

APPENDIX.

THE CLASSIFICATION OF THE SCIENCES.

HAVING assumed, as the basis of our argument for the progression of humanity, *the consecutive evolution of the sciences, and their logical dependence on each other*, we have endeavored to present the sciences in a tabulated form, which, if correct, should present the *logical* order in which they must be *classified*, and the *chronological* order in which they must be *evolved* by the human race. To have exhibited the chronological evolution of the sciences, would have required a separate dissertation, for which we have not space in the present volume; but if the reader will consider the progress of science from the days of the schoolmen down to the present day, he will find that the following table, which is merely logical, might be exhibited, in fact, as chronological. For that purpose, however, each science would have required to be divided into its separate portions. Thus, acoustics would require to be divided into its *mechanics*, or the doctrine of its motions or vibrations, and its *music*, or the doctrine of its tones. And, again, optics would require to be divided into its *geometry*, or the doctrine of its reflection, refraction, &c., (in which it is unnecessary to con-

sider the *motion* of a distinct fluid;) into its *mechanics*, or the doctrine of its motion; and into its *chemistry*, or the doctrine of its agency on other substances. These various portions are perfectly distinct, (as distinct as the mechanics of solid matter from the chemistry of solid matter;) and consequently, in the history of evolution, it is to be expected that the one portion will evolve before the other, although all may be assembled under the same name.

Again, this mode of viewing the progressive evolution of the sciences explains at once the controversy between the Baconians and the Aristotelians. Many tirades have been levied against Aristotle and his followers, by those who appear altogether incapable of comprehending his method. Aristotle's method was absolutely necessary, (meaning thereby the *deductive* method of reasoning;) and it was perfect, so far as the mathematical sciences extended. Without Aristotle, there could have been no Bacon. Both were requisite. The first developed the general form of all reasoning, and the second applied the form to the phenomena of matter. But the *deductive* mode is only one of the phases of reasoning; and the Baconians, overlooking the fact that the deductive mode was the only mode applicable to mathematics, imagined that they had invented a new method, when they had only inverted the method which Aristotle had bequeathed to them. For, in fact, between the deductive method and the inductive method there is only this difference, that in the former we begin with the major and minor premises, and *deduce* the consequent; whereas, in the inductive method, we begin with the minor premiss,

(the observed conditions,) and the consequent, (the attendant phenomena,) and from these *infer* the major premiss; that is, the law or generalized fact. Aristotle was as necessary as Bacon; and though the Baconians of the present day do not perceive it, they are exactly in the same position with regard to *moral* science that the Aristotelians were in with regard to matter science. The sensationalist Baconians, who endeavor to make moral science by a mere induction of facts, are as much out of their province as the metaphysicians, who endeavored to make physical theories by ratiocination. A third method is now requisite, and then the scheme of knowledge will be completed. Aristotle, Bacon, and the man to come,* will have exhausted the whole doctrine of *method*. But each is necessary in his place; Aristotle to give the method of the mathematical sciences, (and also, let it not be forgotten, the method of the physical sciences when once they *are* discovered;) Bacon, to give the method of the physical sciences, (in the process of discovery;) and the man to come to give the method of the *man* sciences. But even in the man sciences there can be nothing to transcend the method of Aristotle, as there really was nothing in the *Baconian* method to transcend the method of Aristotle. Aristotle gave the

* To Kant this position may perhaps be ultimately assigned, but even in that case he would be the *man to come*, as he has not yet been acknowledged as the author of the terminal method, which must exhaust the realm of cognition. It is questionable whether any future writer will ever be able to transcend Kant; but at the same time it is also questionable whether the critical method can be fully achieved before the whole of the sciences are evolved.

blank *forms* of reasoning, and Bacon pointed out the mode of putting *real* facts into the minor propositions of the syllogisms. And whenever man science is fully made, it also will be only a filling in of real truth into the blank formulæ of Aristotle, who, although for a time degraded from his high position, will again hereafter be esteemed as the genuine founder of scientific method. When physical science, passing through the phase of *induction*, which is the process of discovery, shall have fairly established the great major propositions of the physical world, the method of Aristotle will once more be applicable, and his name will again be revered as second to none in the grand phenomenon of man's intellectual development.

If, again, it be true that man evolves the sciences in a certain chronological order, we learn to appreciate more correctly the various labors of those great men whose names symbol the respective eras of development. Thus Aristotle might lay bare the universal doctrine of method, and after-ages might have little to improve upon his labors. His *logic* might be exhaustive, and no future writer might be able to say that he had seen more completely than Aristotle into the universal form of science. But if (as we affirm) logic is the first and most general of all the sciences, the genuine origin of all systematic reasoning, then logic necessarily falls to be classed *first*, and Aristotle might develop logic, while his opinions on all other branches of knowledge were empirical, incomplete, superstitious, or erroneous. His logic might be perfect while his politics would be little else than a tissue of assumptions.

But the most important consideration connected

with the following scheme of classification is the logical dependence of one science on its antecedent science. And this dependence manifests itself in the fact, that the one science applied to the forms of the next fundamental noun-substantive, actually becomes the *next* science. Thus, logic applied to number becomes arithmetic; arithmetic applied to quantities, becomes algebra; algebra applied to spaces becomes geometry; and geometry applied to force becomes statics.

This process cannot possibly be reversed. It is not arbitrary, but necessary. It belongs not to a mode of classification which might serve a temporary purpose, but to a general mode of classification which would always impel man as man to arrange the sciences in this order, and in no other, because no other is permanently possible. Not that we have succeeded in arranging the physical sciences in an order altogether unobjectionable, but that we have exposed the principles of classification which must ultimately prevail when the doubts and difficulties now connected with the physical sciences shall have been cleared away, and the relations between electricity, chemistry, and magnetism been so simplified, as to enable lines of demarcation to be drawn with a precision which the mere logician would not now be justified in attempting.

Those who are familiar with logic (and happily that science is gradually regaining its position) will perceive that the fundamental nouns-substantive of the sciences are classed on their *extension* and *comprehension*, the extension diminishing exactly as the comprehension includes more and more qualities or predicates.

And this circumstance affords a high presumption that the order is not arbitrary, but the genuine order of nature.

Science, in every case, involves *reasoning*, and where there is not reasoning (as in the descriptive sciences) there is only *classification*, which is the preliminary of science. But, anterior to reasoning, there are the fundamental and universal propositions of human credence, which belong to ontology or metaphysic. And ontology furnishes *the axioms* to the mathematical sciences, which axioms render deductive reasoning possible.

Ontology posits what Kant has accurately termed a *synthetic proposition*; and this synthetic proposition, next to the *abstraction*, is the very foundation of all science whatever. True, the sensationalists have endeavored to obliterate this synthetic proposition; but the current of human credence is rapidly returning to a more genuine estimation of the real character of the phenomena of thought, and the fundamentals of belief (never capable of being rejected *in fact*) may ere long be expected to undergo an examination which shall place them beyond dispute.

But another consideration may be made with regard to thought. Two methods of studying thought are open to mankind: first, the psychological; and, second, the critical. The psychological assumes the power of man to make thought itself objective, to study it, classify it, and reason with it; the ultimate appeal being to the human consciousness. This method is ever open to objection. The intellectualist may posit *substance*, and *cause*, and *power*, and appeal for

the confirmation of his doctrine to the consciousness of mankind. The sceptic at once asserts the *subjectivity* of the concepts, and uproots the very possibility of proof. True, he says, there is a substance, but that substance is *in thought*; and a cause, but the cause is in thought; and a power, but the power is in thought. And thus the intellectualist is reduced to the mere reiteration of his dogma—a dogma which, so long as he confines himself to the criterion of *consciousness*, is no more than an assertion of his own mental experience or conviction.

Far otherwise with the *critic*. The critic takes his stand on the immovable basis of *science*, and, leaving all questions of consciousness or of mental operation, he makes the whole range of the sciences objective, and asks what thoughts they have posited, and what methods they have pursued. He leaves it to every science in particular to determine what is *true* and what is *false* in each region of inquiry; and, when science has achieved her office, he culls the first and fundamental truths of each science, and says, "These are indisputable; and, if you question them, you must fight your battle with the *world of science*, which has established and authenticated these propositions." And thus when he speaks of *power*, he appeals not to *consciousness*, but to the *science of dynamics*, which treats especially of power, and performs with that substantive operations which could not be performed without it.

The sciences are all direct and spontaneous, and their office is to determine what is *true*. In geometry, for instance, the axioms are spontaneously true; and

geometry never does, and never can, inquire into the objectivity or subjectivity of her fundamental propositions. They are true *necessarily*, because no effort of man can conceive them otherwise. And when they have been accepted on these terms by geometry, they are handed over to the critic; whose office is not to determine what axioms are *true*, but to examine *what they consist of*, what is their form, their *meaning*, and their function.

And as the sciences, when completed, will involve every substantive that can enter philosophy, and every proposition that could give rise to a question on the reality of knowledge, critical philosophy will thus become the genuine doctrine of *thought*; not inquiring into *the truth* of the thought, for that is the office of science, but into its *form* and mechanism. And thus philosophy would be at once the genuine *scientia scientiarum*, and the genuine exposition of the laws of human thought, based on the whole range of science, and appealing to ascertained knowledge for the substantiation of her fundamental truths.

If psychology have any truths to advance, they must be advanced as scientific, and not philosophic truths. Philosophy cannot acknowledge them till they have been *already* established beyond dispute; and then philosophy uses them for a purpose altogether distinct from the purpose of science. Science, making its realm of investigation *objective*, inquires what is true in the *object*, and this object may be man as well as matter. But when science has made her truth, and achieved her independent inquiry, philosophy accepts the truth, and endeavors, with the whole

mass received from the whole category of the sciences, to read aright the phenomenon of knowledge; and, linking the object with the subject, to complete the circle of cognition, and, it may be, to project some reasonable anticipation of the future destiny of humanity.

The last of the direct sciences is *theology*. Theology completes the range of spontaneous science, and closes the book of science, properly so called. But beyond theology lies critical philosophy, which reflects on the whole course of knowledge, and examines the method that has been pursued. And this critical philosophy can never be achieved till the whole of the sciences are complete — complete, not in having made manifest every truth which they quantitatively contain, but complete in having posited their fundamental propositions, and acknowledged the method by which they evolve truths of a certain specific quality. And if this be the case, it is plainly evident that critical philosophy has yet to undergo a new expansion; in fact,* that so long as there remains one qualitative science to be reduced to ordination, critical philosophy is only *partially* possible. Moral science and natural theology must be truths for the world, before critical philosophy can sum up the whole facts of cognition, and pronounce judgment on the cosmos of man's knowledge.

But what is the lesson that philosophy can teach — the last problem of man's inquiries upon earth?

In this philosophy there may lie involved the stupendous fact of a mystery insoluble to the reason — a mystery that has borne down humanity, and baffled

the mightiest efforts of the intellect. Ever and ever there comes back the appalling consciousness of "a reason that points infallibly in one direction, and a fallen nature that tends infallibly in another." Science is here utterly helpless to inform; and philosophy, while recording the fact, weeps over the hopeless mystery. *Man* cannot solve the mystery. And thus philosophy, reading the whole realm of knowledge, and beholding all that the intellect can teach, lands at last on the shore of that ocean where a higher than man must guide — where the horizon is infinity, and where she might gaze forever on the lost regions of illimitable space. That ocean *philosophy* cannot traverse. Reason cannot survey the infinite. Time, and earth, and man's knowledge are all behind; and before is the infinite ocean of immortality. And here philosophy must end with a pathless ocean and an insoluble mystery. Her work is over — finished. She has no compass to guide on the trackless waters — no beacon to direct her. The loadstar of heaven must appear, and Faith, giving the hand to reason, may lead by the records of eternal Truth.

Nor is this faith itself *unreasonable*. It is not mysticism nor superstition, but credence of *a matter beyond the realm of reason*, by means of *an evidence within the bounds of reason*; reason being judge of the *evidence* which authenticates the *matter*.

And thus the last final lesson that philosophy can teach, and which one day it will teach the world, is, that there is an insoluble mystery within the region of cognition; and that, consequently, the only hope of *knowledge* is in a revelation from that divine Creator and Preserver whose moral existence has been proven

by natural theology. And this indeed is the true province of philosophy, her great work, her terrible achievement, save that there is hope from on high. She lands, indeed, at last on the shore of a boundless ocean; but in so doing she bequeaths to man the last record of her teaching — that in revelation *alone* can be found the truth that humanity requires.

CLASSIFICATION OF THE SCIENCES.

All science presents itself under the following aspect:—

1. The substantive.
2. The relation between two substantives.

This is called the proposition.

Two propositions must in every case be given before there can be *reasoning*.

3. The evolution of a new relation from two propositions given. This in its complete form is called the syllogism.

This is the universal *form* of science, and it first appears in *logic*, which is the most abstract form of all science.

The evolved relation is always a *new* relation, being the relation between one of the substantives of one of the given propositions, and one of the substantives of the other proposition.

A perfect syllogism presents itself under the following general form:—

Major Premiss.	The whole of B is C.
Minor Premiss.	The whole of A is B.
Consequent.	The whole of A is C.

In the deductive sciences,*(the mathematical sciences always, and the physical sciences when their

laws *are* discovered,) the evolved relation is the conclusion or consequent of the syllogism.

In the inductive sciences, while undergoing their process of discovery, the evolved relation is the major premiss, which then becomes sufficient for deductive reasoning in new cases.

Every single science consists of a *nomenclature*, a *classification*, and a system of *syllogisms*; that is, of a system of propositions connected together by the law of reason and consequent.

A *classification* is improperly termed a *science*; it is only a *portion* of a science, the propositions which are isolated in a classification requiring to be connected by the law of reason and consequent, before science properly so called is achieved.

In the physical sciences, matter invariably appears as a *power*, or force, or agent, or as acted on by a power, or force, or agent; whereas in the mere classification it is a *substance*.*

In mechanics, matter is viewed as a power capable of acting on other matter, without producing a change in the qualitative powers of the portions of the matter operated upon.

* Unless matter be conceived as a *power*, (a power located or conditioned,) there cannot be *science*. There might be a knowledge of facts, but the facts must be connected by the law of reason and consequent, before the facts will function in science; and they can only be connected by the law of reason and consequent by making matter an agent, or power. But though *some* matter is always present as a power, there may also, in the same syllogism, be matter present as a substance — that is, as an object acted on by the agent; while for the moment the *reaction* of the object on the agent is not taken into consideration.

As every major premiss represents a *power*, every minor premiss

In chemistry, matter is viewed as a power capable of producing a change in the qualitative powers of every portion of the matter operated upon.

In political economy, matter is viewed as a power, (called value;) which power is the power of exchanging against other articles, or against services: or it is viewed as a power capable of *producing* articles of value. In political economy, man himself is viewed as a power capable of producing value, or consuming it.

In politics, man is viewed as a conscious power, capable of acting equitably or unequitably towards his fellow-men.

Power, and not *substance*, is the essence of all physical science; and the object of research is the discovery of the exact specification of the powers of nature in their most general form, so that those powers shall function in the syllogism, and produce logical consequents which shall coincide with the observed consequents wherever the verification can be made.

All science exists in *the mind*, and it is only as the substantives of the sciences are made to function logically in human thought that science is really achieved. Science, then, is a form of *thought*, and when evolved

a *classification*, and every consequent a *produced phenomenon*, matter may appear in the major as a power, and in the minor as a substance, thus:—

Major.	Matter acting, (a power.)
Minor.	Matter acted upon, (a substance.)
Consequent.	Produced phenomenon.

Dr. Thomas Brown, in advocating the *substantial* claims of matter against the *potential*, appears to have overlooked the fact, that we know as little of *substance* as of *power*. Both are relative terms; and if the one be obliterated, the other, by a parity of reasoning, ought also to disappear.

it is the same for all human intellect; so that it involves in itself the unity of human credence, in opposition to the diversity of error, superstition, or mere opinion.

FIRST.

The foundation of human knowledge is *Ontology*.

Ontology furnishes — 1st. *The abstraction* or substantive of the science; and, 2d. *The axiomatic proposition*, or necessary *relation* which renders reasoning possible. Ontology is not a *science*, but is the necessary preparation for all the sciences. The mathematical sciences derive their *axioms* from ontology. Ontology presents itself in the form —

A. The abstraction or substantive posited.

A is B. The relation or proposition. The synthetic proposition of Kant, which becomes the axiom in mathematics.

Science.

Science originates when we apply a rational method to the object of intellectual perception, rejecting all human authority and all human superstition.

The universal form of science is *Logic*. Logic furnishes the laws of identity and equality, and its process is called *reasoning*. Logic presents itself in the form —

A is B; B is C; *ergo*, A is C: the law of identity.

A is part of B; the whole of B is part of C; *ergo*, A is part of C: the law of equality.

The doctrine of identity and equality is therefore the first science, and the sciences range themselves in the order given in the accompanying table:—

THE REGION OF KNOWLEDGE.	THE REGION OF REALITY.
METAPHYSIC; OR, FORMAL INTUITION.	
The necessary and uni- versal forms of thought, { <i>i. e.</i> } Ontology or Metaphysic in spontaneous operation.	
SCIENCE; OR, FORMAL APPREHENSION.*	
I. FORMAL SCIENCE.	
THE CATEGORIES. THE SCIENCES.	
Identity { Logic, or	
Equality } Syllogistic.	
II. THE MATHEMATICAL SCIENCES.	The firmament of SPACE, the knowledge of which involves ge- ometry and the anterior sciences.
Number Arithmetic.	
Quantity Algebra.	
Space Geometry.	
III. THE FORCE SCIENCES.	The HEAVENLY BOD- IES, the knowledge of which involves the force sciences and all the an- terior sciences.
Forces, neutralizing each other Statics.	
Forces, producing motion Dynamics.	
IV. THE MATTER SCIENCES, OF POWERS conditioned.†	
INORGANIC.	
Force, con- ditioned in { Solids Mechanics.	
{ Liquids Hydrodynamics.	
{ Aeriform fluids Pneumatics.	
Sound Acoustics.	
Light Optics.	
Heat Thermology.	
Magnetic Force Magnetism.	
Affinity Chemistry.	
of Solids } according to	
Liquids } their chemical	
Gases } classification	
Light }	
Heat }	
Electric Force Electricity.	
ORGANIC.	
Life or Vital Force Vegetable Physiology.	The Vegetable Kingdom.
Animal Physiology.	The Animal Kingdom.
V. THE MAN SCIENCES, OR MIND SCIENCES.	The HUMAN RACE, the complete knowledge of which would involve <i>all</i> the sciences, without exception.
Utility Political Economy.	
Equity Politics.	
Accountability Theology (natural.)	
PHILOSOPHY; OR, FORMAL REFLECTION.	
Critical Philosophy Critic	The CREATOR, posited by the reason in natural theology.
Ethics of Theology Dikaistic.	
Expectation of a Future Life Elpistic.	The DIVINE CREATOR, made known by person- al communication
REVELATION.	

* GENERAL FORM.

† GENERAL FORM.

Major The General Proposition.
Minor The Specified Condition.
Consequent . . The Resulting Proposition.

Major . . Agent . . The Qualitative Power.
Minor . . Object . . The Classified Matter.
Consequent Phenomenon The Resulting Function.

A more uniform nomenclature might, however, be attempted in the following manner:—

1st. Primary Knowledge, necessary and universal.
Ontologic.

2d. Science.

Logic or Syllogistic.

Mathematic.

Dynamic.

Physic. (A term absurdly applied in Britain to drugs and drugging.)

Mechanic	} Of all the various forms or manifestations of matter with which man is acquainted, classified specially in each science.
{ Magnetic	
{ Chemic	
{ Electro-Galvanic	

Organic,—

Botanic.

Zoölogic, (including man as an animal.)

Anthropologic, or Man science.

Artistic, (Arts and manufactures, &c.)

{ Economic. (Production of wealth.)

{ Socialistic. (Distribution of wealth and welfare of the community.)

Politic.* (The laws of equity.)

* The term *ethic* is objectionable, *ethos* meaning a manner or custom. On the contrary, if it be true that man ought to be a citizen or member of a state, and not an isolated individual, the term politic may properly apply to the rules that should regulate men as citizens; that is, in their actions towards each other, and to the sys-

Theologic.* (The divine Creator of man and the universe.)

3d. Philosophy.

Critic.	What have I known ?	} See Kant, Can-	
Dikaistic.	What ought I to do ?		on of Pure Rea-
Elpistic.	What may I hope ?		son. Sect. 2.

Seeing that man is a fallen creature, and that there is an insoluble mystery within the region of cognition, the two latter questions can never receive a satisfactory answer from natural knowledge. Revelation *alone* can answer them.

If we view knowledge as *necessarily* evolving, both logically and chronologically, in the above order, the scheme ought to explain the *generation* of science ; that is, the mode in which one science grows out of, and is produced by, another. And to effect this explanation, we have only to arrange the sciences as consecutive, so that one science *applied to the classification* (or classified substantives) of the next science should *produce* the next science ; remembering always that

tem of truth on which those rules are founded. It must be remembered that man is *by nature* either a politic being or *not* a politic being ; and very important consequences follow in either case.

* In the previous table we viewed theology from the point of view of *man's accountability* ; but *when* that view has been taken, theology must, of course, be erected into a genus by itself, and as *comprehending* all the other sciences. In looking upwards from *man*, the divine *Judge* is alone apparent ; but in tracing the universe from God, the whole universe appears as his handiwork. Both of these modes are legitimate, but each gives rise to a separate series of considerations.

each science introduces a new concept, a new nomenclature, and a new series of *classified substantives*, which are made to function in the mind by the laws of the previous science.

Thus, *ontology* gives the laws to *logic*, while *logic* gives the laws to *arithmetic*, *arithmetic* to *algebra*, and so on.

Abstraction gives the substantives to *ontology*, and *ontology* gives the universal forms of rational thought, (or of knowledge;) and these, applied to the classified terms of logic, evolve the *process of reasoning*; and the process of reasoning applied to classified numbers gives arithmetic; and so forth. Thus:—

Ontology.

Ontology, Logic.

Ontology, Logic, Arithmetic.

Ontology, Logic, Arithmetic, Algebra.

Ontology, Logic, Arithmetic, Algebra, Geometry.

Ontology, Logic, Arithmetic, Algebra, Geometry, Statics.

This table would extend as far as the *mechanics* of sound, light, and heat; and if electricity (or any *power* by whatever name known) should come to be viewed as the *cause* of magnetic, chemic, and electric phenomena, the table would then extend to physiology, the last of the purely physical sciences, after which *intelligence* appears. A new region is then entered on.

On analyzing a science into its general elements, a correlation is observed to exist between *the operations of nature* and *the operations of the human reason*.

Every function *in nature* is conceived under the conditions of —

An agent, an object, a phenomenon;

or concretely —

Force, matter, motion;

whereas the function, when transformed into language, presents itself in the form —

A major, a minor, a consequent;

the syllogism in the reason being the representative of the function in external nature. But as it is the rational apprehension of the function, and not the function itself, which constitutes *science*, every individual science will present itself as ordinated on the plan of major, minor, and consequent. And as each science may be viewed in its general or *speculative* truth and in its *practical* application, each science may present itself as a series of *double* syllogisms, where the consequent of the speculative portion becomes the major premiss of the practical portion. The following scheme will be sufficient to illustrate this point, taking one example from the mathematical sciences, one from the physical sciences, and one from moral science. In a special treatise the subject might be pursued to a much greater length.

SPECULATIVE GEOMETRY.

Major.	The axioms.
Minor.	The specification of spaces, (definitions.)
Consequent.	The function of lines, &c.

Applied Geometry.

Major. The function of lines, &c.
 Minor. The specification of concrete conditions.
 Consequent. Concrete determination of spaces.

In *commerce* again, this consequent becomes the *major* premiss of a new syllogism, e. g. :—

Major. Concrete determination of spaces, (so many acres of land.)
 Minor. Rate of value, (so much per acre.)
 Consequent. Concrete determination of value.

This is the process that connects the very highest and most ultimate abstractions with the most immediate and concrete matters of practical life. It is also the process which constitutes *the chain of proof* in any particular science, the proven conclusion being transformed into an admitted major, for the purpose of evolving a new consequent.

Speculative Mechanics.

Major. General laws of force.
 Minor. Specification of particular forces.
 Consequent. Action of particular forces.

Real Mechanics, (Astronomy, for instance.)

Major. Action of particular forces.
 Minor. Specification of the conditions of matter.
 Consequent. Action of matter.

Reading this last syllogism from the bottom upwards, it becomes an *inductive* syllogism, the *forces* being *inferred* from the actions of matter and the conditions of matter. The consequent, again, might

become a major in another syllogism; for instance, in the determination of a ship's latitude, *e. g.* : —

Major. Action of matter, (motions of the heavenly bodies.)
 Minor. Observed conditions, (sun's apparent altitude.)
 Consequent. Latitude of observer.

This syllogism, of course, involves numerous details and special considerations. Its consequent, again, becomes available in a new reasoning, either by itself, (as in running down a port or island in the same latitude — a common practice among elementary navigators,) or combined with the determination of the longitude. Thus, (the mariner knowing himself to be east or west of his port,) —

Major. Latitude of observer.
 Minor. Latitude of desired port.
 Consequent. Course to be steered.

So that a few general syllogisms, with their propositions properly filled with the specific details, lead from celestial mechanics to practical navigation.

Speculative Politics.

Major. The axioms or general laws of equity.
 Minor. Specification of particular actions.
 Consequent. Moral value of actions.

Politics applied as a Rule of Action.

Major. Moral value of actions.
 Minor. Specification of the conditions of men.
 Consequent. Concrete actions that *ought* to result.

Politics realized in Legislation.

Major.	Concrete actions that ought to result.
Minor.	Concrete actions that do or may result.
Consequent.	Legal prohibition, restriction, &c.

In the foregoing table of the sciences, neither astronomy nor geology appears. Astronomy is not in itself a science, but a real illustration or example of the science of mechanics.*

The qualitative forces of all *real* matter have to be *inferred*, (and herein lies the method of induction;) but *when* inferred, the substantives are viewed as functioning under the influence of laws which are more general than any real or concrete manifestation with which man is acquainted.

* When, however, knowledge is classified on its *objective* elements, (which exhibit the real operations,) the realm of nature may be divided into its physiologies, and these are viewed as existing in time and space. The division would then be into —

1. Astronomy, or the physiology of the sidereal universe.
2. Geology, (in its most extensive signification,) or the physiology of the terrestrial world.
3. The vegetable world.
4. The animal world.
5. The human world.

But, as astronomy and geology present certain *concrete* conditions, concrete arrangements, and concrete functions, it seems more simple to reserve the term *science* for a knowledge of the principles according to which the functions are supposed to take place, and according to which other concrete functions would have taken place, had the conditions been other than they are. By this arrangement, the sciences would form the *major* premiss of a great syllogism; the *conditions* of the various substantives of nature, the *minor* premiss; and the *history* of real events or functions, the *consequent*.

Science is an attempt to make the conceived substantives of nature function in the human *mind* correlatively with their real functions; so that from the observed conditions of to-day, the reason may predict what the conditions of to-morrow will be—nature performing the real operations, and reason performing the rational computation. And if the *rational* operation be correct,—that is, coincident with the real operation,—the sensations of to-morrow will confirm the method, and authenticate the rational process of the *thought*.

But if astronomy be viewed as only a stupendous art, or real operation done, it follows, according to the same mode of viewing, that the qualitative characteristics of matter revealed by chemistry must also be assembled in a *classification*, and be viewed as functioning under the influence of a *general* power; and if magnetism, chemistry, and electricity could be absolutely *identified*,—on which, of course, we can offer no opinion, having only to do with the method of classification,—then chemistry would recede from its position as a *science*, and take up its position as the *classification* of the science of electricity. But these points must all, in the first place, be satisfactorily determined by the men of science, from whom the logician receives the materials that require to be schematized.

When the whole of the sciences are evolved, *critical philosophy* becomes possible in its complete form, being always possible so far as science has actually extended, and no farther. Critical philosophy is the final termination of man's intellectual labors on earth.

It consists in the reflex consideration of the scheme of science, and critically examines the mode in which human intellect, constituted as it is, has been able to evolve and develop the sciences. Critical philosophy pronounces nothing on the truth or falsehood of the sciences, but on their *form*, their *order*, their *relations*, their *classification*, and their *functions*. The whole scheme of natural knowledge being completed, the last inference that can be drawn from the consideration of the whole, is the prospective destiny of man; and the scheme of natural knowledge will thus be brought to the verge of that region where revelation alone can speak authoritatively, and solve those questions which are insoluble by the unaided reason.