan the civil sovereignty is made absolute, and in Hegel’s Science of Right the prevalent universal thought and will is supreme, but no age has wanted its particular examples of moral heroes who have met persecution and martyrdom for individual conscience’ sake, and been approved and applauded by the wisest and best of all succeeding generations for holding fast to private conviction in the face of popular sentiment. Not

logical rule for accordant thought, but rational insight of what is morally due, must stand imperative for individual conduct, no matter what the thought and will of the empirically universal. There is a point for attaining to Absolute Universality, and determining not merely how some or all men think and will, but how some and all must think and will to attain ultimate approbation. The Hegelian Universality is the abstract thinking humanity; and the universal must be as the particulars are, discordant if the particulars disagree, illogical if the particulars break logical rules, even defunct or dormant if the particulars, as some do, become dead or unconscious. The universal lives only in the particulars, and is as the particulars, and at best it is only thinking humanity, for the only activity is thought-activity. Thought and will are one and the same, and the only freedom known is unhindered spontaneity of perpetual positing, negating, and reuniting in ascending categories. Admit such a controlling inward impulse to perpetual thinking, and the thought-process may be persistently continuous and invariably within the logical law, but this would be merely appetitive in intellectual gratification, not at all imperative in the end of moral approbation.

4. *These thinking-particulars in universality could have neither communion, nor a common space and time, in human experience.*—The entire activity here is thinking, the whole productivity is thought. Whatever religious views there may be entertained about spiritual communications and divine inspiration, in

our human social experience the communication of thought from man to man is necessarily through media of sense-impression and reciprocal sense-affection. Thought does not become common possession, but through some symbolic interpositions, where the thought is put within the symbol, and the receiver takes it from the symbol, and if there be no such medium of expression, no one mind can read the thought and sentiment of another. It is God's prerogative to search the heart, and if one make no overt expression, he may defy all men, angels, and devils, to know his inward secrets. In the flesh the only medium of communication is through some special sense-organ. Hegel's profoundest, clearest thought must have been as exclusively for himself as his dreams, if he could have found no sense-symbols of communication. A logic cognizant of thinking-activity only may have *actual* distinctions, definitions, and connections of thought under every category, but the logical thinking could find no *real* participant beyond the thinker.

And so also, there could be no common participation in one space and time. With Hegel, space is the abstract externality. All interior thought is as in a spaceless point and a timeless instant, but when thought goes over into the negative counterpart of externality, it then enters space, and may be determined in time as an infinity of possible abstract instants and moments. We need not say of such abstract space and time that they are no likenesses of

reason-space and time. Space and time in the reason, are concrete unities from which nothing can be taken and to which no additions can be made, and which are illimitable and immutable internally or externally, all limit and change belonging not to them, and only to that which may be *in* them. But even with Hegel's space and time as abstract emptiness, mere thinking could have no common participation in them with human sense-experience. Every man must think there as every man might dream there in his own place and period, and his thoughts and their places and periods could have no common connections with another's thoughts in their places and periods. All that makes our own places and periods in a common experience of places and periods with others is solely this, that they and we come to the same stable extensions and ordered successions for our sense-affections, and if we and they did not receive our sense-appearances from the same substantial sources, we could never put our places and periods together with theirs in the same common space and common time. Aside from this, every man's history would be a separate biography of his inner thought, and could never be included in the current history of collective humanity. Restrict all being to thought, all activity to thinking, and we could never connect the acts and thoughts in any mode of common space and time and which truly we do in our human experience. The Transcendental Logic can never rule in the conscious experience of sense-phenomena.

5. *Transcendental logic admits no other force than that of the thinking-activity.*— All sense-impression and affection was excluded as having no true being in the Phenomenology, and only the thinking-activity was retained as true being, and so the modifications of the organs of sense could be no symbols signifying forces impressing them. Accordingly when the logic attained quality, the thinking activity produced it and gave to it its intrinsic determinations of attraction and repulsion; and then, when quantity, measured to its specific degree, became a determined somewhat, and carried beyond the limiting degree went onward to become a different somewhat, these distinguishing limits for different things were all products of the thinking movement; and so again, when quality and quantity coalesced in Essence, the reflecting and reverting counter-acts of the "Begriff" were the only forces throughout as giving efficiency to cause, phenomena to substance, and reciprocal efficiency in action and reaction.

And further, the supersensual "realm of law," back of the thinking and necessitating the movement, and which in the reason might have been made original for all distinguishable forces, was determined as itself a transcendental thought-process, disceding into particular laws and combining again into a universal "infinite of law," so that not only all force but all ruling of forces is determined after one and the same method of thinking-action. All efficiency, making things and their manifestations in the under-

standing, and giving to nature its being and connections, is solely the force of thinking-activity.

But in our world of sense-experience we well know, whatever we may say of the power of ideas, that their conversion into fact must have other forces in operation and execution than any thinking in determined and combined plan; there must beyond thought be the distinctive energy which moves muscles, and works changes in hard materials, and puts the thought-out plan in and upon substantial and abiding things. Our thinking-activity is force sufficient for constructing pure figures, and arranging mental diagrams, and abstracting and generalizing thought-conceptions, but when we have carefully put our thought in clear systematic construction within our own conscious intuition, the force of the thinking activity has done all it may, and it must stand in our subjective world alone, if a further and more effective energy of will does not supervene, and express the thought in overt fact and work it on to abiding substance, and thereby put the subjective idea into objective reality. We never make any thought obtrusive by the mere force of thought, and the clearest logical forms must have their dynamical utterances, or they remain utterly vain and empty for all human experience. Even logical rule must be made effective by a higher force than is in the thinking-process.

Before taking up any further form of logic, it will be important to note, in connection, some of the *comparative* defects of the syllogistic and the transcendental systems.

1. *The old logic cannot move, and the Hegelian logic cannot rest.* — The old logic is determined by the conceptions, and these are abstracted and generalized from experience, and only the permanent characteristics of sense-objects are taken and retained. The peculiarities of individuals are passed by, and so the attributes of the particulars, species, and genera are respectively changeless. These impress their forms upon mind, and so the logical judgments and syllogistic conclusions are fixed by them and all thinking is determined from them, and change and movement become unaccountable, whether in thought or thing. Matter is made wholly inert, and its motion and change must come from somewhat outside of it; and mind also can know only as affected by matter, and thus mind cannot move or change except as first matter must move or change. A first mover as an originator of activity is inconceivable, and an attempt to put in descriptive terms such a thought could only expose its absurdity and self-contradiction.

The Hegelian logic, on the other hand, is regulated by the thinking-activity, abstracted from experience by carefully taking that only which, at the end of a process, is found to have self-movement and is productive of all recognized objects, and so everything moves whether subject or object. Mind cannot rest at any attained position, and all thoughts in external relations revert back to the internal thinking for their validity, and nothing rests; there is no static point nor instant from which determined motion or change

may begin, nor in which they may terminate, and rest or stability is here as inexplicable as in the old logic were motion and change, and an attempt to put in logical terms fixed and steadfast being will end in nothing but absurdity and confusion.

2. *By the logic of neither alone can we determine the whole of our experience.*—Without the consciousness of motion we can determine nothing of any experience at rest, and with no consciousness of rest we can determine nothing of any experience moving. Our experience has in it both objects at rest and objects in motion and change, but one logic knows nothing of motion, the other nothing of rest. Neither can go back to any state when it has been otherwise with itself, and with its experience, and with our human experience, than at present, for the old logic never knew a resting from precedent motion, and the later logic never knew a beginning of motion from precedent rest. One stands and nature works its changes for it, and the other moves and works nature's changes into it, and so to both, some part of nature's experience must be an enigma. One cannot say how nature came to express a stable experience, nor the other how it came to exhibit a fleeting experience.

3. *Both together might exhaust all determinations in experience, but neither nor both can rise above experience.*—One is deficient in determining any knowledge for a moving experience, and the other for a resting experience, and here one may supplement the other, and all experience be subjected thereby to full deter-

minations. The two together might subject to knowledge all empirical facts, but neither one nor both together can avail anything in carrying our knowledge above experience. The so-called transcendental logic is still within the universal, and this logical universal is but an empirical universal, and can say only, Experience is as I find it, since I am constituted incompetent to think it to be otherwise. Neither can reach an ultimate that is absolute, and find an author and finisher of experience itself. Law *is* as invariable experience *has been* for both, and neither logic can tolerate a violation of its law and admit a miracle. Indeed, what is law to one is miracle to the other, and to neither is there any possibility of adjusting miraculous interpositions.

4. *The transcendental logic is wholly dependent upon the use it must make of the old logic.*— Where the thinking-activity has been found by the wondrous acuteness and comprehensiveness of the Phenomenology in dispelling all the illusions of sense-perception and reflection, and so the “Begriff” is present for the logical movement, yet cannot the work of determining, limiting, and stating of thought at all go on, except by availing itself of the whole labor of the old logic in its analyses, abstractions, and generalizations. The transcendental process has been usually termed a development, an evolution, as if the logic had been brought out from it; and sometimes the thought is spoken of as the product, and even the creation, of the thinking-activity. But such is assumption or pre-

tension merely. The process starts in determining between pure abstract being and its counterpart naught ; and yet this pure abstraction is the conclusion and comprehension of the whole generalization of the old logic. The pure being has had all content of experience abstracted, and every attribute experience gave has been put over, in the extent of the conception, to the particulars, species, and genera as wide as being reaches. The universal of experience, just as the old logic has gained it, has been put over as a gratuity into the hand of the transcendental logic-making for its own use and behoof, and but for this gratuity it it could neither have begun nor completed its work. All objective being which it exhibits, from primitive quality to concluding self-identity, comes from the extent of this generalized conception of pure being, and the "development" is really of the old logical being, and not any new production, or creation, or self-evolution, of the thinking-activity. Old laborers had patiently gathered piecemeal the scattered facts of all ages, and wrapped up species and genera in this universal conception, and the thinking process again unfolds them. The trilogic method is the invention of the transcendentalist, and to his immortal credit and honor, but the abstract being the method develops had been taken in its highest generalization from the day of Aristotle, and but for this the exactness and completeness of the method could never have expressed itself in systematic form. This "abstract being" is, as before shown, for Hegel what the "*nou-*

menon” was for Kant, and indeed the only being attained at last is this same abstract being which the old logic had given, and it enters the thought-activity as the only essence with which in its maturity the thinking can identify itself.

5. *We note what certitude either of these logical modes can attain.* — According to the old logic, when the judgment has executed its functions in Quality, Quantity, and Relation by determining their content, there comes a fourth function of judgment, having no reference to content, and only to validity of copulative connection, known as Mode. This has three varieties, viz., the Problematical, which may have validity; the Assertorical, taken as valid; and the Apodictical, which has been logically proved, and so is necessarily and universally valid; yet this necessary and universal validity rests on logical ground attained by the abstractions and generalizations of experience, and can therefore have validity of no safer or broader ground than human experience. A higher certitude is needed than that attained in deductions and conclusions from any data given by experience, and which the old logic can by no means furnish. Beyond *logical ground* as principle of deductive conclusion, we must have, for satisfactory knowledge, *rational cause* as principle for being; a logic not for *proving*, but for *knowing* true being, as the only condition for proving anything.

And so when Hegel has carried the formal thinking of abstract being to essence, and then united

being and essence in the "Begriff" as thinking-activity, and made thereby logical thinking the ground for being, he still shows his felt-need of a deeper ground, for he carries out this logic at least to a supposed self-consciousness in a universal of all thinking particulars; and this he takes to be absolute reason in a complete identity of thinking and being. We have already shown the inadequacy of Hegel's logical universal humanity to stand for absolute reason; but with no question of the completeness of this attained reason from universal humanity, we have in it the clearly admitted necessity the logic supposes, for a deeper ground on which to place the validity of being than that of logical thinking. The thinking must itself go back for its anti-type and control, to the deeper "quiet realm of law" which underlies it. When then in any way, formal logical necessity and universality have been attained, we must still have a deeper knowledge in the insight of reason, or our logic of experience, and experience itself, are destitute of any satisfactory certitude.

There is yet one more method of prominent logical importance to be noticed, before we come to that which is the source and test of all that is valid certainty in any form of logic. All have some parts in common with the true, and in so much each has its portion of truth that has been the stand-point from which the whole has been produced, and this one now to be considered will bring us fairly to that which has its evidence in its own light.

IV.

THE LOGIC OF FORCE.

THIS method of Logic is very much the converse of the transcendental, using substantial forces for the connection of things as the latter uses reflective acts for the connection of thoughts. Each method fails to recognize the distinctive human faculty with which all true logic must be executed, and uses the understanding only in determining the truth in nature and in mind, and each also puts its own respective connection to hold together the phenomena of both matter and mind; the physicist using force as the essence alike of material and mental facts, while the transcendentalist uses his thinking-process as the one agency identical in both the internality of spirit and the externality of nature. Both also have made large advances, each in its own province, in the attainment and classification of facts and bringing them nearer to the determinations of reason, but with both, the discrimination has been quite too vague for any adequate recognition of the sharp outline that separates the retrospection of the reflective faculty from the insight of the comprehensive faculty. Most gladly and gratefully we acknowledge the eminent service

rendered to science and philosophy by each, and yet with the like fidelity and impartiality must the deficiencies of the Logic of Force be exposed as has already been done in the case of the Transcendental Logic. Prominent names appear as collaborators in clearing up and applying their notions of force to physical science, but by far the clearest and most systematic author in the presentation of the Logic of Force is Herbert Spencer.

An *outline* of what he has given will answer our present design without specific details, and though the system of logical physics is far from having attained the exactness and completeness which Hegel has given to his logical metaphysics, still enough has been done to disclose clearly where a further prosecution must fetch-up, and also that the dawning of reason, into which the movement is necessarily driven, must soon shine too clearly to permit a persistence, in an unchanged direction very much longer, to be satisfactory either to author or reader.

It is at first affirmed that religion and science have, unhappily, long been in conflict, the one in referring all phenomena directly to God, and the other to an intrinsic power in nature itself. But Evolution, as a more general truth, will include both, and harmonize them in the necessary admission that the ultimate for each is an utterly unknowable. Both the God of one and the Nature of the other stand back beyond all knowledge in unfathomed mystery.

Human knowledge is possible only through distinc-

tion, and therefore only of the relative, and however large the circle may be made within which growing experiment and research shall find and determine the phenomenal relations, it must only make the outlying field of the unexplored to border-in upon a larger circumference. Both parties admit the beyond alike to be real, but both also must submit to the necessity of owning that, beyond the relative and conditioned, this acknowledged reality is yet an utter *terra incognita*. There is a positive known, and a positive unknown. Study the relative known, and the result is clearer order and system; study the absolute unknown, and we run into deeper confusion and uncertainty.

The *first* work is to seize upon law, which is uniformity of relation. A clear search will find this everywhere amid surrounding facts, and for particular cognate facts particular laws will widen to more general classes, till you may come to one law transcendently general. This most general law is *Evolution*, and as last and highest will be latest found and least thoroughly apprehended.

Evolution differs from the common conception of *progress* mainly in that we deem what bears upon the increase of human happiness alone to be progress, but evolution is more general, and includes progress from the simpler to the more complex — from homogeneity to heterogeneity — as illustrated in the nebular theory of the heavens, geology, society, &c. Yet not all such processes are those of evolution, for disease and death, as dissolution, are the reverse of evolution. Evolu-

tion also becomes the more definite the more it becomes complex, while dissolution is the more indefinite as it augments in heterogeneity. Subsidiary to this growing definiteness, evolution also grows more coherent as it is the more complex. The definiteness comes through integration, while indefiniteness is from differentiation. Everywhere there has been, and is now, going on an evolution from indeterminate uniformity to determinate multiplicity. The definition of this law in terms is — “*a change from an indefinite, incoherent homogeneity, to a definite, coherent heterogeneity, through continuous differentiations and integrations.*”

The *second* step is to find an all-pervading principle which underlies this all-pervading process. From some analogies the attempt is encouraged and steadily prosecuted, to interpret the law of evolution as the necessary consequence of a deeper law, beyond which last, however, it may be found impossible to proceed.

There are different species of evolution, such as astronomic, geologic, organic, ethnologic, social, economic, artistic, &c., and whatever may be the agency and conditions of a common causation, the best guide to the underlying principle must be to take hold on that which is in all; and this alone is common to them that they are all “modes of change,” and this of “internal,” instead of “external relations,” and must therefore consist of “change in the arrangement of parts;” and in the order of incoherent, indefinite homogeneity to coherent, definite heterogeneity. And

in this we come "face to face with the ultimate elements of phenomena in general," viz., matter, motion, and force.

Absolute truth is ever beyond us, and thus absolute knowledge of matter, motion, and force is impossible, "but what is the exact meaning of the assertion that they are relatively true"? The terms *phenomenon* and *appearance* delude us as if they were "phantasms," but if in place of them we use the term *effect*, which is applicable to all impressions on consciousness through sense, and which has "real cause" as correlative, "we shall be in little danger of falling into the insanities of idealism." Any further danger, if there be any, will be avoided by putting for "real" the meaning of "persistence in consciousness."

So guarded, "the result must be the same to us, whether that which we perceive be the unconditioned itself, or an effect invariably wrought in us by the unconditioned." Hence we may conclude — we have indefinite consciousness of absolute realities; and definite consciousness of relative realities; and that the relative can be conceived only in connection with an absolute, and so such persistent connection of the relative and absolute is real. "The persistent impressions being the persistent results of a persistent cause, are for practical purposes the same to us as the cause itself, and may be habitually dealt with as its equivalent."

There are two primary forms of relation, without which we cannot think, viz., *sequence* which appears

in all changes, and *coexistence* where the order of the changes is reversible at pleasure, and these experience distinguishes, and by abstracting the sequences attains pure Time, and in abstracting the coexistences attains pure Space. The experience for this is in the sense of touch whereby muscular resistance in correlation occurs, and the abstraction made is of the correlative resistance, and so of force, and thus the pure abstractions of time and space are the relatives of force. We cannot say of such relatives that they represent some forms of an absolute time or of space, and only this, that the relative conception is produced by some mode of the absolute, and hence relatively real in consciousness and implying an unchanging absolute.

Matter, distinct from abstract space, is the conception of coexistent positions which offer resistance, and the conception of body is that of matter bounded by resisting surfaces, and so both matter and body are relations of force, implying some mode of an unknown absolute cause.

Motion involves space, time, and matter, all relatives of force; and so motion is relative, implying some mode of an existing absolute.

Force is thus the "ultimate of ultimates;" all is from it, and it is from nothing else, and so is absolute as beyond all. Consciousness itself is possible only through change, and change is the manifestation of force, hence force is to us necessarily the last analysis and highest generalization.

After attaining this ultimate analysis and universal conception of Absolute Force, from which all synthesis must begin to build, there follow further considerations of axiomatic requisites for evolution — as the indestructibility of matter, the continuity of motion, the persistence of force, the correlation and equivalence of forces; the direction of motion in the line of least resistance, and the rhythm or oscillation of motion. And then again, conditions essential to evolution, — as that matter must be moderately movable; chemically decomposable assisted by agitation; not changes of matter only, but also change of motion, wherein the motion of units passing into the aggregate makes evolution, while motion of the aggregate changed to motion of the units is dissolution. After which, in conclusion, is the consideration of the changes themselves, — as from the instability of the homogeneous; the multiplication of effects; how orderly integration accompanies disintegration; &c.; but for all present purposes with the Logic, we have what is needed in the above last analysis and highest generalization of force. This is asserted to be “the foundation of any possible system of positive knowledge. Deeper than demonstration, deep as the very nature of mind,” since without this as furnishing constant content to consciousness, a persistent consciousness is impossible.

There is abundant opportunity for making manifest certain deficiencies and inconsistencies in matters which follow after this attained last analysis, especially such

as the following — That evolution is admitted to be partial only, inasmuch as dissolution is ever concurrent with it, and is yet never comprehended by it; thus leaving a wide region of phenomena with no philosophical explanation. That the operating forces noticed as bearing upon evolution are such only as are exceedingly general, while the minuter and more specific forces must be the ones most directly effective in shaping nicer events, and especially personal purposes and tender sympathies; just as the sculptor's artistic skill will be more adequately shown in the finer touches of the file than in the rude strokes first chipping out the marble. And finally, while denying that absolute force can be made intelligible, the author evinces his own repugnance to the denial by an *à priori* demonstration that such knowledge is essential for a consciousness of anything. We pass all these, since the essential point of the logical absurdity is the Universal Force. This is to the Logic of Spencer what the thinking-activity was to the Logic of Hegel — thought and knowledge are with each respectively conditioned by their last analysis and universal conception, only with one the ultimate condition is in Absolute Mind, and with the other it is Absolute Matter.

It has above been cheerfully acknowledged that science, especially mental, has been largely indebted to Hegel, and we have just as grateful acknowledgment to make that science, especially physical, has been greatly indebted to Spencer and his co-laborers;

but as we have found in the former case, that it was from the recognition of the thinking-activity itself, and not from the logic produced, the benefit has been derived ; just so is it here in the latter case ; the service accredited is from the force so prominently and imperishably introduced, and not at all from the logic which is made to accompany it. If Hegel's "Begriff" depended for general recognition on the logic produced, the world could not be made to take and keep it ; and if Spencer's Absolute Force depended for general adoption on the attending logic, it could not survive for a single generation. Both the thought-process and the working-force are perishingly needed, not because either of their logical systems is adequate, nor that one can so supplement the other that out of both a true logic can come, but because the respective activities recognized are each necessary connectives for a universal philosophy. The tri-logic method of reflective thought and the dynamic method of physical research have helped the world on immensely in scientific attainment, but these new possessions cannot be used to any philosophical ends, except by an introduction of a higher and better logic than either has given. As this has been shown already in the case of the transcendental, so we now proceed to establish the same in the case of the dynamical Logic. The Doctrine of physical Force as the substance of matter is true, but the ground on which it has been placed is illogical. When we have so determined it, the door is opened for the complete introduction and explanation of the better Logic.

The refutation of this Logic is ample by clearly disclosing, *that it essays the self-absurdity of thinking relatively and knowing absolutely by one and the same intellectual faculty.* — To think relatively is in the primary acceptance to think distinctively. The thinking act thrusts itself between objects, and so discriminates one from another. Such distinguishing activity exposes the relative determinations of the objects to each other in consciousness, and discloses their connected standing in an ordered experience. It is thinking in its very incipency, and arranging sense-appearances relatively to each other in conscious consistency. All objects primitively appear through sensation, and however we may subsequently modify them by analysis, abstraction, or composition, they permanently retain their relations in and to conscious experience, and thus thinking relatively comes in the largest sense to be thinking within consciousness. Exclusively so thinking, all will be restricted within experience. All conceptions will take content from experience; all judgments will get their predicates from experience; all induction and classification will be after the order of experience; and every major premise in a syllogism will be filled from empirical observation; and all deductions and conclusions will be kept within the field of conscious experience. Consciousness is made the primary source and ultimate test of all truth, and universal science consists in finding the distinctions and marking the relations which long and careful observation and experience have put within consciousness.

Herein, then, is the one exclusive basis for a Logic of Consciousness. If the thinking does not in some way become delusive by interposing equivocal expressions or ambiguous meaning, it will be solely reflective and discursive, viz., turning itself back on attained experiences, forming conceptions more or less abstractly general, predicating attributes of subjects, and deducing conclusions, strictly as taught by the most careful and extended consciousness. All beyond experience is held to be inconceivable, unthinkable, unknowable. So Herbert Spencer strenuously and peremptorily insists on keeping within the relative, since the human intellect is faculty for working only with relative distinctions in consciousness.

And yet, doubtless as deceptively to himself as it is delusive to others, he has been making careful though covert preparation for sliding over upon very different ground which lies wholly within another logical jurisdiction. He has repudiated the terms *phenomenon* and *appearance* as tending to make us "feel ourselves floating in a world of phantasms," and has substituted for them the word *effect* as "equally applicable to all impressions produced on consciousness," and which, he says, "carries with it in thought the necessary correlative *cause*," and by so doing he deems "we should be in little danger of falling into the insanities of idealism." All this he does as if he supposed a logical *ratio percipiendi* could at pleasure become a dialectical *ratio essendi*, and that veritable efficiencies and forces could become matters of con-

consciousness by misplacing rational *cause and effect* where only empirical *ground and consequent* can have any logical right. To all reflective thought on conscious experience, in the absence of rational insight, "correlative cause," except as merely antecedent phenomenon, is exactly one of Spencer's idealistic "insanities," and can be nothing other than a transcendental in distinction from an empirical conception. "Effect" and its "correlative cause" are nothing more than "phenomena" in invariable succession in experience, except as the insight of reason, beyond reflective consciousness, sees in the successions an efficient determining their order of antecedent and consequent.

And then still further in deepening the illusion, consciousness is to be made persistent by giving to it persistent content from an absolute real where no relative real can furnish the supply. Consciousness cannot be kept persistent by relative realities fitting in and out, and so an unknowable absolute is assumed to keep up the continual successions. What if empirical consciousness cannot be kept constant by merely evanescent impressions in sense-experience? That might well be sufficient reason for not making consciousness a basis for universal logic; certainly not a justification, having made such basis, for the logician to go beyond his ultimate and smuggle in help from an absolute utterly incognizable by consciousness. And yet the resort is to just this method. We can think only relatively; relative realities cannot keep consciousness persistent; it is then assumed that

we have a "persistent impression" giving to us a "vague" or an "indefinite consciousness" of an absolute, the "persistent impression" being an "effect" from the absolute and so a relative of the absolute. We thus have persistent consciousness because we have "persistent impression" as an effect from the absolute, and we think relatively because the impression is a relative effect of the absolute. "Thought being possible only under relation, the relative reality can be conceived as such only in connection with an absolute reality;" and then "the connection between the two, being absolutely persistent in our consciousness, is real in the same sense as the terms it unites are real." But the old logic adopted, and so strenuously maintained, must keep consciousness persistent, if at all, by only relative realities, for it can know no other; and its relative thinking is solely in reference to the relations of conscious experience, and not at all to any relations with an absolute reality. The new side presented could not have been conceived if the logic had kept its proper function in its legitimate province.

The absurdity involved comes from the surreptitious introduction of cognitions which can be attained only by their distinctive function of intelligence, as if they were apprehended by a lower and very different intellectual faculty. Hence we have an absolute reality beyond conscious experience, on which consciousness itself is dependent, and this too a higher generalization from a deeper analysis than that which

attains matter, motion, space and time, or even persistent consciousness which is conditioned by it ; and yet the logic on which all cognition rests is, that consciousness is ultimate, and experience fundamental, and thought itself is only of the relative in consciousness. Where experience stops short, there all knowledge ceases. If this logic is to rule, we surely can say nothing about relative realities as being "effects" from absolute reality ; and the absolute as "persistent," since otherwise consciousness would cease ; and that the ultimate relative in consciousness must be a relative effect of an absolute since it can have no other relative, and thought must be of the relative. All these "effects" and *à priori* prerequisites can be known only by some higher function than that of the reflective understanding, and if we know an absolute at all, we must know it by a faculty reaching quite beyond conscious experience.

There can, then, be no alternative ; if we keep the old logic we must keep out the new absolute. But, if we keep the force, as both science and philosophy surely will, then must we have some faculty higher than reflective thought with which to make out its relations, and to determine its modes of being and efficiency of action. The logic retained and the force assumed cannot stand together.

It would be in place, and an easy task, to show here, in a variety of particular defects and their results, the utterly unsatisfactory position in which this logic of force is left ; but from the duplicity already

exposed in it, the mere mention of some of the more prominent of these deficiencies will be sufficient to make plain the point of their application, and also to suggest others of perhaps not much less importance. The abstract, relative space or time, which is all the logic can recognize, is at the most only void place or period, being only the utter emptiness which it might be imagined some coexisting resistance could fill with content, and thus be limited by surfaces for place and by instants for period that then would resist and make the place and period palpable; whereas the true space and time are already illimitable forms for all limited place and period, from which no point can be taken out and to which no point can be added, and which must already be, or no possible place or period could be. — And so again, the relative force supposed is only the result of force already in action, and at best but an index of the veritable force that is working back of the muscular tension. The true force will be recognized by the appropriate faculty as readily in the contracting muscle of another's hand which is in resistance to mine as in my own with conscious tension, or even in the meeting impulse of two billiard balls with no sensitive muscular contraction. The true force can never be brought into any sense-experience, and so can never be an object of consciousness, and if empirical consciousness be ultimate, all conception of force is impossible, even an indefinite impression and consciousness of it. — And so also with matter and motion as relative in con-

sciousness; they are symbols of the absolute matter and motion in the unknown force above consciousness, and if we have not a higher faculty than conscious reflection upon remembered experience, no forces working in and around us will ever be cognized by us, and no knowledge of what matter and motion essentially are can be even relatively to experience attained by us. — And lastly here, by the new side of the logic, we have the evolution from the unknown absolute force alike of both physical, vital, and intellectual phenomena; and can therefore recognize nothing of human freedom, nor morality beyond utility, nor religious worship of a divine Personality, nor may there be any supposition of a miracle, which would unsettle the last ground of scientific trust in the invariable order of nature; and yet such trust is only from what experience finds has been, not at all that any truth or wisdom precedent to the experience required that so it should have been.

These last issues will be admitted by the votaries of the logic themselves and defended by as plausible explanatory considerations as may be, but they necessarily originate from the deficiencies of a logic founded on mere sense-experience in consciousness; and though no unwelcome consequences will force an honest mind from avowing all that his adopted logic demonstrates, yet no comprehensive intelligence can permit itself to be satisfied with these intrinsic pugnacities to his deepest sensibilities, and will in them find occasion to distrust the logic that imposes such an internal con-

flict. The determination that essential force is substantial matter we recognize as important for philosophy as for science, yet neither can intelligently avail themselves of it in face of the absurdities from the logic made to accompany it, and the highest service to both will be the clear presentation of a deeper and firmer logical basis for their support, and by the foregoing cursory criticisms we come more clearly in sight of what is demanded for such an undertaking, and with better preparation to appreciate what may intelligibly be presented.

PART II.

LOGIC OF CONCRETE UNIVERSALITY.

PREREQUISITE CONDITIONS. — The comprehensive trait of all the forms of Logic hitherto considered has been, a taking of experience in its particulars and thence abstracting and gradually generalizing them to a universal. Individuals are observed with their many characteristics, their idiosyncracies are overlooked and the attributes common to many are noted, and these individuals with common attributes are classed together. Abstraction of still fewer common attributes is further made, and thus generalizations through species and rising genera are taken till a universal is reached to which all species and genera are subordinate, and in this the purely abstract conception is found which has no attribute left to be predicated of it. Among the advantages of this process of abstraction are, a ready and complete classification of empirical phenomena, the attainment of comprehensive judgments, and the capability to deduce the attributes of every particular from the more general conception. Among the necessarily attendant disadvantages are, the shutting of all knowledge within experience, the knowledge growing less definite as

we rise towards universality, and that we ultimately come to a pure abstraction of which nothing can be predicated and about which no judgment can be formed. The higher we rise the less we know, consequently the best way is to stand still at the start, for the necessary termination is utter nescience. At the best we know just what appears and just as it appears, but at the end of the abstracting and generalizing process we can have nothing but empty subject with absent predicates. This may be called an Absolute, but it is absolution from all rules of thought and judgment.

It is not possible to satisfy the human mind with this abstract logical process. The brute takes sense-appearance as it is, and never asks concerning any experience, From whence did it come? Whither does it go? Or who has made it? But even from human childhood the restless questionings of all things around it are, Where did this come from? What is it for? And who made it? And no delusive replies nor chiding rebukes can repress the wonder or its struggling impulses. Humanity has its inborn reason which knows its rights, and claims its prerogative both to seek and receive an honest answer. But such honest and satisfactory answer cannot be given by any abstract logic. Whether we assume a pure thought-activity or muscular co-resistance, the abstraction of them from experience and generalizing them to a universal will oblige us to carry over into the province of the absolute, in either case, all the limi-



tations of the relative and which must involve us in perpetual contradictions and inextricable perplexity. Whether thought-process or convertible force be adopted, an absolute must be assumed at last, for if thought be of the relative it cannot satisfactorily rest in the relative, and in passing on to the assumption of an absolute neither the logic of one nor the other can carry along with it anything which is not adapted exclusively to deal with relatives only.

We shall entirely reverse the process from abstraction to concretion, and instead of a generalized experience we shall make an integration of experience that will hold all parts together in their entirety. We shall need experience as radically and use it as extensively as do any systems of abstract logic, but we work in experience with another intellectual faculty and in a different manner. We put the insight of reason to read in the facts of experience what has been conditional for it, and thereby know what must have preceded it, and determined the order of inherent, adherent, and coherent connections in all phenomenal observation. We begin with a purely formal experience and pass on through the most complicated substantial appearances, and keep all the elements and attributes together till the last. Instead of diminishing our predicates with the extending of our judgments, as we do by abstraction, we multiply them by concretion, and make every rising category richer in attributes and the judgment fuller in predicates. The unifying bond begins in the simplest,

and colligates all in one in the completest experience, and so all existence is held in absolute integration universally and eternally. Each successive stage will have its own evidence, but the clearer light and conviction will come in the consummation of the logical process.

Further on we will take short occasion to note, why reflective abstraction and generalization cannot be extensive without the help of reason; we here only state of our proposed logic of concretion and integration, that though from the activity of a truly reflective agency, yet this cannot be practically exerted to any purposes of extensive intelligence except as the reflection shall be prompted and controlled by the reason. The insight of the reason avails to the attainment of somewhat that was earlier and deeper than the appearances, and was also a necessary prerequisite for the intelligible experience which is to be stated in distinct thought, and only in the light of these necessary preconditions can the clear thought-construction be stated. Except as we shall take separate portions of experience consecutively into consideration, we leave the work of abstraction wholly out of account as any part essential for our logic, and rely wholly upon the coalescing or integrating activity, under the teaching of reason, for our entire constructing process. The practical completion of the process can alone bring out a full conception of what the agency is and how it works, yet a short preliminary description and statement, adequate to some

incipient apprehension of it and its method of application, will be here useful.

We do not contemplate the human reason as standing alone and isolate from all other being, and hold that by itself and from itself it foresees coming experiences, for it is no work of the inspired seer and prophet that we attempt to expound, or that in any way we make analogous to our attainment of the knowledge of experience. Not an independent, self-originated *à priori* knowledge from pure reason, but with a given form of experience in contemplation by the reason, we affirm and strenuously maintain that the human mind is competent to apprehend more than the facts consciously given in experience; and can do more with these facts than to take abstracts from them, or to put their common attributes into class-conceptions, or to deduce particular judgments from general premises; that it is competent to look into and through the various conscious facts and find an inner meaning specifically expressed by each, and read there a true story of much that must have been first, or that experience itself could not have been. There are truths older than the conscious experience, and which had their determining influence in securing the ordering of the experience to come within consciousness as it has, and these are indicated in the experience itself as the lesson which it contains. The empirical facts are the expressive symbols of the meaning, and their coincidence and perpetual concord-

ance is an undeniable evidence that the sense-symbol and the expressed meaning were put together to the end of their intelligible comprehension. The meaning is no component part of the symbol which can be abstracted from it and predicated of it in a logical judgment or a deduction therefrom, for it is its inner life and spirit, without which the whole is but a dead-letter. This meaning is not addressed to and cannot be interpreted by the reflective understanding, and can be a communication of no significance whatever to any other faculty than the reason.

Single facts or disconnected facts in experience may not sufficiently express their meaning in many cases, but the leading facts together carefully examined will be found to be such a sufficiently plain utterance of their truth that they need not be unmeaning nor mistakenly apprehended. The reason can see in the experience the necessary conditions which preceded it and were the prerequisite for it, and no facts in experience are truly known until they are thus comprehended in the conditions which made them possible, and necessarily as they are, and as through their conditions seen to be the fulfilment of a purpose.

In such way the whole experience becomes known, and its facts are no longer mere appearance. We have its inner significancy without mistake and beyond contradiction. This will make the three follow-

ing forms of conditions necessary to be read in all comprehensible experiences:—

1. CONDITIONS WITHOUT WHICH THE EXPERIENCE CANNOT BE.

2. CONDITIONS WITH WHICH SUCH EXPERIENCE MUST BE.

3. CONDITIONS SO EVENTUATING AS EVINCIVE OF A PROPOSED END.

Where these are clearly seen conspiring in any ordered experience, we shall never have any hesitating convictions.

Ordinarily, experience is understood of that which comes within consciousness through sense, but there is also a higher meaning where the insight has truth in its own light, and which is distinctively reason-experience. We must thus distinguish three states of knowing relatively to experience, and which will be determinative of our logical method.

I. EXPERIENCE WITH PURE FIGURE AND INORGANIC BODY; including the categories of Quantity, Quality, and Relation.

II. EXPERIENCE WITH ORGANIC BEING; including instinctive, sensitive, and rational activity.

III. ABSOLUTE BEING; as above all finite experience.

PURE FIGURE AND INORGANIC BODIES.

I. EXPERIENCE IN CONCRETE PURE QUANTITY.

— The experience we here contemplate is that of mathematical construction of pure Figure, which is restricted within the subjective consciousness, as mere mental activity guided by the light of reason in the arithmetical calculus of numbers and in geometrical forms. The following are the leading items of such experience, in which the insight of reason may read their prerequisite conditions :

1. The experience is confined to pure Quantity quite regardless of any Quality.

2. In Arithmetic, as calculus of numbers, the arithmetical functions apply to the pure units regardless of their magnitudes ; the sum or difference, product or quotient, having the same computations whether the units stand for atoms or worlds, seconds or centuries.

3. In Geometry, the elements recognized are points, lines, surfaces, and volumes. The point has position, the line has contiguous points in succession, the surface has contiguous lines in the same plane, and the volume has an enclosing surface. Solids are surfaces superimposed.

4. In Mechanics, motion is taken as commensurable with force, and this is computed mediately through the place passed over or the period passed through.

5. The figure is within its limits, as the angle is the point at the opening of its enclosing lines, the area is the plane within the lines, and the volume is the place within the enclosing surfaces.

6. The known perfection of a figure is by its accordance with its determining idea, as a circle by the circumvolution of a line about its terminal point, a sphere by the revolution of a circle upon its diameter, or a cone by the revolution of a right-angled triangle about one of the sides containing the right-angle. All similar figures, as circles, spheres, cones, squares, &c., are each to each relatively proportional.

7. Demonstration is made practicable by constructing diagrams in which intuition may pass from step to step through the whole process.

8. All constructed magnitudes have definite place and period, and places and periods are known as in Space and Time ; but the Space and Time are known only as given through place and period ; for when place and period pass from consciousness, the knowledge of Space and Time in which they were passes away with them.

9. Figures made coincident in place and period lose their distinct individuality, and the many become but one.

10. When two figures coincide in parts of their limits, the limits are to that extent abolished.

11. Figures constructed in place can, in thought, by its own energy, be moved to another place without a reconstruction.

12. Old figures abolished from consciousness, and then new figures constructed in consciousness, it becomes impracticable to know that the places and periods of the former were in a common Space and Time in which are now the places and periods of the latter.

These facts in mathematical experience, carefully considered, will give abundant occasion for the insight of reason to read in them many prerequisites which must have been determinative of them. But before presenting their precedent necessary conditions for an experience, it is quite possible and for some purposes desirable here to rule out the acts of formal abstraction as of no logical connection with true mathematical thinking, thereby leaving a clear field for a logic founded upon concrete and integrant construction.

If our mathematical figures must be abstracts from phenomenal experience, then experience is the ultimate test of the truth of all mathematical demonstration. The doctrine of J. Stuart Mill is stringently accordant with the claim to such ultimate criterion. By such test of abstraction we can know nothing further in mathematical truth than we have beforehand attained in empirical fact. We know triangles to have any two of their sides greater than a third side, or, as the same thing, we know a straight line between any two points to be the shortest that can be drawn

from one to the other, only because we have invariably in experience found such to be the fact. We do not know that parallel lines produced can never meet, nor even that two and two are four, but as experience has already so taught us. All notions of immediate intuitions are held to be mere delusions, which are induced by forgetting and so wholly overlooking the empirical associations primarily attained, and then credulously mistaking what has truly been abstracted from sense-observation as a direct beholding of universal and necessary truths. All pure figures are but abstracts from perceived phenomena, and must be referred to some actually limited and measured object for their truth, and no mathematical demonstration can be admitted as either more accurate or more comprehensive than the copies in experience from which the abstractions have been taken.

Still further in refutation of the logic of abstraction, we remark that the limits of bodies perceived by the senses are their outlines and surfaces, and these are parts of the bodies themselves and belong to them, and thus their abstraction as limits of mathematical figure must make them to be component parts of the figure, and we must conceive the angular point to be at the limit-point, and not at the area-point between the limits; and in the same way we must hold that the circle includes its circumference as belonging to the figure, and the volume of the sphere includes its periphery, and every figure must be, not within its limits, but the limits within the figure, and as truly

belonging to it as the superficial outline belonged to the original body. If, then, equal figures be applied each to each, they must still retain their respective limits and cannot exactly coincide, but must keep their individual distinctions. Were two right-angled triangles of equal sides containing their right angles, put counter each to each with their sides subtending the right-angles in contact, neither triangle could admit the annulment of its hypotenuse, nor that the two should coalesce in a third and become a perfect square. And then the fiction of attaining abstractions so pure that they may have position without magnitude, length without breadth, and surface without thickness, by which it is designed to eliminate the deficiencies of impracticable coincidences, must still, beside the logical absurdity of the attempt, be at the expense of mathematical accuracy, in the same way as when in transcendental analysis the polygon is supposed to multiply its sides into a coincidence with a circle — in all cases the differential infinitesimal is still there, precluding the coincidence as persistently as the infinitesimal surfaces of solids prevent their bodily concretion.

And then again, in the experience before abstraction, a perfectly formed circle or other figure could never be determined by any practical measurement but by conforming to some supersensual idea, like the circumvolving line for a circle, &c., which idea must be first mentally constructed, and brought to the sense object, and its perfection so ascertained before

a perfect abstract can become a copy of it. The absolutely perfect must be carried to the sense phenomenon, or it can never be taken from it. And then, further still, when an abstraction is made that is quite void of all sense-content, and there is attained pure place or pure period, the abstraction has not attained, nor in any way can attain, Space and Time. Pure place is not Space and pure period is not Time, for the place is *in* Space and the period *in* Time. The place has extension, and the period has succession, but Space instead of being itself extended has already all extension in it, and Time instead of being successive already contains all succession. Space is no outstretching, but all outstretching is within it, and it must first be in order that any extending can be; and so Time is no onflowing, but all onflowing is within it, and it must first be in order that any flowing successions can be. All abstractions from extension and succession are but empty place and period, and all further attempted abstraction is utter emptiness, which can give no distinction between Space and Time themselves, nor determine any places or periods within them. We do not, therefore, discard abstract logic arbitrarily; it is intrinsically delusive, and hopelessly, helplessly defective. We come back then to our recognized experience of pure mathematical Quantity as intrinsically concrete, and proceed to subject this purely concrete experience to the insight of reason, that we may see exactly the conditions which are determinative of it.

We already know that points, lines, surfaces, volumes, and angles, together with motion and numeral units, make up the elementary content of the mathematical experience, and that as they are pure Quantity, destitute of all sense-Quality, they cannot come within the consciousness through the medium of organic perception. It is a necessary condition that they have their construction by an intelligent activity working within consciousness, and so far the conscious constructing activity will be a portion of the experience itself, while that which sees within the whole experience the necessary conditions for it, must come from an intelligence looking over and beyond the empirical constructing to that which determines it, and must authoritatively control it. There will then be an activity directly engaged in constructing this elementary content, and which must have its guidance and control from a deeper intelligent sovereignty. We here particularly distinguish these subservient and dominant mental activities in their order.

A point cannot come and stand in my subjective consciousness except as I assume, by a mental movement, a certain position and there rest, when such double-act in moving to and resting in a stable position makes that a fixed point in the consciousness. The stated point consists in the intelligent act taking and keeping the fixed position. The positing act is thus necessarily not a simple but a complex activity, including counteraction by a positing and negating on opposite sides, and thereby attaining steadfastness.

So holding the intelligence in position, there is the conscious point with no motion ; and conditional for such posited point is such counter-activity.

And further, no line can come within my subjective consciousness except as I construct it, and the constructing activity will necessarily be a modification of the above described counter-action. I must so far withhold the negative side and give excess of energy to the positive side as to secure the passing of the activity to a contiguous position, and there again balance itself in the contiguous point, and so moving from position to contiguous position successively, the contiguous points become a constructed line, and the line so constructed in consciousness is itself a complex throughout of the discrete and continuous ; the points are put in unity by the intelligent movement and statement, so that no one falls away from the preceding, and none falls out of the continuous line, but all stand together as a concrete extended in the consciousness. Such complex activity of intention and extension is necessarily conditional for the construction of any mathematical line. This activity is virtually the living movement of Hegel's thought-process, and which, instead of a process of abstraction and generalization, has here been seen in the facts of mathematical experience itself an indispensable prerequisite in order that such facts can be. By careful inspection this whole constructing process can be brought within clear consciousness whenever in subjective movement we describe a pure line or fix a pure

point. The products are original concrete constructions and not second-hand abstract conceptions, and in such method all mathematical figures may be drawn, and so must be drawn if they stand in subjective experience.

But we now go further to the attainment of a profounder agency. The points in the line are contiguous and so the line is itself an extension, and the constructing activity was continuous in uniting the points, and so they stand in succession, the line thus fills a place and the construction of it fills a period, and conditional for pure place and pure period in subjective consciousness is such construction of extension and succession. The line may be made to limit any place and the successions in it to limit any period, and the places and periods are made by their limits, and so are as their limits and cease at their limits. These limits may be constructed indefinitely, but how far soever that may be, the construction can only fill place and period as smaller or larger, and can never get beyond limited place or period. But an insight into any constructed pure place or period sees, that conditional for place there must be Space in which places may be, and conditional for period there must be Time in which periods may be. Place is not space and period is not time, the former are *in* the latter. The directly constructing activity gets the conscious place and period, and cannot make the consciousness reach over and beyond some place and period. But the profounder insight does see in any place and period,

that for place it was a prerequisite there should have been space, and for period a prerequisite there should have been time, and that both the space and the time be illimitable and immutable. Places and periods change *in* space and time, but make no changes *of* space and time. Space and time are concretes, and no abstracts from phenomenal experience can be other than void place and period, and if place and period be further generalized they become abstract emptiness.

There is, then, in concrete mathematical experience clearly two orders of intelligent agency with their distinct varieties of consciousness, one the immediate constructor of the pure figures in their places and periods, with both the constructing activity and the constructed pure figures in place and period within its consciousness; the other is the reason, with its insight into and through these pure figures and their places and periods, and which so attains illimitable and immutable space and time as prerequisite conditions that these pure figures should have had their places and periods. The constructing agency has the figures and places and periods in its consciousness, and can make consciousness reach no further; the reason puts all these within its insight, and gets the profounder consciousness of an Absolute Space and Time which hold all these relative places and periods and their constructed limits. The first may be conceived as if its observing agency and consciousness were on ship-board, striving to arrange and fix con-

sistently in ordered experience all the moving places and periods and their Quantities amid the disturbing winds and waves and counter-currents which agitate both it and them; but the other may be conceived as if the Ocean-bed were itself conscious, and steadily looked through all that came over it, and knew all that was in itself and outside of it. From this deeper consciousness not merely the relative facts appear, but their necessary conditions and predetermined connections are comprehended. So far as even the finite human reason reaches it knows more than that which *is*, it knows much of that which *must be*. Beyond limited places it knows there must be illimitable space, and beyond passing periods it knows there must be per-during time. Thus much of that which is absolute is brought clearly into mathematical science, and its demonstrations cover not merely the generalities abstracted from phenomenal experience, but they include truths absolutely universal and eternal.

Hegel calls the infinite which lies within and beyond a line in space, or before and after a period in time, a "miserable infinite," inasmuch as it is only two finites on opposite sides of a limit; and his assumed true Infinite is the thought-activity itself, which has in it the capability of an endless process; but for the reason-consciousness, Hegel's Infinite is scarcely less miserable, for it is but a potential Infinite; that which can be, but which is not yet; the reason space and time is an Infinite in each case, as that which is above and beyond all limits; limitation and change

cannot be of infinite space and time, but of that only which is in them.

In all mathematical construction preliminary to mathematical demonstration, the common consciousness, in which the constructing activity moves and within which the constructed pure figures are stated, must ever be held within the light of the profounder reason-consciousness. Mathematical thinking can be, only as the constructing activity is prompted and guided by the insight of reason, to the end of arranging the mathematical diagram with its consecutive steps for an intuitive process, and then passing through that process step by step to the consummated demonstration. Even pure thought must travel deliberately and carefully its patient way over the very path which opens to reason at a glance. All is thus within the reason-consciousness of illimitable space and time; the constructed limits are in the infinite space or time, and the constructed figures and their places or periods are within the limits, and thus as concrete Quantities they may, as abstract Quantities they cannot, have their coincidences of like with like, and each annul its counterpart limits, and the two completely coalesce in some middle third figure. The deeper consciousness exactly comprehends the process in its absolute universality.

We have thus, in full view, all prime conditions necessary for any exigency in pure mathematical experience. We know a constructing agency for any arithmetical formula of numbers or for any geometri-

cal diagram, and we also have the conscious places and periods in which they are stated and limited ; beyond this we also recognize a profounder function that has an immediate insight, in the places and periods themselves, of the necessity that an illimitable space and time should give occasion for limited place and period. In this deeper reason-consciousness all is concretely present, and one truth of its kind is a truth universally, and no possible experience may violate the absolute demonstrations. Each mind will have its own mathematic, yet each man's mind, so far as its pure experience reaches, will have the eternal mathematic of the Absolute.

We may, then, unhesitatingly affirm that logic and fact here go together, and that the necessary conditions conspire in attesting both logic and experience. Without the prerequisites the logic and facts cannot be ; with them the logic and fact cannot fail to be ; and their complicated attainment of the end evinces a predisposing purpose. We as little doubt the correctness of the logic as we do that of the science itself.

2. EXPERIENCE WITHIN CONCRETE QUALITY.— Under this category we shall find the logic for sense-experience, and which will determine our knowledge of phenomena as gained through organic Perception. The broad distinction between this and the previously considered mathematical experience is, that the latter had its elements as pure construction in subjective consciousness only, but here organic senses intervene

and present their content to the constructing activity as material already given, and which this activity is to elaborate into clear and complete appearance in consciousness. The experience within Quality is on this account not merely subjective, but has also eminently an objective significance. One is conversant with pure figure alone, the other with figured or limited sense-objects.

Some of the leading items of the experience into which we are now to look for the discovery of its necessary conditions are as follows:—

1. The five senses, with their respective organs of seeing, hearing, tasting, smelling, and touching, the touch subdivided into mere contact and muscular pressure, supply the content for all appearances.

2. These organs have impressions upon them and affections within them, preliminary to any perceived appearance.

3. The organs never give appearances which can be interchangeable one within another.

4. Each complete appearance has its own place and period, but often different appearances stand interfused in the same place and period.

5. All that stand thus interfused within the same place and period are apprehended as one body, and the different appearances are deemed to be distinct qualities of that body.

6. Successive modifications of the qualities are deemed to be changes of the body.

7. While many qualities may be in the same body

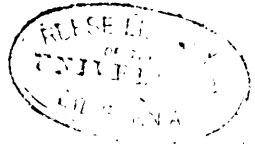
at the same period, no two bodies can be in the same place at the same period.

8. Bodies in their places and periods may stand contiguously and remain continuously, and their many places and periods may be aggregated into an augmented place or period, but no augmentation of place and period can transcend some limit.

9. Perceived bodies in place and period stand in a Space and Time which may contain all bodies that can possibly be perceived in their places and periods.

10. Bodies once perceived may be remembered, and their recollection will be a present representation of a past perception.

The above characteristics of sense-experience will give an adequate occasion for the insight of reason to unmistakably read its prerequisites. Hegel, in his *Phenomenology*, began with sense-organs already affected, and yet on coming in his process to the point of reflective consciousness, he had then dropped out all organic sensation as having no permanent certitude, and thence onward the knowing and the known are in and of one thought-activity alone. We have before noted that this omission of sensation was an arbitrary or an unwitting neglect, since sense-affection is ever in a mode that indicates some foreign agency. It is as important to keep note of the pressure of experience upon us as of the activity which directly works experience within us. Except there be some organ there can be no sense-impression, and so no awakened sensation. Fancy, imagination, and



PURE FIGURE AND INORGANIC BODIES. 117

memory, may have reconstructions occasioned by former impressions, but organic affection is conditioned upon nerve-irritation, and it is through sensation thus excited that we come to the recognition of sense-qualities. But beyond this, that which we are now most concerned in considering is the inadequacy of mere sensation to attain to complete perception. No qualified object will appear in consciousness except as the given sensation is previously further wrought out to full cognition. The impressions having been given and the affections induced, it is still conditional that an intelligent agency work them up into full and clear phenomena.

Sensation is at first given in gross as the commingled affections of many organs, and this promiscuously mingled content must be reduced from its manifoldness into separate and single apprehensions as particular qualities, and then these single qualities must be brought into collective order and consistency in their respective objects. The same constructing agency which produced pure points, lines, and figures, in mathematical experience must here be directly active in elaborating the phenomena of sense-experience.

The *first* prerequisite is that of *Distinction*. Literally, to distinguish is to thrust a point between heterogeneous elements, and so separate what has been commingled and confused. In this case of organic affections taken in mass, the intellectual act takes position between different affections in the common sensory, and thereby discriminates the differences.

The mental act, as constructing a mathematical point, required a positing and negating counter-working in order to both take and keep a steadfast position; but in sensation, the sense-affections have intrinsic differences, and thus the distinguishing act states itself between the differences, and steadies itself by their persistency, and thus a clear distinction is recognized so far as a dividing activity is carried. Points of demarcation are put between the same and the different, and the distinctions appear in consciousness. The quality will have its distinctions in *kind* when the sensation is discriminated according to the organs affected, each organ having its own generic appearance, as color pertains to the eye, and sound to the ear, while the quality will have its distinctions in *variety* by dividing the affections as differing in the same organ, like the colors through all the separations of the spectrum, or the sounds in all divided tones. When the differences in sensation are thus exhausted the work of distinction is completed, and all kinds and varieties of phenomena become consciously recognized.

The *second* prerequisite for Perception is *Definition*. To define, is to limit on all sides; and here for intelligent apprehension the constructing activity is carried clearly about the quality in a line or covering surface, and so shuts in each distinctive single by itself. When all distinct qualities have so also been made definite qualities, the whole constructive work of phenomenal perception is completed, and nothing

further is needed for complete single appearance in consciousness. The distinctive act is specially conditional for *observation*, since it sets the distinctive qualities obversely in consciousness, and the defining act may specially be known as *attention*, inasmuch as it stretches itself around or completely over the observed phenomena. Both are necessary for complete perception; and when obscurity occurs, it is easy to mark whether the deficiency occurs in the distinguishing or in the defining.

A *third* prerequisite is the *embodying of Qualities*. When quality of a certain kind has appeared, there is ever an occasion for quality of another kind to appear in consciousness; and where all organs are open to impressions, no one kind or variety can so seclude itself as to exclude others. On this account even distinct and definite qualities may yet interpenetrate each other in collocation, or run on concurrent in succession. The defining activity, having already given single qualities place and period, may then put many other single qualities into the same place and period. Color, sound, touch, &c., may appear together in one place and period; and again, diverse other kinds and varieties may be gathered in groups in their respective places and periods, and so there may be definite groups in the same way as definite single qualities. When a certain group of diverse kinds and varieties of quality appear invariably the same together in their place and period, even perception so far takes thought as to deem the persistent assem-

blage to be one thing, and the whole is apprehended as an individual object. Discursively and singly, and yet collectively in one place, the sense finds in an Orange the roundness, and fragrance, and yellow, and acid, &c., and these persisting in their period invariably the same in the consciousness, the perceiver at once embodies them together, and as he deems them one body, so he gives them one name, and the many qualities are but the several characteristics of the same individual. The sense can recognize no intrinsic connection, but can clearly apprehend local and periodic relations, and so distinguishes and defines collated and coetaneous objects as distinct and definite bodies. The many qualities belong to the one embodied thing.

And now these bodies differ in their magnitudes and duration, and thus fill smaller and larger places and periods, and so far as experience reaches, the places of each may be determined relatively to the whole in place and period; but this can give place only within larger place and period within larger period, the largest of which will still be within known limits, and no perception of objects can attain a consciously unlimited space and time. The constructive imagination may run out to any extended conception of body in its place and period, but at furthest stretch the conception has its limits, and no constructing agency, prospective or reflective, can recognize a space and a time within which all possible limits must be. And here, just as with mathematical experience, the

reason's insight recognizes that neither smaller nor larger places and periods can be, except as there also be unlimited space and time to contain them and their limits. In any bodies perceived in places and periods, reason immediately reads illimitable and immutable space and time with neither hesitation nor mistake.

And here is good occasion for expounding the human capacity for abstract generalization. The mere sense-activity in its reflection can make abstractions. The brute can regard some qualities and reject others, and can derive conclusions from abstract remembrances, and so guide its conduct by past general experience. But this, as compared with man, is only to a partial and confined measure. The brute is able to hold past experience but very incompletely in memory, and can put objects together in relation to each other and to itself merely as its remembered experience has found and retained them. It has no faculty which may take all experiences in place and period and hold the whole in one space and one time, and so take a steady universal retrospect. Man puts his and all men's experience into unlimited space and time and holds all in one, and can thus reflect deliberately, and make universal abstractions and generalizations. The reflective understanding is the direct agent in abstraction, but man's rational insight and oversight guides the practical activity effectively and extensively. Reason alone gives to man his superior capability of abstraction; and while reason distin-

guishes man from the animal specifically, in abstraction the difference is in degree only. The profounder consciousness of reason has in it the universal and eternal, and can make more complete and comprehensive use of the constructive and reflective agency, but the constructive and reflective consciousness is in man and brute of the same kind, while man's superior endowment of the rational faculty greatly augments his capability for abstraction in compass and clearness. But we here regard a capacity for abstraction, less or more, as of no account for our logic. We distinguish and define sense-affections into clear perception, and put phenomenal qualities into individual bodies in place and period, and then by reason's insight hold all concretely in unchanging space and time, and infallibly know that except on condition of infinite space and time there could be place and period for no possible sense-objects. We have then again here the three varied conditions conspiring to give us a logic for sense-perception, and this with valid convictions above all gainsaying.

3. EXPERIENCE IN CONCRETE RELATION. — Perception, as an experience in Quality, is completed in Distinction and Limitation, thereby cognizing single qualities, and then embodying the single qualities as they stand interfused in place and period into one individuality, and such individual body in its place and period the reason cognizes as in infinite space and time wherein are comprehended all places and periods. Reflection then ensues, and the relations of each to

each and to all are thought out in specific judgments, and the experience rises from separate appearing things to a concretely connected nature of things in a universe. So far as perceptive experience can reach we recognize bodies only in their places and periods, and can speak only of their extensions and successions, their collocations and concurrences; but beyond this we attain a largely advanced and extended experience, by the reflective activity of the understanding under the illumination of reason.

The ordinary work of Reflection may be concisely given as a turning of the mind back upon objects perceived, and analyzing the bodies into their single elements, and then, predicating these as the several characteristics and attributes of their respective bodies, we recognize them in various forms of judgments. We further note such bodies as have together common attributes, and abstracting such as are common to the many from such as are peculiar to the individual, we make a class of the bodies to which the attributes in common belong, and give to it a general name. In the same way, by appropriating common attributes to a wider generalization we rise to more comprehensive judgments, and thereby attain class-relations in addition to relations of place and period. By the logic of concrete relations we can rise to an experience of intrinsic connections, by which the identity of subjects and predicates will be indisputably established; but in order that we may find the necessary conditions preliminary to the practica-

bility of such transcendental experience, we need to contemplate some of the prominent facts contained in it, since only by an insight into the experience can the reason read what are the prerequisites which render it possible.

1. Some bodies continue of the same appearance and in the same place, others change either appearance or place, and others change both appearance and place.

2. Some bodies have tendencies to move from or to each other, some in polar directions, and some around another body.

3. Some bodies tend to mutual composition, some to dissolution or disintegration, but in their primitive elements the molecules maintain their integrity.

4. The compound bodies are some in cohesion, some in chemical combination, and some in crystallization.

5. The same body at different periods may be solid, or liquid, or vapor, but in no two states at the same period.

6. Bodies are surrounded or infused by subtle influences which interact with them, the bodies known as material and the subtle influences as ethereal, like heat and light.

7. The material has impulses towards a centre, the ethereal has expulses from a centre, and so matter has gravity and ether has levity.

8. The surfaces of some bodies, under special modifications, send off influences in polar directions and with impulsive or expulsive energies, known as electrical action.

9. All known bodies and ethereal existences act and react on each other, and thus is maintained universal communications.

10. Loco-motion perpetually repeating ongoing successions gives continuous periods, especially revolving motion, which, as repeatedly returning into itself, gives measured periods.

11. Changes in appearances as well as in place give successions, and so have periods; but the places and periods which different men may have in consciousness cannot be in a common space and time for all, except as all come to the same bodies for their places and periods.

12. All men have a common space and time, so that all transactions in places and periods may have one historic record from the beginning.

The above items will suffice for attaining all needed prerequisites for related human experience.

If here we should but follow out the logic of abstraction in finding and taking attributes common to many, and so rising in classified generalizations, and from them deducing particular syllogistic conclusions, our most comprehensive judgments could attain only to the sense-relations of place and period, and could never reach the certainty of any concrete connection. The attributes of bodies having appeared invariably together in their place, and in fixed order of succession and communion, on this ground of observed fact we predicate their relations to their subject, but inasmuch as the relations perceived, and consequently the rela-

tions deduced and concluded can be those of collocation, sequence, and concomitance merely, it must be utterly illogical to assume that there are the concrete connections of inherence, adherence, and coherence in any possible judgments. . We opine, merely because we feel a constraining need, that there is something answering to our notions of substance, cause, and counter-causes, and deem long observed fact to be law of nature, but no light of thought can penetrate the perpetuated experience and find any reason for it. We here put abstractions all aside, and turn at once to concrete and integrant connections determined as prerequisite and clearly intelligible conditions.

Organic impression and sense-affection we have already found to be necessary preliminaries to distinct and definite perception, and we now make the inquiry, What is conditionally necessary for such organic impression and sensation? Mere thought-constructions can never affect sense-organs. Neither human nor divine thought can be communicated to a sense-recipient simply as thought, but only when uttered in some expressive way that affects some special sense. We speak not here of any purely spiritual communion, but of spiritual communication through sensation, and this must impress itself upon sense-organs, and induce affections in them which no thought-activity can itself accomplish. The thought must stand embodied in some material symbol in a way to impress itself upon some material organ, and by so much must have an imparted energy over and

above the thinking-activity. As the clearest ideas systematized into the most consistent plans must have an added executive energy which embodies them in matter before they can be recognized by sentient intelligences, so all recognition of nature's meaning is only through overt material symbols impressing themselves upon organic receptivities. The spirit must have the letter, the thought must have the body, the plan must have the material mould in nature's steadfast substance, and thereby the thinking must be supplemented by an impressing energy, or nature can impart nothing to, and be nothing for, any sentient observer. There must be a static energy embodying thought, and a dynamic energy impressing the static symbol on sense, or there can be no sense-content to be distinguished and defined into sense-perception; and such static and dynamic energy is Force, in both respects conditional for any sense-experience. Nature is other and more than clear and consistent thought, even thought and plan expressed in static force, and to this all sentient intelligence must come and take the communicated impression, or, to such, nature has no inherent meaning, and can impart nothing of her hidden wisdom.

And still further, inasmuch as mere thinking-act cannot affect the sense, and only as the thought is embodied in static force, so manifestly it is a further prerequisite that the force be thoroughly pervious to thought, and the consistent plan and meaning penetrate, and be so clearly suffused throughout it, that

the static force shall be an exact symbol of the thought, and convey to the sense its complete expression. Force and thought must be thoroughly conformable, and as much one as the other must be determinable by logical rule, and only so can any reflection on sense-perception attain knowledge of the inner connections of nature, or acquire a true science of her observed phenomena. Sense must take the impressions, and distinguish and define them in clear consciousness; but the insight of reason, which has seen the force as conditional for the perception, can alone take the thought and meaning from the force and give its true interpretation. The force must be seen conformable to thought, and the thought must be seen expressed in the force, and the force underlies all phenomenal arrangements, and so, carefully through reflective thought, guided by rational insight, we recognize Nature's universal connections.

We have not here arrived at the position to see from whence the force must come, but shall ultimately clearly attain it. We are now in position to see not only that static force must be in order to a knowledge of the connections in phenomenal experience, but also what the force must be to answer the ends of symbolizing thought. The force must be fashioned according to thought, for it must express thought in itself, and impress thought on organic sense. We have already, by the insight of reason, seen what is necessarily conditional for pure constructed thought, and

this must be our guide in attaining what must be the prerequisites of force. In order to take and hold position in pure thought we found the necessity that the constructing activity equilibrate itself in the counter-energizing at the same time of both positing and negating, i. e., putting itself in position and arresting the positing energy at that point, and only by such counter-action could pure point be constructed ; and now, that force should occupy and maintain position, it is alike conditional that counter energies, of an executive agency other than thought-activity, balance themselves in their mid-point, and there rest by their mutual resistance. And then, as the thinking activity moved in describing the pure line in the only manner by putting an excess of energy on the positing side above that of the negating action, so force can move from its resting point only on condition that an excess of executive energy be given to one side of the counter-action, and in such condition motion must follow in a line opposite to the excess of energy. Such balanced force is known as **ANTAGONIST FORCE**, and as persistently at rest it is *static* force. As unbalanced by a one-sided excess it is still antagonizing up to the balance, and as driving or drawing to the degree of excess it is so far *dynamic* force, but whether static or dynamic it is in each case properly *mechanical* force, and will stand or move as persistent substance for all sense-affections and cause for all changing phenomenal manifestations, and in such acceptation it is essentially *Material* force.

Light and heat energize the reverse of matter, *from* and not *toward* a mid-point, and thus conditional for them the energies must be *expulses* and not *impulses*, yet as they must reciprocally work in explosive activity one with the other, they constitute force driving apart and not condensing as in antagonism, and so is distinctively known as DIREMPTIVE FORCE, and which will persist as *static* when equally divellent, and work as *dynamic* when one side has an excess of explosive energy. Either as static or dynamic, diremptive force works mechanically, but as the converse of material it is known as *Ethereal* force.

A persistent origination of multiplying energies, of either impulses or expulses in a mid-point, must also multiply forces of their respective kinds of working about their appropriate points, and must eventually balance themselves in full sphere about the primal point as a centre, and such ensphered accumulation of forces may be known according to their distinctions as *atoms*, either material or ethereal.

In the formation of the material atom by antagonism and persistent accumulation of antagonist forces in the central point, there must be a continual coming in and crowding from the mid-point of the successively originating forces, and which must induce another kind of force as motion about a centre, known as REVOLVING FORCE. Such force, by careful inspection, will be found conditioned to the direction of the antagonizing impulses of the material forces successively about their common antagonizing point,

and in opposite-handed helical circuits eventuating in the production of the two atomic hemispheres, which as completed will give to the atom a bi-polar energy working opposite-handed from the equatorial line through the hemispheres, and locking each other in mutual rest through the polar diameter.

So constituted, each material atom must have gravity in its impulses precisely according to the empirically attained Newtonian law, while the ethereal atoms must each have levity in the same necessary ratio. The material atom must in the necessity of its method of construction be a magnet, and its revolving force must determine the distribution and arrangement of the accumulating atoms into masses working into systems, and the systems forming into worlds. The interaction of all will intrinsically connect all, and ensphere all as literally a universe turning on its one primal centre, and generating from it the many concentric suns and systems.

This doctrine of concrete relations, in the intrinsic connections and combinations of distinguishable forces, cannot be here thoroughly expounded, and reference must necessarily be made for full explanation of this, together with organic connections, to the recent work of "Creator and Creation," in which is noticed the composition of material and ethereal atoms, primitive insoluble molecules, and the empirical phenomena of cohesion, chemical combination, crystallization, vaporization, combustion, and electrical action, as appearing on earth, and the observations evincing the

presence of like substances in other worlds. All intercorporeal spaces, atomic, telluric, or cosmic, present a plenum of substantial forces which fill and fix the universal sphere, while still the most tenuous and the solid substances as well are constructed of forces thoroughly pervious to thought, clearly conceivable and intrinsically intelligible, leaving the very essence of substances and their efficient causality as open to rational insight as the pure figures of constructed mathematical diagrams. The conception of things and their attributes is in unity, and as subject and predicate concluded in a judgment they have not merely relations of place and period, but concrete integration by intrinsic connections. We have knowledge of their truly substantial inherences, causal adherences, and reciprocal coherences.

And lastly, all these material bodies and ethereal existencies we know have overt, objective reality. They are no product of mere subjective thought; they are neither fancies, nor dreams, nor poetic imaginings; they all stand out in one common space and time for all humanity, and while each observer has his own phenomenal facts in his own consciousness, yet has every one come to the same stable extensions for his space and the same invariable successions for his time as all others have, and so all know they are not dreaming, nor internally musing, but all openly beholding the same solid stable worlds and their phenomena, which have, and can have, to all sense-organs, no place nor period which is not in the one infinite space and the one eternal time.

And here again the three prerequisite conditions conspire. Without the conditions the connections in experience could not be, with them such experience must be, and for just such experience they must have been originally purposed. We thus establish a valid logic for all mathematics and all physics within what is known as the Mineral Kingdom.



II.

ORGANIC LIFE AND ACTIVITY.

IN pure mathematical figures and in the mechanical forces hitherto occupying our attention in the First Division, we could avail ourselves of constructive forms and movements in space, and thereby attain pure objects to assist our conceptions; but in this Second Division we have to deal with susceptibilities, in their feelings and urgencies of want, appetite, and imperatives, which are independent of all space and cannot admit of constructed outlines, and therefore, from the necessity of the case, we are forced back upon the facts of inner mental experience in consciousness, that the insight of reason may in them read, without a diagram, what is necessarily conditional for them, and for analogous experiences to them which yet never rise into consciousness. While thus our knowledge of Life must necessarily get less

assistance from outward sense than our knowledge of Matter, still a close speculative examination of what is prerequisite for it, and in it, may attain to convictions scarcely less satisfactory.

Organism is the product of life, and also an instrument in subserving the ends of life; and while the most mature and perfect forms of living activity are in full consciousness, the earliest life-work is in darkness, and to the closing period much of what the life-power does is beneath all consciousness, it will therefore doubtless help to the knowledge of its primal essence best, to first get the leading facts of life as they stand in highest consciousness, next downward through the twilight, and thence to such as are perpetually in darkness below it. We may then study the facts as they stand distinctively in the different Organic Kingdoms.

I. LEADING FACTS OF LIFE RUNNING THROUGH FROM CONSCIOUS TO UNCONSCIOUS AGENCY. — The most complete life-action is in the reason-consciousness, then sinking to the less complete as we have lower consciousness. and thence to instinct in unconsciousness; and yet in all degrees of life-experiences a prompting urgency is determining the activity. We may clearly note those of the following grades: —

i. *Rational action in liberty* has a graded experience through Religion, Morality, Philosophy, and Art; and a conscious urgency, in the claim of reason itself, imperatively puts force to a fulfilment of the ends of Worship, Righteousness, Truth, and Beauty.

ii. *Sense-action* is fully within sense-consciousness as an experience under the urgency of sentient gratification, and it appetitively uses force in the interest of Happiness.

iii. *Spontaneous activity* has no strictly defined limits in consciousness, since it comes within it from above and sinks below it from beneath, and like a passage-way to a dark chamber, admitting less and less light as we move onward. We refer here to some of its successive grades of descent. Musing meditation is in half-consciousness, so absorbed in subjective attention that it becomes oblivious to all without, and barely feels without heeding what is going on within; yet on retrospection, there is the consciousness that the thought-activity was urged onward in the interest of its own gratification.— In the primitive facts of sensation and distinction and definitive construction of organic impressions, we are ordinarily unaware of both sensation and constructing action, and only attain the consciousness in the completed perception; and yet a close watch may fairly detect an urgency from the sensation calling out the energy of construction.— Somnambulism walks in sleep, and yet is not entirely heedless. The senses still direct the steps, and the subject usually recalls some vague uneasiness that was prompting the action.— Dreaming, also, is action in sleep, but only in subjective fancy, and remembered dreams ordinarily reveal the impulses of hope or fear as urging to the dreaming experience.— Breathing is mostly unwittingly per-

formed, and yet is at all times open to conscious observation, and we thus know that empty lungs urge to inhalation and full lungs to exhalation. — The heart's palpitations are deeper in unconsciousness, but experiment shows that the heart-beats are in systole and diastole as the organ feels its fullness or emptiness. — The peristaltic intestinal movement, and the varied activities in digestion, assimilation, secretion, &c., all go on unconsciously, and yet any interfering disturbances disclose an urgency, waking forces up to the fulfilment of vital interests.

iv. In *reproduction* of new organisms, and their *growth* to maturity and *preservation* afterwards, though in each case alike the activity is in unconsciousness, yet careful observation discloses the urgency of a hidden feeling controlling and using force in the interest of the organism. Experiment and assisted observation have found, that while a few other substances supplement them in corporeal constructions, yet only three and in some cases four substances incorporate in complete chemical combination, viz., carbon, oxygen, hydrogen, with at times the addition of nitrogen. The earliest vital activity observed is in the production of cellulose from a previous protoplasmic combination of the above elements. This activity appears in the augmenting and multiplying the unicellular formations, and which in continuation take on varied forms of fibrous and vascular tissue, gradually shaping the assimilating protoplasm to the formed embryo, and then maturing and perpetuating the spe-

cific construction. The nourishing elements existing in many modified combinations are sought and selected amid facilities or hinderances of procurement, and occasional injuries occur to the organism, and in all such exigencies an urgent feeling prompts in the way to the most gain, or the least loss, or the readiest recuperation to the structure. The activity changes, in the changed conditions for the need, by seizing advantages, avoiding difficulties, and mending disasters, as promptly and directly as possible. The appropriate forces are employed for the welfare of the organism in the right way and place and period. There is an energetic urging which is manifestly a using of mechanical force to specific ends.

Other facts of similar significance might be adduced, but we have in the above sufficient indications of conditions which must previously be, or such results could not be. Force is here, substantially in the body and executively going out from the body, which essentially is necessary in the securing of these ends. But mere force is surely not all that is here. There is force urged out and onward to specific ends, and used in different ways for varied circumstances. It cannot satisfy to assume that distinguishable forces are here but mechanically acting and interacting, and mutually modifying and reversing their action, so regularly and persistently and exactly as they do according to the varying ends in the interest of the organism. The benefit to the organism is the constant intent, and the urgency of the secret energy is in that direction

unchanged through every other mutation. Conditional for such activity is clearly in reason's insight, the necessity for force, and also for some superinduced mastery and use of force, to which its own constituted mechanism is utterly inadequate.

And the end proposed and attained fairly and clearly indicates what is the character of this superinduced master and user. The force is feeling its way to a proposed end, which demands along its course assimilations of other forces, and modifications of newly combined forces, according to widely diversified circumstances, and it is urged in its way by the feeling, and so the feeling must be in the force, and truly possess the force, and use it in the execution of the need which is its own essence. The force has the feeling of a specific need, and so becomes the executive of a special want, and is urged by the want in the accomplishment of the before-felt interest. The force possessed must be the force immediately used, but which may mediately take hold on other forces, and modify them to the end of its want, as the want modifies it in subserviency to its own intent. And so the feeling want must be the prompter of the possessed force, and can assimilate other forces to its end only by the mediation of the forces it possesses.

The want may urge and direct its possessed force by turning an excess of the component counteracting energies on either side, and so guide to the end of the feeling need, and which, as ultimate end, must be one, but as subordinate, may be many and

successive. The instinctive feeling may rise to conscious urgency, as it does in too long suspended breathing; or it may ever prompt in unconscious urgency, as in the vermicular motion of the intestines; but the insight of reason sees alike in each case that the force is controlled by the feeling that possesses it. The force can be figured in spacial limits and subjected to mathematical construction, while the feeling can be recognized only in the inner sense and the analogies in conscious experience, yet the two in union make a middle-third, indifferently known as a feeling force or a forced feeling. All life-activity expresses itself in phenomenal symbols, that have no other meaning for the reason than that of force spontaneously working in the end of a specific want. Such reason-conception adequately determines the connections of all organic facts, and identifies the predicates in their subject for all organic judgments. The end to which the urgency is intent gives the type in constancy for every species, and the stage in consciousness to which it rises gives the measure of its reign, and in this we have the distinctions of life into its various kingdoms.

2. LEADING ORGANIC FACTS IN THE VEGETABLE KINGDOM. — In mechanics, the dominating Force, starting and guiding other forces, is known as *power*; and so in organic construction, the feeling-force we have now attained, as urging on the organizing process by the use of its selected elementary forces, may be known as distinctively *life-power*. The directing

energy in life-power itself is the feeling of need that has the force in its possession, but feeling and force in one is the master-power amid nature's elemental forces, and which it constructs into living bodies. In its lowest form of working, its dominion and rule is in the varied species of plant-organization, and as controlling in all vegetation its entire domain is known as the Vegetable Kingdom. Keeping the conception of Life which we have attained, as a necessary condition for the leading significant facts in organic experience generally, viz., a Force suffused by a feeling of specific need, we now go on to attain what is further conditional for the life-power to be, and to do, in the rising reigns respectively of the three organic kingdoms, vegetable, animal, and human, confining our view here to what is a prerequisite for the life-power to rule in the Vegetable Kingdom.

Our experience in Vegetable Organisms has given to us the recognition of the following significant phenomena, in which the insight of reason may read much further the precedent conditions, which must have conspired to make such phenomenal experience possible to be presented to our observation by the activity of the life-power in plant-construction.

1. There is a sharp distinction between inorganic and organic chemical combinations, from binary complementary equivalents to ternary and quaternary combinations. In plant-organisms, carbon, oxygen, hydrogen, and nitrogen, in small proportion, are assimilated from their crude state into living bodies, and

while supplemented by some other substances, these alone are brought into definite combination.

2. They are gathered from the soil by the roots, and from the atmosphere by the leaves.

3. The vital sap is in circulation from the roots to the outermost buds and leaves, and then again returns through the stalk to the roots.

4. The organism has a persistent sympathy in every part, and a benefit or injury to any member is felt throughout the structure.

5. The species perpetuates itself in numerous individuals. The most simple multiply by sections, each part restoring in itself the complete structure; a higher grade produces spores or tubers from the old stock out of which successors spring; while the highest plants propagate through sex-generation.

6. Ordinarily generation is within the sex-distinctions of the same species, keeping the type constant amid perpetual variables, and occasionally varieties become hereditary.

7. In few cases nearly conforming genera propagate hybrids, which are either sterile or tend back to the normal species.

8. The old stock provides for the new plant in its germination by storing sustenance in the seed, and often gives to the seed special arrangements for its distribution, all kept constant according to specific type.

9. Plant-life never rises to consciousness, and uses its organisms only for reproduction, but not for its own gratification, and is destitute of loco-motion.

10. The dissolution of the organism is the destruction of the plant's individuality.

The primitive substances elementary for plant-formations, though composed of distinct forces, are yet molecules practically indissoluble, and in their crude state incapable of combination in cellulose production except as first assimilated by the life-power. The end of the life-want is just this embodiment of itself in a specific organism, and conditional for this is its use of its own force in working in and upon the elementary molecules and modifying them to become chemical equivalents, thereby bringing them into cellulose combination by the special interposition of organic chemistry. The molecular forces so modified by the life-power become vitally assimilated and enter the organic structure; and for the period fill their place and subserve their end in the living body. In the continued action and reaction of accumulating and interchanging construction, the sometime vitalized forces become unfitted for the new occasion, and need to be eliminated as now exhausted material, and be better supplied by new assimilations. The organism is thus matured and sustained by continual loss and supply, and it is conditional that the persistently working life-want spontaneously urge on this continually selecting and assimilating process in the fulfilment of its instinctive craving. Nothing other than a force which feels its way to the end of its need can execute so complicated an intent.

Inasmuch as the sustenance so elaborated is to be

found and taken from the earth and air, it is further conditional that the roots be sent downward and the stock and branches upward, and the leaves be spread abroad for the necessary inhalation and exhalation, and with such conditions the universal plant-form must be a result of root, stock, branches, and leaves, the general arrangement admitting of endless varieties. In all plants it is conditional that the life-power send the nourishing fluid to every part, but this becomes wondrously conspicuous in forcing the sap against gravity to the topmost bud and leaf of the tallest trees.¹

¹ President Clark, of Massachusetts Agricultural College, has recently made carefully exact experiments in the circulation of sap in trees, of a very surprising and unmistakable significance. They indicate other points important for science and philosophy, but especially in this here considered — the astonishing degree of the life-power. We make the following very interesting and clearly expressed quotations.

“On the 20th of April, 1873, two gauges were attached to a large black birch, one at the ground and the other thirty feet higher. The next morning, at six o'clock, the lower gauge indicated the astonishing pressure of 56.65 feet of water, and the upper one of 26.74 feet. The difference between the indications of the two gauges was thus 29.92 feet, while the actual distance between them was 30.20 feet, so that they corresponded almost precisely as if connected by a tube. In order to learn whether the same principle would prevail if the upper gauge was moved, it was raised twelve feet higher. The same correspondence continued through nearly all the observations of the season, notwithstanding the gauges were separated by 42.20 feet of close-grained birch-wood.”

“At 12. 30 P. M., April 21, a hole was bored into the tree on the side opposite the lower gauge, and at the same level. Both gauges at once began to show diminished pressure, while sap issued freely from the orifice. In fifteen minutes, one pound of sap having

Nothing can be found supplying such persistent and strenuous energy but the internal working of the life-power in the respective plant itself.

This pervasion of every part by the perpetual activity of the one life-want conditions the sympathy everywhere found in organic structures, making every part to feel an injury or a benefit to any one part. Neither the rootlets nor the leaves can be severed from the plant but though at opposite extremities of the organism the other immediately suffers. The life-power is the essence of the structure and is one in every member, and this feels the change wherever made.

The propagation of plants clearly indicates the diffusion of this controlling life-power through the

escaped, it was found that both gauges had fallen to 19.27 feet of water. Upon closing the hole, the gauges in ten minutes rose to their previous level, showing that the rootlets had reabsorbed in that brief period the sap which had escaped from the tree, notwithstanding the enormous pressure already existing."

"A stop-cock having been inserted into the hole opposite the lower gauge, it was found that the communication between it and both the gauges was almost instantaneous; which shows that the tree must have been entirely filled with sap to the height indicated by the column of mercury in the lower gauge, which exerted its pressure in all directions as freely as if standing in a cylindrical vessel as large as the bark of the trunk. The sap-pressure continued to increase until, on the 4th of May, it represented a column of water 84.77 feet in height."

"To determine, if possible, whether any other force than the vital action of the roots was necessary to produce the extraordinary phenomena described, a gauge was attached to the root of a black birch-tree as follows: A root was followed from the trunk to the

organism. In the simplest constructed form there is needed nothing further than a section from the old stock, and the almost homogeneity of the parts grows out under the prompting instinct in full proportion. A little higher order of plants collects its assimilated cellulose in spores or tubers about the old leaves or branches, and the same life-want urges out a continuation of the same constructing activity as that still going on in the plant, and the new is but the transferred life of the old, like another branch or bud of the same, though separated. The most perfect organisms have the most complete sex-distinctions. The fruit-bud evinces a distinctly conditioning urgency from the leaf-bud at the start, which has been given by the old life-power at the fructifying season, and

distance of ten feet, where it was carefully cut off one foot below the surface, and a piece removed from between the cut and the tree. The end of the root thus entirely detached from the tree, and lying in a horizontal position at the depth of one foot in the cold, damp earth, unreached by the sunshine, and for the most part unaffected by the temperature of the atmosphere, measured about one inch in diameter. To this was carefully adjusted a mercurial gauge, April 26. The pressure at once became evident, and rose constantly, with very slight fluctuations, until at noon, on the 30th of April, it had attained the unequalled height of 85.80 feet of water. This wonderful result showed that the absorbing power of living birch rootlets, without the aid of any of the numerous helps imposed upon them by ingenious philosophers, such as osmose, exhalation, dilatation, contraction, oscillation, capillarity, &c., &c., was quite sufficient to account for the most essential of the curious phenomena connected with the circulation of sap." — Lecture on the Circulation of Sap in Plants, by President W. S. Clark. Wright & Potter, Publishers, Boston.

the two corresponding genders appear usually in the same calyx, though sometimes apart on the same or on a different stalk, and together engender a newly constructed embryo. The preserved proportion of numbers in the sexes, the perpetuation of the specific type in the new seed, and the sterility, or returning likeness to the ancestral stock of an occasional hybrid generation, all betoken that an original typical want has continued its urgency down through the individuals of the species. The typical want has been a constant, and perpetually passing moods have been variables, but the varieties, though strong enough to become in some cases hereditary, still keep their restriction within the specific type-want. The perpetuation of the species through long lines of individual generation bespeak to the reason an intelligible meaning, that a primitive feeling of a specific need has urged its way down the generations; and then, again, that the classified genera conspire from the lower to unite in one highest and maturest model, means, as unmistakably, that all species are conditioned to an original Ideal.

The plant-want terminates in organic construction and reproduction, and feels no intent on any use of the organism for self-gratification. The feeling is solely a craving or longing for what is not yet, and never waking to what is, nor recurring to what has been, and is necessitated to act in unconsciousness as an instinct, and never to open in enjoyment, or be satisfied by possession. It toils spontaneously in and

for its organism that others will use and enjoy, and when that organism perishes, the living individualism of the plant is lost.

3. LEADING ORGANIC FACTS IN THE ANIMAL KINGDOM. — The facts already noted in the instinctive construction and continuation of plant-organisms will also appear in their peculiar modes in the observation of animal life, and it is not needed that what is common to each should be further considered. The facts peculiar to animal life, and which are significantly distinctive of the prerequisite conditions, need here alone to engage our attention. The life-power rules here in a superior kingdom, and there are clear facts indicative of what was primitively necessary in order to the attainment of this superior realm, and the more prominent of these will satisfy the present design.

1. The essential elevation of animal above vegetable construction and growth, is in the capability to sensation and conscious perception which animal life-power exhibits, and which is secured through the medium of the special senses that make the body to be an organism of several organs in unity.

2. These special senses are made effective by their connection with a nervous arrangement, which is a system of irritable fibres connecting in numerous central ganglions, and in the higher orders of animals have their source in the brain and spinal-cord. These nerve-fibres communicate from without the organism, and are known as *afferent*, and others communicate only internally, and are known as *efferent*.

3. The animal organism is constructed from cellulose substances previously assimilated in vegetable life, or from other animal flesh, and except in the addition of more nitrogen, takes nothing direct from the mineral kingdom in definite combinations.

4. The arrangements for digestion and assimilation are within the body, which has also provisional members for loco-motion and other subservient uses.

5. The sense organs open the most favorably for impressions from the outer world.

6. The general form of head, body, and limbs, on each side in pairs, is most accommodating for the animal conveniences and uses.

7. The animal-sense rises to consciousness, and urges to action through appetite, so that while instinctive action is from want, sentient action is for gratification.

8. Animal intelligence is perception and judgment, according to sense-experience.

9. The animal has conscious individuality, but the animal self is strictly bound in the necessities of nature.

10. The dissolution of the body is the loss of sensation, and self-individuality perishes in it.

By applying the insight of reason to these empirical phenomena, we shall read therein the prerequisite conditions which make them possible.

There must be such a construction and arrangement of the organism as shall subserve the end of sensation. A sentient embodiment, and conscious

experience in it, are to be utterly new originations, to which the whole vegetable kingdom is an entire stranger. The conscious activity is to be under the prompting and guiding urgency of appetite, and the whole organism must be subservient to it. The special senses must be accommodately set in the most convenient and servicable positions, arrangements for moving members, and the loco-motion of the entire body, in ministrations to sense-gratifying, must be secured, and such gratification is to be connected with, and auxiliary to the nourishment and preservation and reproduction of the organism, so that the welfare of the body and the indulgence of the appetites may go on concordant together. The digestive arrangement must be within, and borne about by the organism, that persistent assimilations may be continued while movement from place to place occurs. The plant may find its end in its fixed position, the animal can gratify sense only in motion. And as bare mechanical force had the prerequisite that it become possessed by a feeling need for an organism in which to work and reproduce its kind, so the simple plant-life must have superinduced upon it the feeling of a higher need, in order to an organism by which sensation shall be reached, and in which the sensation shall wake to conscious gratification.

Both plant and animal bodies have their construction alike by an activity wholly below consciousness, but by as much as the sentient organism transcends the plant-construction, so much must the animal life-

power rise above plant-instinct. The added force of nitrogen is taken, and quaternary combination is effected, and wholly new ends are to be attained, and a new sovereign must commence another reign in a separate and higher kingdom. Beyond vegetable pulp and ligneous fibre there is to be animal bone and muscle, and much more significant than either, there must be the irritable nerve-system, with the ganglionic centres reciprocating the afferent and efferent communicating fibres. A want that covers all this must possess a force efficient to get all this, and as an instinctive builder of the body, this is subsequently to become its conscious possessor and gratified user. As instinctive agent, the life-want in plant and animal alike thrusts the possessed force through to the end of the need felt, only in the animal the need reaches further, and the feeling covers more, than in plant-construction, but in both the want is intent only on its end, and urges its way to it with no present or retrospective notice of its own activity. Even when the animal organism is completed there is much instinctive use made of it. Digestion and circulation and secretion go on in unconsciousness, and sensation itself is brought to conscious perception by a previous action spontaneously distinguishing and defining the organic impressions. But when the conscious perception ensues, then in it animal experience begins. The life-power comes to reciprocal activity in the nerve centres, and a common central sensory co-ordinates the whole, and the conscious perception is retained in

memory, and association and comparison and abstraction begin, and judgments are formed, and deduced conclusions made, according to observed order in experience, and the animal learns as practice progresses. He has found a sense-world in which he intelligently lives and moves, recognizes its objects and their qualities, executes brute-will in gratifying appetite, and acquires prudential economy in attaining happiness as his ultimate end.

All is conditioned in the nervous organism the life-power has constructed, and in which it attains conscious individuality, and the individual animal continues while the living organism endures and the life-power works consciously within it; but when the organism is dissolved, all capacity for sensation and conscious recognition and appetitive gratification is lost, and the individual animal is no more. Through sex-distinctions new embryos have been generated, and individual descendants begotten; but these have waked in consciousness within their respective organisms, and are distinct individuals in their distinct bodies, and can have and retain consciousness only in and by them. The unity of species, as in plants, is perpetuated in the offspring by becoming prolific only through concordant genders, and so the species endures, while the individuals of successive generations perish without a resurrection.

4. LEADING ORGANIC FACTS IN THE HUMAN FAMILY. — In instinctive construction, plant, animal, and man are alike produced in unconsciousness, and

in sensation and sense-cognition animal and man are the same essentially, the grand distinction from all other beings which come within conscious experience is, that in man alone is found self-activity in conscious liberty of will, and from this, and in order to this, many other exclusive peculiarities are found in humanity. It is only of these exclusively distinctive human facts that we need take any notice, and only such of these as most strikingly signify the precedent conditions which alone could make their admission into conscious experience possible for us.

1. Man only is fitted for loco-motion in an erect position, with the instrumentality of two complete arms and hands, organs of speech, and the majestic expression of an open brow.

2. The human body is the full pattern after which all lower organisms are in their respective grades successively aspiring, and in this all organic morphology comes to perfection.

3. Man only lives in family relations, regulated social communities, and under state authority.

4. Man separates himself, and that which is his, from all else, and knows himself in distinct personality, and in his rights of possession and property.

5. Man only lives in an experience where thought and sentiment are communicated through expressive symbols.

6. Mankind alone experience the admiration of the Beautiful, or can find it as an absolute authority and ultimate standard in all questions of taste in Art.

Compare the way how we use things
to the animals and how we use them.

7. Mankind alone can carry science up to philosophy, and apply a determinative and universal standard of Truth.

8. Man alone, of all sentient beings, is capable of knowing and following an Ultimate Rule of Morals ?

9. Man alone can worship, and propose to himself a Being for his supreme reverence.

10. Only man forecasts his Immortality, and anticipates a future reckoning and reward according to moral character. ?

In these facts we can read many plain and important lessons of what must have conditioned them.

Necessarily conditional for the human organism is the feeling of need, which as a want is instinctively working to another end than mere plant-embodiment, or even of animal cognition and gratification. It is the crowning completeness and perfection of all living forms, and the instinct that builds and uses it must be as much higher and nobler than plant or animal instinct, as is the end to be attained in it higher and nobler than theirs. Animal sense, with no higher endowment, could not use the human body in its skilful dexterity, and powers of speech, and diffused dignity of feature; and even less capable would animal instinct be to build a body it did not want and could not use. Except as the life-power be also imbued with the spontaneous urgency of the reason, the human fashion can never take to itself the divine image. Reason must prompt in the making, and guide in the using, of the organism, just as reason

only can read in it the mysterious meaning expressed by it, and the final purpose for it. The man's essential rationality is a superinduction upon vegetable and sentient life, and can be no development from plant or animal.

Plant-instinct makes its own body, and then works in it to perpetuate it, and reproduce others of its species from it; animal instinct, also, constructs its body with irritable sentient nerves, and instinct also distinguishes and defines the primitive sense-affections; man also, so far as vital and sentient only, has his body instinctively made, and at first instinctively used in its conscious up-waking; but beyond all this, for man there are other and higher instincts, to which all brute-life is an utter stranger. The parent brute has notes of encouragement and warning instinctively stimulating its young through desire or fear, and the human parent does the same for the child; but how much further do the human instincts reach, and how different are they, when the child begins to catch the meaning of the mother's look, or soothing song, or stern command, or her gentle, serious folding of the infant hands for prayer! No brute-instinct in either parent or offspring ever urged the living activity in such directions. Only as deeper wants are hidden in the human life could the child's instinct open to such meanings, or the parent's heart yearn to quicken in the infant these peculiar and exclusively human impulses.

And so, moreover, when sense-appetite is consciously awakened, and clamors for gratification, the

mere animal has no counter-check to the urgency of desire, and can have only one variety of brute-passion set in restraint over against another, and so of necessity must go in the way of the strongest interest for happiness; yet is the man conscious of quite another urgency than appetite, and that he can set an imperative over against it which will admit of no comparison of interests in happiness with it, and thereby can hold his sense subordinate to the claims of his rational spirit, and live for worthiness of moral character, and not in the end of any gratification. He knows "a law in the mind" sovereign in authority over any appetite as "a law in the members," and that in this he can "free himself from the law of sin and death." Conditional for this is the endowment of reason, which knows its own intrinsic dignity and excellence, and so is a law to itself in its own claims, and above which no passion may exalt itself without conscious debasement and shame in the spirit permitting it. The man's birthright is in his reason, and he must sell it for nothing.

This capability of interposing a counter-check to any urgent appetite by a claim in the interest of reason, and thus possessing self-mastery and conscious liberty, is witnessed in divers modes of man's active experience. Were nothing but brute-appetites urging, the stronger must prevail, and the executive act go out after it; and to the excess of one above another there can be nothing to restrain it, and sense is left with no alternative. But just here the man

can, as the brute cannot, interpose the beautiful in art, and hold sense in check by an ultimate standard of taste; or introduce scientific truth, and hold appetite subordinate to the claims of philosophy; or hold on to an ultimate right, and refuse any gratification in conflict with morality; or, above all, may interpose a religious claim, by saying, "How can I do this great wickedness, and sin against God?" Conditional for this free will in liberty is the endowment of reason which urges to action only for its approbation, and for which the man is consciously competent to deny any possible gratification. He may deny appetite, for his dignity's sake, in either taste, or science, or morality, or piety.

These leading facts in human life and experience, that a nobler organism is instinctively constructed for man than that of brute embodiment, that his earliest instinctive impulses are superior to any sense-urgency, and that he can practically control his appetites, by an ultimate standard of beauty, truth, and goodness, all necessitate a previous superinduction of reason upon sensational life-power; and to these we only add, that man's expectation of immortality is valid only on this his endowment of reason. Animal and human instinct alike reluctate disorganization and death. But more than this is needed to make man sure of existence after death. His rationality has given him personality and responsibility, and induced a permanent character in the disposition taken that will not admit of annihilation, but must have persis-

tent living retribution. Sentient soul has been joined in this disposing with rational spirit; and though death may sunder soul and spirit, yet the equitable claim on both must bring them again together with no subsequent divorcement. So much of the substantial organism as shall hold soul and spirit, sense and reason, in one embodiment, must stand up again in endless retributive consciousness. Man's immortality rests alone in its reasonableness.

This will suffice as an outline of logic for organic being, concrete and integrant; and of the whole there is the conspiring validity from the three sources of prerequisite conditions—reason directly affirming that, except on the conditions specified, the empirical phenomena cannot be; that with such conditions the phenomena must so be; and that these conditions so exactly attain the end as to evince that this was their final purpose. But a short word further is needful in reference to the connection of organic with inorganic being, whereby of the two there is made literally a universe.

Life is the source of organic being; and this has been found to be force suffused by a feeling urging to a special end. Of all inorganic being force is the substance—antagonist force for material being, and disreptive force for ethereal being; and so the common base of both is the same mechanical existence, and which works under mechanical law for inorganic bodies, and according to the specific living law in the peculiar spontaneities of the respective kingdoms of

vegetable, animal, and human organisms; the organic feeling using the mechanical forces for its own ends. In the nature of the case, reason determines that the diremptive force is more immediately appropriate for the possession and use of the life-want than the antagonist energies, inasmuch as thereby the requisite solutions and modifying conversions of material substances in assimilation with the living process may be the more readily accomplished. The expulsive force works in and through material combinations, while an impulsive energy can only work upon them. Both in plant and animal life, the elaboration of elementary substances, and their movement in organic constructions, indicate divellent action from centres rather than compressive action to central points, especially in all agencies of light, and applications of vital-heat to organic growth, and circulation of sap or blood through the bodily structure. But quite beyond this indication from inherent fitness and observed vital movement of circulating fluids, there is the opportunity for direct experimental confirmation of the fact that the intermediate force in the life-activity is the ethereal, and through this it works on and in the material. Brutes and men have power over their bodies and limbs; and though the force itself cannot be perceived, our conscious method of use proves it to be diremptive energy.

Material bodies are moved by the muscular matter of our bodily organism, pulling to or pushing from itself; but one can do neither without foothold, and

whichsoever it may be, the difference will be only that of direction from the foot-fulcrum, since at that point the one agency is consciously expulsive. We effect no outer movement but by an inner expulse, parting or separating external objects by an internal diremption. We overcome rest, and check onward motion, by a counter-energizing each way from a mid-point. As our own conscious direction of inner energizing is expulsive and diremptive, so we may also see all living action to be in the use of diremptive forces, and as truly expulsive from a common point in vegetable growth and movement as in animal effort and locomotion. The plant elongates itself towards the light, or in the way to its more congenial or abundant nutriment, by an urgency strenuously working in expulsive energies; and all vegetable growth is the result of intense inner expansion, as in the cases noticed above of strong animal exertion. Both plants and animals use diremptively the forces the life-want possesses, and to very large degrees, but can directly control only each its own energies.¹

The spontaneity of living motive is want in the

¹ The amount of expansive force in vegetable growth would be utterly incredible but as stated from careful experiment. President Clark, since attaining the facts in sap-circulation, which we have before noted, has been diligently extending his ingenious researches. This present season (1874) he planted a seed of mammoth squash in prepared soil, under the glass roof of his green-house, and made the vine run along upon a strong table. The first set squash, the 1st of August, was left to grow to about four inches diameter, and was then covered as it lay solid on the table with a basket-work

plant and sense-appetite in the brute, and in both it is only as inner nature and outer conditions prompt the life-power. Both can take to themselves that which is craved, the one instinctively, the other consciously ; but in neither plant nor brute-life can there be anything beyond selection, and never a proper election. What they take to themselves is never with the alternative of a choice, but with an urgency in one direction. Instinct and conscious appetite are fated to the way of the stronger urgency. Man also, as animal, is bound to the end of highest happiness only ; but as endowed with reason, man can subordinate sense, and hold any gratification in check which has not rational approbation. Man is the creature of liberty, and can act on nature from supernatural motives. He, like all living agents, can move nature only through diremptive energies ; but he can originate a persistent disposition in the spirit that may control any urgency of sense.

Thus, in all cases, the organic is in direct connection with the inorganic world through their reciprocation of their respective forces. By the use of possessed

of iron slips, having the checkered spaces about two inches square, and an iron fulcrum with a thin edge raised upon and across the basket-cover on the squash. On this fulcrum-edge was laid a strong bar, one end linked to the table about one foot on one side, and the other end free, about six feet on the other side from the fulcrum, with the squash growing up beneath. A perpendicular graded scale determined the elevations of the longer arm out of a horizontal position, and on this arm were suspended successively augmented weights, as the growing squash increased its lifting power. From

direptive force life modifies matter, and builds up its organism of assimilated forces always instinctively, and in the constructed organism, man and brute, as animal, move matter for the sake of appetitive gratification, while man alone, as reason governs appetite, and can move the material world in the rational interests of beauty, truth, and goodness. Our world is held in connection with all worlds by interacting forces, and all living beings of our world have thus their connection with all material worlds by mechanical laws. Such as are merely instinctive or appetitive agencies can never transcend these laws. But beyond all mechanical law man is supernaturally endowed, and while bound in and to matter, and competent to inhabit a material universe, he is also competent to commune with an Intelligence that gives law to matter, and as absolute reason is absolute law to himself.

fifty pounds at first, the augmented weights raised by the vegetable growth (the expansions always at night, and nearly stationary by day) have gone up to the astonishing amount of two thousand pounds *avoirdupois* at this present writing (October 5); and this lift of a full ton still seems quite within the *ne plus* of its future capability. The surface bulges through the meshes of the iron basket, and the whole vegetable is crowded by its frame into a cylindrical form above the table, having now its transverse diameters about fifteen inches each.

III.

ABSOLUTE BEING ABOVE ALL FINITE EXPERIENCES.

GRADES OF EXPERIENCE. — We have before noticed the distinction in experience as that of phenomenal perception in consciousness, and that of rational insight in a higher consciousness ; but we are now in position to discriminate all grades of experience ; and inasmuch as we are about to advance our Logic to a valid knowing of truth beyond all finite experience, it will be found important exactly to apprehend all clearly distinct varieties of experience.

Experience is ever a form of knowing, and involves an actual *trial* of the knowledge in consciousness, and so, literally, experience is knowing by conscious trial. In its lowest stage, mere mental phantoms may be taken as experience, as children live mostly in their fancies, or as a brain-fever induces fancied appearances, and dreams and even waking musings have any amount and variety of empty appearance ; and yet, as the phantasms are mere appearances in consciousness, we speak of them as *illusiv*e or *deceptive* experience. So, with careful intent, we mentally construct pure

figures in subjective consciousness, and arrange them in order to some designed end, as in geometry ; or, in pure thought, we form conceptions and connect them in judgments fictitiously, and invent works of imagination ; and all such activity in conscious trial we may define as purely *mental* experience. Impressions made on the special senses, and intellectually distinguished and defined in perception as objects consciously appearing, is the form of knowing to which the term experience most commonly applies, and which may be known as *phenomenal* experience. Conduct controlled only by such habitual experience is *empiricism*, as applied disparagingly ; and where the observation is repeated and carefully applied, we name it *experiment*, by eminence, as *scientific* experiment.

But beyond all sense-experience, or any formal conceptions abstracted, or any general judgments concluded from it, we have a higher form of knowing by the insight of reason, and thereby attaining truth in a transcendental consciousness, which is the essential determiner of the validity of all knowledge in phenomenal consciousness. The transcendental is seen to be a prerequisite condition for the phenomenal, and much more than any abstraction or deduction from the phenomenal, for the transcendental was itself necessary beforehand in order to the possibility of the phenomenal. The reason sees in the phenomenal facts that they could not so have been unless the transcendental truth already had been. The latter is the essence of which the former is the appearance,

and this latter is tried in the reason-consciousness as clearly and validly as the former is in the sense-consciousness. The reason-knowing is wholly supersensual, and is the most thorough and comprehensive; and as experience in its highest stage, it is known as *philosophical* experience. Knowledge, thus consciously tried in the reason, becomes settled, unshaken conviction; and no phenomenal knowledge can give ultimate satisfaction and security till brought by the reason-insight to a trial in the higher consciousness.

And just this is the point to which we have now brought our Rational Logic. We know Force as the ultimate essence for all inorganic phenomena, and Life as ultimate essence in organic appearance, and the speculative process to such knowledge is philosophical experience. We come to know the universe as it is, and thus know its very appearing.

Here is the highest point to which our human experience can ascend. We can try nothing on, and test nothing in and by, any consciousness beyond this. And yet in our finite reason-consciousness, we can take these transcendental facts of Force and Life, and subject them to further insight, and can thereby truly reach a higher knowing in their meaning. We can in our finite reason see what is prerequisite conditional for Force and Life to be, just as an insight into phenomenal facts gave the knowledge that conditional for them force and life must precede them. We shall then have the known essential force and life as validly at least as in sense-consciousness we had their phenom-

ena, and they are facts, things made, as literally as sense-appearances in perception are made. And since reason has them beneath its gaze in its own consciousness, it is quite competent for it to see in them what has been necessarily conditional for them. These transcendental facts of force and life which the insight has read as the meaning in their phenomena, the finite rational being himself was in his personal individuality, and thus in himself were both material force and conscious life in tried experience ; but now, in man's insight of force and life, and thereby an attained knowledge of their prerequisites, these last truths, conditional for force and life, must stand out quite beyond all human consciousness, and can never be tried-on by any finite experience. They are the ultimate conditions for any and for all facts, and must stand valid in their own immovable necessity of being. Force and life are the substance and essence of the universe, and as these persist perpetually, they perpetually reveal their prerequisites as a continual meaning in them and communicated by them. We know these prerequisite conditions for the universal force and life to be necessarily in real being, though we can never try them on in our conscious experience. Substantial force and essential life we ourselves are, but their prerequisites we experimentally cannot be. And yet in our human life and experience we have the endowment of reason, which imperatively controls and uses the mechanical force and sentient life within us, and hence we know

that the prerequisite source of force and life cannot be merely mechanical and sentient, but imperatively urgent as is our reason, only that it is the Absolute Reason whence our finite reason was derived.

Herein is the business of a concrete logic consummated, by the established validity of a knowing which reaches beyond any human experiencing. We are already quite beyond all phenomenal experience in our knowing, and may yet further step even beyond a "transcendental" experience, and know that which Kant has termed "transcendent" as exceeding the transcendental, and which he excludes from the possibility of human attainment. With him all knowing is empty which cannot fill itself with an empirical content, and so force and life are mere mental notions which we may assume because we cannot think orderly without them, but which we cannot verify because we cannot consciously experience them; and then much more must immortal spirit and Absolute Deity be incognizable, which never admit of even their appearance to any sense-envisagement. But the knowing which validly attains the "transcendental" by its insight of the phenomenal, can in the same way, and with equal validity, attain the "transcendent" by its insight of the transcendental. In veritable force and rational life, which are the transcendental, we can know the Absolute Godhead, which is Kant's transcendent.

We need, therefore, an outline of the transcendental knowledge attained of force and life, as the substan-

tial essences of the inorganic and organic Universe, in order that by an insight of them we may read what is primitively and permanently conditional for them.

1. We know a constructing agency as a pure intelligent activity in the prerequisite conditions for the facts of pure figures and intuitive demonstrations in Mathematics. Abstractions from phenomena could not determine the experience, but must be themselves determined by the experience, and so a concrete agency is prerequisite for all experience in pure mathematics.

2. Knowledge is conditioned to an objective known as well as to a subjective knower, and no subjective construction of pure figure can impress sense-organs in common. Organic sense-affections are conditioned upon certain outer activities, and the sensations intellectually distinguished and defined become perceived phenomena in consciousness.

3. Conscious phenomena, in order to become orderly experience, must be known in their logical Relations, and these not of abstract collocation alone that gives mere relative place and period, but of concrete connection that stands in antagonist and diremptive forces, and are truly material and ethereal substances. In equal balance of the impulses or expulses, the substance is static ; when there is an excess of energy on one side, the substance is in motion, and has become dynamic.

4. The interaction of the forces determines all embodying, moving, changing, and distributing of inorganic substances.

5. Organic existence presupposes the feeling of a specific need superinduced upon force, so that as a suffused want it urges the force in the way and to the specific end of its longing, and such possession of force by feeling is Life, spontaneously working an organism for itself by assimilating appropriate elements and combining them in a living structure.

6. Life in the vegetable kingdom assimilates the elements from their crude inorganic state solely to the construction of its own organism and the reproduction of its species, and the distinct species has an original type transmitted with varieties through individual descendants.

7. The animal kingdom has life in which the want urges to the construction of an organism for the further and much higher end of conscious sensation, using only elements already assimilated, blended with nitrogen into the nervous arrangement of irritable fibres and central ganglions and grand co-ordinating sensorium, by which the individual becomes sentient, and consciously perceives, remembers, and judges, according to acquired experience.

8. Humanity has reason superadded to sense, and the life-want constructs its organism to both the ends of a sentient soul and a rational spirit as instinctively as in plant or brute embodying, and also instinctively opens in conscious experience; but this opened experience has rational imperatives to control sense-appetites, and in this is found human personality, liberty, responsibility, and consequent immortality.

9. There is thus constituted a universe in which the inorganic force and the organic life stand together inseparably connected. The organic plant and animal have individuality of existence without personality; the human alone is personal, and in this supernatural; and though held perpetually in corporeal forces, is still competent to spiritual communion.

These facts give occasion for the insight to attain, —

1. PREREQUISITE CONDITIONS FOR FORCE. —

Force is known by the insight of reason into conscious perception as necessarily conditional for the phenomena perceived, and thereby becomes a conscious intuition of reason. All force is complex as constituted of either impulses in antagonism or of expulses in repellency, and these elementary impulses or expulses are simple energies in activity to or from each other, and which in combination become by the peculiarity of their action antagonist or diremptive force. These elementary energies are the prerequisites of the forces, and in simple activity they must come essentially from a source which is antecedent to any existent forces. The force is the fact, or thing made, and must come from a producing source competent to originate universal forces. This source is thus *Omnipotent*; for the very conception and definition of omnipotence is, power to constitute and use all forces. The source is not itself force; it has in itself the energies constituting and controlling all forces, and is thus properly the ruling power using

the entire forces of the universe. The inorganic universe is essentially substantial force, and a prerequisite condition for it is a Source of Omnipotent energizing.

And again, this Omnipotent energy must be *Omnipresent*. The universe is only when, and as the force is, and the essential energy constituting the force taken away from any place necessitates a collapse of the universe in that place, and so a destruction of its unity, for there its substantial force is annihilated. The definition of Omnipresence is just this upholding energy in each and all places universally.

This Omnipotent and Omnipresent energy must be also *Eternal*. Not only must the universal places, but the universal periods as well, be filled with this active energizing. Withdrawing or withholding it at any period must be as fatal to universality and integrity of existence as would be its cessation in any place. The definition of eternal power is just this constituting and controlling energy persistent in every period.

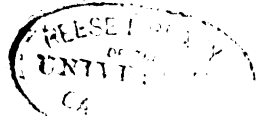
This source of universal energy constituting and using the universal forces is antecedent to, and so independent of, all force, and therefore has its being irrespective of space or time. The active energizing makes and upholds and moves the universal forces, and itself was when as yet they were not, and in making and moving them there is constituted the universal extensions and successions, and so comes the knowing in them of the one universal space and one universal time in common for all intelligences. All

could not have the same one space and one time as each has, except as all attained their knowledge of their space and time from the same extensions and successions, and these from the same spread-out and passing universal forces.

While, however, the finite intelligences of the universe are made respectively individual by their individual incorporation into their appropriate substantial forces, and each corporeity is held within the universal forces, and subjected to the reciprocal action of them all, and so is comprehended in their universality of space and time, yet is this prerequisite source of all energy, independent of the universal forces, antedating them all, and itself stands outside, and beyond all their activities and extensions in place and successions in period, and to which all their reciprocities and co-agencies and relative localities and periodicities have no possible pertinence. The universe is determined by the pre-existing Omnipotent Energy, and this energy, which is irrespective of the universe, can have no interfering modifications and changes from the forces and places and periods of the universe. They are even more subject to this power than the clay in the hand of the potter, for the potter can only modify and use the clay as he finds it, but the Omnipotent Energizing makes the universal forces, and puts them in their respective places and periods. The forces cannot be but in the combined working of the single activities, and the single activities cannot be but as they have their energizing in a pre-exist-

ing source, and so all inorganic being is the creature of an Omnipotent Energy, and its existence in kind, place, and period is determined by essential laws already in the source before the production of the universal forces.

2. PREREQUISITE CONDITIONS FOR LIFE. — Life is essentially force, possessed by the urgency of a want, the urgency in the lower stages of life prompting and using the force in unconscious spontaneity, and so making the living activity to be wholly instinctive. In the plant, as we have seen, the life-want works instinctively to the end of constructing its own organism, and then in it reproducing its own type in the multiplied individuals of the species. In the animal the life-want adds to that of the plant a further end for which it works, that in its constructed organism may be found the occasion for waking from spontaneous instinct to conscious sensation. In human life there is added the still very much higher end, that in his more perfect organism man may find occasion for rising from sentient consciousness to the dignity and responsibility of conscious rational activity. In all life the force is the immediate efficiency, and the want is the urging and guiding agency in the organizing construction; in the human organism, all the ends of life meet in unity, — the instinctive, the sentient, and the rational; and thus to find the prerequisite condition for human life, will be to find in one source that which can be necessary in any and all living being.



Mechanical force and the feeling of need are different existences in kind, and the latter cannot be any product of the former; and yet that the force should be possessed by the feeling of need, which is a want, is that alone which can make the force to become a living power. To a rational mind it may clearly be seen that simple energies working in conflict, as either antagonistic or diremptive, while they constitute force, are wholly lacking in a feeling of need; yet a mere lack of the feeling of need cannot supply the feeling, any more than mere force can put itself in possession of feeling. The want must have positive existence as feeling, and this must be to the force wholly a new product diffused throughout the force; and by so much as it is feeling added to force, it is more than can be got from force, and must come from some source utterly beyond it. When the feeling is made to have possession of the force, the two must of course be so conjoined as equivalents that the two can steadfastly consist together while the feeling shall spontaneously urge the force to the attainment of its end. The feeling is that of a deficiency, and the force possessed must be adequate to fill the want, and so the combined force and feeling of deficiency become a positive efficiency in supplying at the very point lacking; and as conditional for all this, it is necessary that the force and feeling come from one and the same source, and carry in their combination the one intent, that as a type or pattern shall be that after which the whole must work, and which only in such way it can exe-

ecute. This source of both force and feeling is above and beyond all force and feeling, and as their producer, is independent of them; and if taken as ultimate and personal source, we can, for human in common with vegetable and animal life, say, in the words of inspired revelation, "In Him we live."

And in the same way we get the prerequisite condition for sensation added to life, as above, of instinctive feeling added to force. The force and want in combination, which constitute a life-power adequate for any plant-organism, are not therein competent for the production of a sentient body. For the sentient organism the life-power must be competent to so construct it that it can carry itself from place to place, and use its own members in selecting and taking the materials which gratify appetite; and this must, on both sides of the force and the feeling, have more in it than that life-power has which exhausts all its capabilities in building a vegetable organism that can neither leave its place, nor be conscious of its activity in its place, nor rise to any conscious agency in propagating its species. This sentient life is of further intent, and from a deeper energy than any plant-life; and yet as the vegetable kingdom is the destined sustenance primarily for the animal kingdom, and especially as every animal instinct that builds up its organism is subsequently to wake up in it and use it in conscious sense-gratification, the source from whence both the unconscious instinct and the conscious sense come must be one and the same, wisely putting the higher life-power

in combination as designed and adapted to consummate the previous intent which had already fitted the lower life to work in full subserviency. The appetitive urgency is the conscious moving agency, and as this is but a fuller measure of the same creating wisdom that has given primitive life, so we may still further say in common for all sentient being, not only that in Him we live, but also that in Him "we move."

And then in the same way, still further, we may read the prerequisite conditions for the being of human conscious rationality. Plant-instinct and animal-sense combined, reach to no higher experience than a conscious urgency moving to action in the interest of gratified appetite, and the plant and animal live respectively in their kingdoms subordinate and subservient to man; and in man himself there is the combination of instinctive life and sentient appetite, and the one end of sentient life is everywhere appetitive gratification, properly termed end in happiness. This alone cannot attain to an agency working from choice, since it cannot stand between alternatives differing in kind, for all gratification of appetite is happiness, and has difference only in degree. But man has more than combined instinct and sense in his superadded prerogative of rationality. His reason is imperative, and competent to dominion over all appetite, and its urgency is in the interest of worthiness in distinction from all happiness, and so man can know himself as standing between alternatives differ-

ing in kind, and can be conscious of an experience in responsible freedom, and not merely of brute-will, in necessarily executing the stronger appetite. And yet as sentient urgency is combined in man with the urgency from rational authority, and the imperative was manifestly intended to control and guide the appetitive, such ordering bespeaks the higher measure of wisdom in one and the same source that has put the rational at last to govern that which had been previously made subordinate in the animal. The man has a rational insight through the instinct and sense into his reason and spirit, and he knows his rational spirit to be other and more excellent than the sentient. Sense in living force, persistent in possession thereof as permanent substance, gives animal individuality; but reason superadded to sense, gives conscious personality, and so, in common with all men, it must be said of this higher endowment of personal selfhood, not only that in Him we live and move, but in Him "*we are,*" as in Him we have personally "*our being.*"

That this human being, living sentient and rational as he is, should thus stand at the head of our world inclusively, both of the inorganic and the organic, and that our world should be so connected to all worlds that all stand and turn together on their common centre as a universe, consistent in one common space, and persistent in one common time, unmistakably bespeak one intelligent Source out of which all have come and in which all abide. And this one originating Source is utterly above and independent

of the universal out-flow, to which force and space and time and organic life and sensation can have no essential relevancy, and can be only consequential on this creating activity. The universe, in its space and time, could not be except as this intelligent Source already was, and this originating Source so being the universe must be, and that the universe so is, most clearly indicates that it must have been in execution of a previous purpose.

While, then, all finite experience must be in and of the universe, and be held within its space and time, and be determinable to its places and periods, the conscious agency of the originating Intelligence must essentially be independent of the universe, and in no wise a pertinent part of it. Force and life and sensation are its component elements, and human reason also is embodied in living and sentient forces, and thus restricted within the universe; and individual personality can maintain its finite distinction in the universe only as held within the substantial forces appropriately identifying its spiritual selfhood; but the originating Source of forces and lives and senses and finite personalities has its essence subjected to no substantial corporeity, acts through no vitalized organism, and receives no impressions inducing nervous sensations. They all originate from this, while this everlastingly was and is above them and independent of them. Already seen to be Omnipotent, Omnipresent, and Eternal, as the Source of universal being, and so abiding beyond what any finite experience can

reach, we have yet occasion for one further advance step for our logic, viz., to note in what way and to how great extent our human reason may come to know the essential perfections and intrinsic attributes and modes of being and action of this Absolute Source of universal existence. We shall never carry our experience over into the conscious experience of the Absolute, but logically we may carry our knowledge quite beyond that of power and presence in universal place and period.

3. THE HUMAN REASON MAY KNOW WHAT IS ESSENTIAL IN ABSOLUTE REASON. — We have already brought the human reason fully to light, and what as human faculty it is competent intellectually to accomplish. It can see substantial force in the inorganic phenomena, and essential life in the organic phenomena, with its rising grades of urgency to activity in plant-instinct, sentient appetite, and rational imperative ; and further, it can read space in place and time in period, and know that the universal places and periods must give one common space for all extensions, and one common time for all successions. It knows itself to be ultimate background for all sentient appearance, and in this attains a higher consciousness, in the light of which is expounded the connections of Universal Experience. Further still, it knows from the universe an Absolute Source above it and independent of it, from whence the universe originated, and whereby it is perpetually supplied and supported. And now, lastly, we withdraw direct

attention from the existent universe, and with our finite human reason look into this absolute Source to find so far as may be what we can know must be its essence and its attributes.

What is commonly meant by The Absolute, when taken as an abstraction from human experience, is the conception of pure being from whence all attributes have been taken. The abstraction has been carried to an edge so thin and a point so fine that nothing can be predicated of it, and such negation of all positive possession is the ultimate which abstract logic can find and retain as its Author of the Universe. No thinking can get any judgment from it, nor find any meaning in it. But the Absolute, when taken as Eternal Reason, is a concrete of infinite possession, having in itself all that is essential to the overt production and manifested existence of the universe, with all its mechanical, instinctive, sensitive, and responsible agencies. There is not merely negative absolution from universal coercion, but positive resources for free origination, sustentation, and consummation of the universe essentially within itself. Not by any abstraction expanded to so broad a generalization can we attain any satisfactory conception of an Author of the universe, nor any intelligent comprehension of the universe itself in its connections and dependencies. We must apply the same insight of reason to the Source, by the method of a concrete and integrant logic, that has brought us to the knowledge of the being of universal nature in its forces and vitali-

ties. Not by any abstract "searching can we find out God," but by the reason-insight we can, "from the creation of the world, clearly see the eternal power and Godhead." Embodied reason can never enter within the conscious experience of the Deity, but in the knowledge of itself the human spirit can know more than merely what is not, even positively what is, the essence of the Divine Spirit.

Human reason, though allied to sentient life, yet knows itself in distinction from all sensation. Force is a new existence as static contest of original energies, and life is new existence as original urgency possessing and using force, and sensation is new existence as irritable nerve-centre, bringing outer impression and inner affection to conscious feeling; but human reason is an impartation from its uncreated source of that in man, which ever was and ever is in unchanged likeness to its original. It is ever reason, both in its source and in its imparted individualization; and what only is new is individual sentient life endowed with and possessed by imparted rationality, in which sentient individuality is made personal, and rational personality is made individual. There is no individualizing out of the uncreated source of reason but by some incorporation of rationality in individualized sentiency. Whether human or conceived angelic existence is in question, neither can be known as individual personal existence out from its unmanifested source, except as imparted reason to some substantial corporeity. This makes

the man and the angel to be in, and portions of, the universe, while the unembodied Reason is Absolute Spirit, independent of the universe. Both the measure of the reason and the manner of substantial force embodied may differ in human or in supposed angelic beings, but rationality, in some mode of individualized substantial embodying, is conditional for knowing any personal spirit as within the universe, and a component portion of it. The unembodied "Father of Spirits" is above the universe, and independent Creator and upholder of it. The sentient portion of the human being is the animal soul, the rational portion of humanity is the personal spirit, and what in the mere animal is brute-sentiency only, standing in the nervous organism, and lost in its dissolution, becomes in the human person immortal soul in the right and claim of the responsible spirit; and as joint participants in probationary disposition, soul and spirit must stand together in unity in the retributive future experience of every individual personality.

Taking, thus, the distinctive human reason as coming in its measure to man from the uncreated and unembodied Absolute Source, and whose urgencies to activity are the imperative claims of either beauty, truth, or goodness, — i. e., either taste in art, science in philosophy, or righteousness in morals and piety, — we may put its insight directly to itself to come to the knowledge of what is the essence, and what the attributes of its Absolute Source.

A number of steps, consequential one upon another,

taken with careful precision, will lead to as many particulars, which human reason may see must necessarily be in the Absolute Source of all being.

1. Finite reason already is, and knows both itself and its dependence on a higher source for its individuality of existence. What is not subject to reason is against it, and therefore reason cannot come from unreason ; and thus above the finite must be the Absolute Reason, which must stand independent in its own essence. Absolute Reason is *self-essential*.

2. This Absolute Reason, purely as reason, must know all that itself is, and all that its knowledge urges its activity to accomplish, and must thus be thoroughly self-conscious. Absolute Reason is essentially *self-intelligent*.

3. This conscious urgency to activity must be competent to accomplish its ends and fulfil its own behests, or the inward disagreement between known claims and conscious performance must make the unsatisfied reason to become unreason. Absolute Reason is *self-sufficient*.

4. The urgencies to activity in reason are ever imperative, and never appetitive as in sense ; and in Absolute Reason the imperatives are behests springing out of conscious intrinsic worth and excellency, and can come from no extrinsic authority, and thus the Absolute is ever self-law ; and as efficient to execute all its urgencies, Absolute Reason is also self-determining ; and in this is the dignity of independent selfhood. The self only makes claims, and what the self de-

mands the self alone accomplishes. The Absolute is ever in full *self-possession*.

5. This perpetual self-possession secures a persistent disposition to the end of its own honor, and in which is the continual satisfying of the claims of conscious intrinsic worth by a voluntarily attained worth ; and such persistent disposing is will in liberty, and also will in constant integrity. The Absolute Reason is *free-agency in full self-approbation*.

6. Free Intelligence can act executively only in the subjective possession of clear ideas, and for the proposing to himself such ideas the Absolute must have working within him the three following associated activities, viz., that of holding the manifold elements as promiscuous content for all ideas ; the sorting from the manifold the particulars necessary for the specific idea ; and the combination of these sorted elements in the self-consistency of the individual idea ; and without such threefold agency, no complete idea can be made to stand in any reason-consciousness. The activities must be readily distinguishable, though they are in perfect concert. Neither the apprehension of the manifold, nor the sorting of the needed particulars can be sufficient, and full knowing can be secured only as the arranged particulars are made indissoluble in the grasp of the reason, in which is accomplished literally the individuality of the manifold elements. In proposing practical ideas to himself, the Absolute Reason is essentially *threefold activity in concert*.

7. Human reason is shut within its own organism, and can use for expressing its inner ideas to others only the already made forces in which itself is embodied. But Absolute Reason is unembodied, and must himself make the forces that shall manifest his hidden idea. The clear practical idea ever urges reason to its expressed communication, and whether in the aspect of beauty, truth, or goodness, the concerted ideal plans of the Absolute will lovingly press to their execution, in which will necessarily be involved a literal creation. The thought-out plan must also become wrought-out substance, and the secret idea must "stand fast" in open fact, in order to which the activities thinking in concert must supplement the thought-result by a solid environment which shall impress the sense. Absolute Reason will pass from ideal constructions to *substantial force-creation*.

8. To manifest the full idea in substantial force requires an authoritative control by a persistent proposing of the ideal plan, an answering expression of each particular element in substantial appropriate force, and a combination of the joint particulars in thought and substance into a consistent individuality. No created thing can be either intelligently expressed or intelligently apprehended except in a complete fulfilment of these requisitions, and the holding of the idea in authoritative control is necessarily the part of a distinct voluntary agency, while also the energizing in the particular force-expressing is necessarily the part of another voluntary agency, and the put-

ting the substantial particular forces into a consistent whole is the necessary part of still another voluntary agency, all being distinct while all are active together. Each must also do its work in consciousness for itself, and also in consciousness of what is done by the others, and therefore each must have a self-appropriation of, and a joint communion in, the one consciousness of the One Absolute Reason. The three agencies are in this way three personalities in will, while they are joint-participants in the one being and consciousness of the absolute. One creative Reason has controlled in a paternal will, and also expressed substantially in a filial obedient will, and also fashioned in consistency substance and idea in a spiritual will, the last executing the processes of both the former. The Absolute Creator is *one Being in three-fold personality*.

9. Some portions of creation will be subsidiary to others, but an ultimate end must have been proposed comprehensive of all subordinate ones, and this can be found only in the Creator himself, since he alone was ere that which was to come from him was yet unmanifested within him. As Absolute Reason he knows himself and his own intrinsic excellency and worth of being, and so is conscious of what is due to himself, and consequently this claim to act for his own honor and dignity must be his ultimate and most comprehensive urgency. This identical object of attainment can be foreknown only to himself and to others but just as the executive work progresses, yet without any speculative particularity through what

thing it is to be gained, it is sufficient here to say, in the gross, that God created, and thus gave outer expression to his inner idea, that he might please himself. He has no appetites to gratify, and hence the pleasing was purely spiritual, and fulfilled in his own approbation of his work. He looked and saw all was good. For this the most orthodox statement is the best — “*He created all things for his own glory.*”

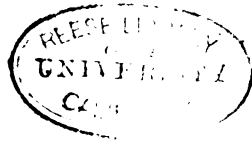
10. What Absolute Reason has created, he must overrule for the attainment of his final end. Mechanical force as material substance, and vital power as instinctive or sensitive being, are but physical products, and cannot be satisfactory as ultimate ends in reason. To permit activity to terminate here, would be the absurdity that reason should be unreasonable, and so the physical can be but as instrumentally subservient to the spiritual. Both matter and vegetable and animal life are means only for ministration to reason. Their end is in man, and man as rational personality finds his end in communion with the Absolute personality. Hence the necessary grades in divine government. Force can only push and pull in mechanical necessity. Vegetable life can only act from instinctive want. Sentient life acts from appetitive gratification, and has necessary determination to the end of highest happiness. The Maker, thus, must govern matter by force, and mere life by instinct, and animal life by sense; but man is spiritual, and God's government of him must be by appeals to that which is reasonable. Reason can check and control

sense by holding to imperatives rather than appetites, and all moral government is in this, that it holds the subject to the duty of spiritual approbation before all sense-gratification. It is more to be personally worthy than to be sentiently happy, and God approves that man the best who honors himself the most; for the greatest dishonor man can do to God is in debasing and dishonoring his own spirit in his sight. All inorganic matter and organic life is *nature*, and God governs it by its own *necessitated connections*; and all Rational existence is *supernatural*, which God governs by *moral and religious interests in reason itself*.

11. Nature works with no alternatives, whether in its mechanical forces, instinctive wants, or sentient appetites. If an intended ultimate end is to be consummated by nature, it must be set at first in pre-established harmony to such end, and have no subsequent interferences, since of itself nature can do no other than run through its necessitated successions to its necessitated point of ultimate balanced rest. But nature has the supernatural rational spirit working in it in human personality, and initiating its own interfering changes; and the intended ultimate end, then, cannot be consummated except by superhuman interpositions guiding the human activity in accordance with the ultimate intent, or correcting any untoward changes humanly introduced in nature. Such superhuman interference with human will in itself, or in its introduced changes in nature, is miracle, and in a uni-

verse where rational individuals act there must be supernatural and superhuman interventions. Miracles are not merely rational expectancies, but necessary incidentals to free human agency and divine ultimate results. Besides all this, there are the occasions for superhuman interpositions in nature in attestation of the presence and pleasure of the Absolute sovereignty. If a revelation is to be made in anything beyond nature's teaching, nothing but a supernatural interference can adequately attest the supernatural communication. As providential and moral Governor of the Universe, the Absolute Reason will take his own occasions to make *absolute miraculous interventions*.

12. Miraculous interpositions in the ongoing of nature must be wholly within the determination and control of the Absolute Reason, and as persistently reason-restrained as reason-prompted. The ultimate end is to be reached not only in guiding nature, but in consistency with, and even by, the direct procurement of human reason in human liberty. No miraculous interventions can contravene the true prerogatives of reason, either in finite individualities or in the Absolute. The Absolute Reason urges to overt manifestation, and which must reach intelligences that can apprehend the communication. To give individuality to such intelligence reason must take possession of specific substantial forces, and hold them in unity, and hold such individuality also in connection with, and yet in personal distinction from, the other uni-



versal forces. Such individuality necessitates the finite personality to be in some way sense *and* spirit, and so necessarily tries and tests the spiritual disposing. Opportunity to dignify himself and honor God, necessarily gives possibility to the finite individual to reproach God in debasing himself. The virtue of the human individual cannot, from the nature of the case, be acquired and retained but at the hazard of a vicious inclination and sinful disposing. The Absolute Reason requires the opportunity for the virtue even at the hazard of the vice, and having put the individual in the fairest position for his probation, it behooves him, for his reason's sake, to let the individual decide the issue on his own responsibility. The virtue itself that could not endure hardness and contradictory influence would be of little excellency. God does what Absolute Reason may for virtue and against sin, but on no account can physical interposition miraculously confirm in virtue and exclude vice, and so when sin enters, God is in his own sight, and openly before the intelligent universe, in full self-integrity, and competent fairly to judge the demerit of the sinner, and subject to reasonable retribution both the righteous and the wicked. He may reasonably do no more and nothing other than he has in the making and proving the individual persons, and the sin the individual commits is by God's *reasonable permission*.

13. Sin stains and defiles the finite personality only, never the Absolute Reason. The individual

sinning has no reason for his wickedness, but all reason has been against it. The sin is in the renouncing of reason and espousing sense. Appetite has been the occasion, gratification of appetite the motive, but in this there has been no reason, and only sin from the exclusion of reason. If the gratification had been truly for a reason, it would not have been vicious but virtuous. To ask a reason for sin is folly and absurdity, since to find a reason is to take away all sinfulness from any action; and to plead the urgency of appetite which was its occasion, or the intensity of gratification which was its motive, as any extenuation or excuse, is but to pronounce the sinner's self-condemnation, for the essence of guilt is in this very thing, that the act was from appetite not reason, and the motive gratification not approbation.

And all the sinfulness of the act is at the expense of the sinning person, while the personality of Absolute Reason in all connection with the guilty transaction has neither done anything nor omitted anything to which reason did not prompt and which it does not fully approve. It is neither to his self-reproach, nor to any reproach in the sight of the universe towards God, that any sin, or that so much sin, has been introduced; and though grieved and angry, yet is God's grief and anger on account of sin only to just the measure and of just the kind that is perfectly reasonable. All sin, notwithstanding, the Absolute Reason has his own justification, and the approval of reason in every individual who knows his action towards it.

It is reason only, and not sense, that can approve or disapprove, respect or abhor, congratulate or commiserate, in anything. Joy and sadness are from the reason and in the spirit, and not from sense and in the flesh in any matter, and in no case is the reason-susceptibility of the Absolute ever unreasonably excited. Sadness in its place is as reasonable in God as is gladness in its place, and the self-sufficiency and persistent integrity of the Absolute exclude the possibility of any unreasonable disturbance. Absolute Reason is conscious of *perpetual and eternal tranquillity and serenity*.

14. We have then, at last, Absolute Reason in its Absolute fullness. It has not come from aught above itself, and does not pass on to aught beyond itself, and is ever self-sufficient to execute its own purposes. Its energies produce and perpetuate the universal forces, and put the proper forces in the possession and use of their respective life-activities. It raises sense to consciousness in the brute-organism, and gives manly dignity to the human body by the inspiration of a rational spirit. It peoples the worlds in its wisdom, and holds them all in one space and one time by their universal connections. It originates its ideal plans in the accordant counsel of its three-fold agencies, and these agencies, with wills distinct in personality permanently abiding in the one being and consciousness of reason, give overt expression to the ideal plan in steadfast universal substance. It is itself above the universe it creates and upholds, and

guides its movements in consummation of an original design, and to the intent of a final purpose.

Within the universe are individual personalities, who have yielded to sentient appetites against the conscious imperatives of reason, and have thus become sinful by consenting to become unreasonable; but the dishonor to reason by the creature has carried no impeachment of integrity or derogation of dignity over to the Absolute Creator. Individual reason in some cases within the universe has become debased by its prostitution to appetitive indulgence, but above the universe is no unreason, and only Reason in absolute wholeness and fullness, and holding all finite personalities to such eternal retributions as both satisfy the claim and magnify the honor of all reason, finite and absolute. Reason is here fully known to be *absolutely universal and eternal*.

In such process of excluded doubt, with universal existence known as under the control of one Absolute Being, Concrete Logic has found both its triumph and its termination.

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