ELEMENTS OF LOGIC.

INTRODUCTION.

No branch of study has suffered so much from perversion and neglect as Logic. Its nature and object have been misunderstood and misrepresented. Writers on the subject, not having defined its peculiar province, or discriminated it from other departments of knowledge, have extended its limits beyond all reasonable bounds. And many, perceiving its inefficiency to accomplish what its votaries promise, have consigned it to contempt or oblivion. To form just views of its nature and object, and to endeavour to rectify the mistakes that have prevailed respecting it, is therefore necessary at the commencement of this study.

It has been disputed, both in ancient and modern times, whether Logic is an Art or a Science. Some have maintained that it is a Science; others, that it is merely an Art:—some, that it is neither; others, that it is both. This, however, is a question of little moment. The terms Art and Science, as used by these opponents, are so indefinite, that Logic may be con-
sidered either, or both, or neither of them exclusively, according to the light in which it is viewed. It is not a mere speculative science which has no connection with practice; nor is it a mere art separated from scientific principles. It is a practical science—a scientific art—a system that communicates knowledge, not only that we may know, but that we may reduce it to practice.

The object of this science is Reasoning. By reasoning, in the sense in which it is here used, we understand all the elements of which argumentation is composed. In every act of reasoning a conclusion is drawn from premises, these premises are made up of propositions; and propositions are formed of terms. All of these are constituent parts of an argument; and therefore they all fall within the province of Logic.

It is however the reasoning process, the principles on which it is founded, and the laws by which it is regulated, that form the proper object of Logic. To analyze the mental powers employed in reasoning, and to investigate their phenomena, belongs to the Metaphysician. It is only so far as they are subject to the laws of reasoning that they claim the notice of the Logician. It is his office to analyze the principles by which, in so far as argumentation is concerned, we think, judge, and reason, with precision and accuracy. This science is primarily occupied with the laws of thought restricted as above. But as language is the vehicle of thought, it must necessarily in some degree be conversant with this medi-
um of communication. This, however, is only a secondary object. It is merely because language expresses the thoughts with which Logic is concerned, that it comes under its notice. The philosophy of language belongs to the Grammarian and Rhetorician.

Aristotle has not given a definition of Logic. The first name given to it by Plato was *Dialectics*; because Socrates used the form of a dialogue when disputing with his countrymen. It was also called the *Instrumental Art*; because it was employed by the Peripatetics as an instrument to ascertain all truth. The Epicureans styled it the *Canonic Art*; because they considered it the experimental proof of the soundness of an argument. These names have now been abandoned for the term Logic, which is derived from a Greek word signifying that which pertains to reasoning or drawing conclusions.

Having thus endeavoured to ascertain the nature and object of Logic, and to define and fix its appropriate limits, we shall take a rapid sketch of its history, and attempt to remove the prejudices and errors that abound respecting it.

The earliest writer on Logic was Zeno the Eleatic. His work on this subject was divided into three parts. The first treated of consequences; the second of colloquial argumentation; and the third contained a method of wrangling whereby the disputant might entangle his opponent by sophistical reasoning. Hence
arose the Sophists, who were plentifully furnished with the weapons which this art of wrangling supplied; and who discussed with the greatest eagerness the most obstruse or the most trifling topics. It is probable the Greeks considered this as an ingenious recreation; and had recourse to it merely for amusement, or for the cultivation of their intellectual powers;—though it might be indulged in too much, and was sometimes prostituted to unworthy purposes. With this art however Logic has no concern but to detect and expose its intricate absurdities. Yet the Sophists retained possession of the philosophic schools from the 35th to the 90th Olympiad.

It is only the second part of Zeno's work that properly belongs to Logic. The interrogatory method of disputation which he introduced is founded on strictly logical principles. It was this mode of reasoning that Socrates adopted, who flourished about B. C. 400, and who is justly esteemed one of the most celebrated philosophers of antiquity. Both the manner and the matter of his argumentations did equal honour to his virtues and talent. He frequented the public places of resort, and mingled familiarly with those whom he wished to benefit. He entered into general conversation with them; proposed simple questions; and gradually drew from themselves such concessions as effectually condemned their vices, or exposed their errors. It is from him that the Socratic Dialogue derives its name—many valuable specimens of which are preserved in the writings of Xenophon and Plato.
This mode of reasoning, however, was soon perverted. Euclid of Megara, and other disciples of Socrates, devoting themselves to the intricate fallacies of the schools, banished that philosophy to its native skies, which Socrates had brought down to the earth. This was not the case, however, with all his pupils. Among them Plato stands conspicuous; who, to all the other branches of knowledge which he studied and adorned, added an intimate acquaintance with the reasoning art. He has indeed left nothing that expressly treats of Logic; yet he speaks of it in the highest terms of approbation, and by his happy method of philosophical research did much to prepare the way for its clearer developement. About this time rules were invented for defining, and dividing, and classifying our ideas. Yet with regard to reasoning itself, little or nothing was accomplished till the renowned discoverer of the syllogism appeared.

Ariostotle was born at Stagira about B. C. 385. He was brought up at the Court of Macedon; was for twenty years the favourite pupil of Plato; and being the tutor of Alexander the Great, was furnished by him with every thing necessary to the successful prosecution of his philosophical inquiries. His masterly genius, and the favourable opportunities he had for improvement, made him the first spirit of his age. He was a man of indefatigable industry, and immense reading; and for nearly two thousand years he exercised as sovereign a dominion over the opinions of man-
kind, as did his royal pupil over their liberties and fortunes.

The writings of this philosopher embrace almost every department of knowledge. It was his Dialectics, however, that gained him his greatest renown. We are indebted to the Stagirite for all the chief principles of the science of reasoning. Some of the materials of the system were indeed prepared before his time, but he laid the foundation; and to this day it remains substantially the same as when he bequeathed it to posterity.

It does not appear that the Logic of Aristotle drew much attention from his contemporaries. At his decease he bequeathed his writings to Theophrastus, his pupil and successor. Theophrastus left them to Nileus of Scepsis; who, though not a philosopher himself, was nevertheless highly delighted at possessing so valuable a treasure. At this time the King of Pergamum was collecting Manuscripts for the Alexandrian Library; and Nileus, fearing lest he should be deprived of the writings of the philosopher, concealed them in a cellar, where they remained for upwards of a hundred and thirty years. It is uncertain by whom or in what way they were rescued from their confinement; but it is certain they were in no small degree injured by the damp and the vermin of their dreary habitation. They were afterwards purchased by Apollonius, whose passion for books was insatiable. By him it is supposed they were subjected to so many corrections, and interpolations, as injured them more
then the dungeon in Scepsis. After this they were carried to Rome by the Dictator Sylla. But the reputation of Aristotle was never great among the Romans. Cicero mentions his writings, and says that they deserve to be better known. But the science seems not to have been at all cultivated. In the fifth century of the Christian era Aristotle's Logic was translated into the Latin language by Boethius, "the last sage of the ancient world." But the fall of the Roman Empire introduced the dark ages, when ignorance universally reigned; and we lose all traces of the science till at length light began to dawn in the east among the Saracens and Arabians.

In the East literature flourished from the beginning of the 9th to the close of the 13th century. Al Mamoon, a Saracen Prince, had the works of the Grecian philosophers translated into Syriac and Arabic, and they were diligently studied in the Colleges at Bagdad and Grand Cairo. Amongst them Aristotle soon became a favourite author. His Logic especially was much admired. The syllogism became a noble instrument for explaining and establishing the doctrines of the Koran. This in no small degree contributed to the injury of the science. And when we add that the above mentioned Prince caused the original Manuscripts to be destroyed; and that when the Saracens conquered the west, corrupt translations were introduced and diligently studied, it will not appear wonderful that Logic should have been so corrupted, as it afterwards was, in the idle and violent disputations of the schools.
In the middle ages numerous controversies exercised the ingenuity of the learned. To attain skill in the management of these disputes was the chief object aimed at in a liberal education. That the syllogism might be perverted to aid this species of wrangling was soon perceived. Hence to be able to wield this instrument to advantage, became the chief object of ambition. The disputationes were not confined within the walls of colleges. Large public assemblies, consisting of the first beauty, rank, and fashion, met together to witness the contest and applaud the victor. Frequently the conqueror, like a knight errant of chivalry, wandered about in search of Quixotic adventures, challenging everywhere those who were renowned for syllogistic superiority.

The topics selected for these discussions were worthy of the occasion. We may subjoin a specimen from that department of Natural Theology, which they dignified with the name of Angelography. They gravely discussed, "Whether more than one angel could exist at the same moment of time in the same physical point?" "Whether angels can visibly discern objects in the dark?" or "Whether they can pass from one point of space to another without passing through the intermediate points?" These and similar all-important questions were nobly supported or controverted. The combatants were ranged in opposite parties, and sometimes the violence and acrimony of their disputes rose so high as to endanger the public peace, and call for the interference of the public authorities.
The syllogism being the grand instrument by which these disputes were carried on, and by the skilful management of which victory could only be obtained, was looked upon as the noblest achievement of the human intellect. It was styled the universal organ of science; the eye of intellect; and, like the sun, the light of the world. It was said to be, "ars artium, scientiarum, organum organorum, instrumentum instrumentorum, ancilla, clavis, testa, murus philosophiae, docendi dicendique magistra, veri falsique disceptatrix et judex." Nor were the praises heaped on the philosopher himself less absurd or extravagant. It was gravely asserted "that Nature was not altogether complete till Aristotle was born; and that in him she received the finishing stroke, and could not advance farther."

The dominion which Aristotle thus gained in literature, and science, and religion too, was most pernicious. What wonder is it then if men of common sense became impatient of the yoke? Was it not to be expected that they would rise, and with one sweeping stroke rid themselves of a system that had been so grossly perverted and abused? This we find actually took place.

In the 15th century a variety of favourable events ushered in the revival of letters—a circumstance of the greatest importance in the history of Logic. When Constantinople was taken in A.D. 1453, many distinguished Greeks took refuge in Italy, and in other parts of Western Europe. By them the writ-
ings of the Greek philosophers were again brought into notice, and the most happy results attended the study of these inimitable productions. The reformation of religion; the discovery of America; the invention of the art of printing, all exerted a favourable influence on the Arts and Sciences. And many persons, in the learned world, arose, who, by wit, and argument, and irresistible eloquence, boldly attacked the Author of the syllogism. Erasmus and Luther deserve to be honourably mentioned. The latter renounced the Pope both in religion and philosophy. He thundered against the syllogism with all the vigour of his masculine and intrepid mind: and had it not been for Melanchton he would in all probability have accomplished a complete reformation in the schools. Ramus and Des Cartes in France; and Leibnitz in Germany, followed in the same train. And in England the immortal Lord Bacon did much to emancipate the world from the absurdities of the scholastic philosophy.

The errors into which the schoolmen had fallen, justify the severity with which their system was assailed. But their error lay not in their studying and prizeing Logic, but in their utterly mistaking both its nature and object. They either degraded it to a mere instrumental art fitted only for ingenious subtle trifling; or they elevated it to the dignity of being the only instrument necessary for physical investigation, and the discovery of truth. It was against these glaring mistakes, this sad perversion of the system, that the censures of Lord Bacon were principally directed; al-
though the weight of his name is often brought forward to discountenance all Logical pursuits whatever. He had too much wisdom, however, to condemn the legitimate cultivation of any science, because it had been abused. It was the reformation, not the destruction, of the sciences that he laboured to promote; and many passages might be quoted from his treatise *De Augmentis Scientiarum*, in which he commends both Logical studies, and their illustrious author.

After the days of Lord Bacon, one of the most determined opponents of the Aristotelian Logic was Locke, the author of the justly celebrated Essay on the Human Understanding. Whoever has studied Logic and reads his remarks, will perceive that they are founded on mistake; a circumstance pardonable perhaps, even in so great a mind, when we consider how much logicians themselves have been chargeable with the same error. His objections to the science, having often been repeated from his time to the present day, merit our attention.

He condemns the syllogism as not being "the only proper instrument of reason in the discovery of truth." We grant it; but what then? Must Chemistry be condemned because it does not impart skill in the Mathematics? Is the science of Optics destitute of utility because it leaves us in ignorance respecting the formation of the earth? The proper instruments for the discovery of truth, and the enlargement of our knowledge, are undoubtedly observation and experiment, so admirably brought to bear on the study of
nature in the Inductive Philosophy. But the province of Logic is quite distinct from this. It is occupied exclusively with Reasoning. And surely it is no valid objection to one science that it does not accomplish that which is the object of another.

Locke objects to this science too as being a peculiar "way of reasoning," intended to be substituted for the common ordinary method of argumentation. But it is not a peculiar method of reasoning, which may or may not be adopted at pleasure. All correct reasoning is logical. It never was the intention of Logic to introduce the syllogism expressed at full length into our ordinary discussions, this would be equally absurd as to encumber every step of a mathematical process by writing, at full length, the axiom or proposition on which the proof depends; or to say, "that to speak grammatically, means to pause every sentence we utter." Hence all that Locke says respecting the "simple and natural disposition" of ordinary reasoning, and the "perplexed repetitions and jumble" of syllogistic reasoning is irrelevant. All reasoning must be syllogistic, if it is reasoning at all; though not necessarily expressed in the form of a regular syllogism. Even the Socratic Dialogue, than which reasoning cannot adopt a more simple, flowing, or popular form, is strictly syllogistical, being a hypothetical 'Sorites, which can easily be reduced to a series of regular syllogisms. In short Logic does not introduce the syllogism as a mode of reasoning distinct from, and intended to supersede, any other mode; but as the
form to which all correct reasoning may be reduced, and by which its validity may be ascertained.

Another argument which Locke brings against this science is, "that there are many men who reason exceedingly clear and rightly, who know not how to make a syllogism." This statement is frequently brought forward at the present day, as justifying the neglect of logical studies. But is scientific knowledge of no use to the practical mechanic, though without it he may perform his work with considerable dexterity? Does the musician act wisely who neglects the rules of his art, and trusts merely to his taste, and natural abilities, and acquired habits, for reaching eminence in his profession? Assuredly not.

A system of rules, drawn from a scientific acquaintance with his profession, is considered necessary by every one. And he that would trust in this respect to practical wisdom, or common sense, or mere unaided experience, to the exclusion of systematic knowledge, would be a fit object for ridicule or pity. Why then should scientific knowledge be considered unnecessary respecting Reasoning, which has been justly styled the appropriate intellectual occupation of Man? Is it of no use to be able to resolve an argument into its elements; to understand the theory on which it rests; to be acquainted with the rules by which it is constructed; and to learn to do that well which must be done constantly every day of our lives? In the application of these principles there will still be enough left for good sense, and natural talent to accomplish.
But an acquaintance with these principles must materially aid both our skill and confidence when engaged in argumentation.

Even admitting that little practical benefit resulted from this study, it would not follow that it should be consigned to neglect and oblivion. Knowledge is valuable for its own sake. The exercise of the mental powers on any subject contributes to their improvement. If we venerate the relics of antiquity; if the achievements of genius demand our admiration and regard; surely that which swayed the learned world for ages deserves to be studied, were it nothing but a literary curiosity.

The next writer on this subject who claims our notice is Watts. But Logic has not been more unfortunate in its avowed enemies, than it has been in its professed friends. Hence even the treatise of Watts, which has attained so great celebrity, has done much to injure this study. He appears to have been misled by the specious arguments of Locke against the syllogism. Locke ridicules the idea (as well he might) that God had merely made men "two-legged creatures, and left it to Aristotle to make them rational." Dr. Watts easily perceived that the Aristotelian Logic was insufficient for this vast achievement. But he seems not to have detected the fallacy that lurks in this Philosopher's reasoning. Hence instead of shewing that it was neither the province nor object of Logic to make men reasonable, he has endeavoured to raise it to this dig-
nty by constructing a system denominated *The Right use of Reason*, which is to improve all the intellectual powers of man, and assist us both in searching after truth, and communicating it to others. "The design of Logic," he says, "is to teach us the right use of our reason, or intellectual powers, and the improvement of them in ourselves and others." Surely this is an object too vast to be accomplished by any one science. It is the end which the whole circle of the sciences aim to effect by their united efforts. To claim it, then, as the peculiar province of Logic, is to raise expectations which can never be realized, and to bring the study into unmerited neglect. The rules which Watts has laid down respecting ideas, and prejudices, and rules of judgment, may all be very important and useful; and in some respects they may be connected with our science. But it is not the object of Logic to teach us to acquire a treasure of ideas; to remove all sources of prejudices and error; and to give us complete certainty respecting the truth or falsity of every proposition. No system of rules can effect this. While the human mind remains as it is, and the sources of error are so multiplied around us, no combination of scientific principles can enable us to judge and reason aught with absolute certainty on every subject. To represent Logic as being a system of universal knowledge fitted to accomplish this end—as being a *panacea* for all the defects and errors of the mind, is certainly giving an erroneous view of the subject. Yet this idea pervades the whole of Dr. Watts' treatise.
Errors in reasoning may spring from two distinct sources; either from the subject about which we are reasoning, or from the manner in which the process is conducted. Now it ought to be particularly remembered that it is only the latter with which Logic is concerned. It may be applied to all branches of human knowledge; but its object is not to decide on the truth or falsity, the correctness or incorrectness, of the statements made, but to see that the inferences drawn from them be strictly correct. If the premises be true, the conclusion, if logically deduced, will be true likewise. If the premises are false, the conclusion may be logically correct, although in reality it may be an erroneous statement. If no error is suffered to take place between the statements made and the inferences drawn from them, Logic has accomplished its work, whether these statements be true, or whether they be false.

That the chief sources of error spring from the subject matter, not from the process of reasoning, is abundantly evident. Hence many ingenious writers, since the days of Watts, have treated Logic with contempt, because it removes not the greatest hinderance to our attaining real truth and certainty in our argumentations. But is it fair to condemn a science because it does not accomplish impossibilities? All that comes within its own province it is able to do well. No more is expected from any other science. Why should it be insufficient in respect of Logic? Chemistry is not censured because it does not provide the substances which it analyzes and
combines; or because these substances are not all simple and unadulterated. When they are presented to the Chemist, his work begins; and his object is accomplished when, by analysis or synthesis, he produces the simple or compound substance into which they may be resolved or combined. So all reasoning must be founded on knowledge,—on facts either true or false. With the acquisition of this knowledge, or with the truth or falsity of these facts, considered as such, Logic has nothing to do. All these must be provided for in the various ways by which man gains knowledge and understanding. This knowledge, when acquired, the Logician operates upon. When it is presented to him he combines and analyzes it, according to the rules of his art, or the principles of his science, and draws such inferences from it as it really and properly warrants. If any unsound mode of arguing creeps into the reasoning process, any "ingenious mixture of truth and falsehood, so entangled,—so intimately blended,—that the falsehood is (in the chemical phrase) held in solution: one drop of sound Logic is that test which immediately disunites them, makes the foreign substance visible, and precipitates it to the bottom." This is the proper province of Logic. If it is fitted to gain this end, surely it is of sufficient importance to preserve it from neglect, although it may not be able to put us in possession of universal truth,—with less than which, however, its opponents seem unwilling to be satisfied.

We rejoice that Logic, after having been vastly
overrated by some, and unjustly undervalued by others, is now, at the present day, beginning to be appreciated according to its real merits and importance. The strictly scientific character of the system has been demonstrated, by shewing that the process can be carried on by arbitrary symbols, without any regard whatever to the signification of the terms; the peculiar province of the science has been recognised and fixed, so that writers on this subject, instead of wandering through every field of science, may now confine themselves to their proper home; the extravagant expectations raised by the unwise exaggerations of its friends, have sunk down within something like reasonable limits; and even the deep-rooted prejudices of its enemies, are beginning to disappear. One of the principal writers at the present day, to whom these happy results are to be attributed, is Dr. Whately, Archbishop of Dublin. His admirable work on this subject has done much to rescue the science from neglect and misrepresentation; and has given a new life and direction to the study, that must be beneficial. The arrangement of Dr. Whately's *Elements* is perhaps deficient in that lucid order so necessary in such pursuits—especially to those who are only beginning their logical studies; and in the details and principles of the work the severe critic may perhaps detect some trivial deficiencies and errors. It is a work, however, of unquestioned merit, of which the freest use has been made in the following pages. In this short treatise, the chief aim has been to give a clear and concise view of
the science, and to furnish a convenient Compendium of Logic for Schools and Colleges in India. Whatever, therefore, has appeared valuable in former writers has been without scruple adopted. Much has been accomplished by those who have preceded; but the very appearance of this little work, shews, that, in the estimation of the Compiler at least, something was still needed, to guide the youthful student in his logical pursuits. Whether this has now been supplied, must be left to others to determine.

It is not to be expected, indeed, that this study will soon become popular. Here there is, little to please the taste, fill the imagination, or strike the senses. The beauties of Poetry, the sublime wonders of Astronomy, and the striking experiments of Chemistry, invest these studies with a fascination which few can resist. But Logic treats of what is common and familiar to all. Few have any curiosity to know what it is, or what it proposes to accomplish; while many suppose they are in possession of all its advantages already, without being indebted to its aid. We doubt not, however, but that this study, when better known, and cultivated on right principles, will gradually rise in reputation. To understand the theory of Reasoning, the principles on which it is founded, and the rules to which it has been reduced, is an object worthy the attention of every human being. The advantages to be derived from a study embracing these particulars ought to recommend it as an essential part of a liberal education.
ELEMENTS OF LOGIC.

OF THE OPERATIONS OF THE MIND.

In every process of argumentation there are three operations of the mind called into exercise; Simple Apprehension, Judgment, and Reasoning. By Simple Apprehension we gain our notions or ideas; by Judgment we compare our ideas together, and pronounce on their agreement, or disagreement; by Reasoning we proceed from one decision to another on which it is founded, or from which it may be derived.

To analyze these processes, and investigate their phenomena in so far as they are purely mental exercises, belongs to another department of science. It is only as they are employed in reasoning that they come within the province of Logic. An act of simple apprehension embodied in language is called a term; an act of judgment when expressed, is called a proposition; and an act of reasoning, an argument. Logic is therefore, divided into three parts, sometimes denominated after the three operations of the intellect referred to above. The first treats of Terms, the second of Propositions; the third of Arguments.
PART I.

OF TERMS.

The first part of Logic treats of terms. Terms may be confused, indistinct, and inadequate. Logic endeavours to remove this obscurity, and to give them a clear and determinate meaning, by rules of Distinction, Classification, Division, and Definition. These have been called Logical instruments; it is only to the last two, however, that this title peculiarly belongs.

CHAP. I.

OF DISTINCTION.

Errors in reasoning frequently spring from our not properly distinguishing things that are different. Distinctions, then, if founded in truth, may be of great use in keeping us from mistake, and in assisting us to detect error. Some distinctions are verbal, others are real. As an example of the former the word "cause" may be selected. Properly speaking there is but one cause—the self-originated fountain of all being. The term, however, is frequently applied to animate and inanimate objects, only adding the word "secondary" to qualify the expression. There are also other distinctions in reference to causes. Among
these the most important are, the efficient cause, the material cause, the formal cause, and the final cause. The "efficient cause" is that from which the effect proceeds. The "material cause" is that of which it is produced. The "formal cause" is the manner in which it is accomplished. And the "final cause" is the object intended to be achieved. Verbal distinctions however more properly belong to Grammar than to Logic.

Distinctions that are real are those that retain their signification into whatever language they may be translated. Of these there are many in common use, which, though not exclusively belonging to the science of reasoning, may here be mentioned. A number of the usual divisions of words given in works on Logic, are not so much divisions of the words themselves, as of the manner in which they are employed. This is the case with univocal, equivocal, and analogous terms. They are not distinct classes of nouns, but the same term used in either signification according to the pleasure of the writer. Thus the term "house" may be considered univocal, because it is only applicable in the same sense to one kind of object. But it may be used also so as to give it a different meaning every time it is employed; and then it would properly be called equivocal. When two objects have a certain resemblance or analogy to each other, they are often called by the same name. Thus a "blade of grass," and a "blade of a sword" resemble each other. In this case then the term is called analogous. But all these are not distinctions in the terms themselves, but only in the manner of using them.
Terms in which a real distinction obtains, have been arranged into the following classes.

1. **Singular and Common terms.** A singular term denotes one object considered as an individual existence; as, “Alexander the great,” “the City of Paris,” “this tree,” “that river.” These terms cannot be said affirmatively of any thing but themselves. A common term stands for several individuals called its signifies, and may be affirmed of all comprehended in the class to which it belongs. Thus, “man,” “city,” “tree,” “river,” may be affirmed of any object included in these classes. As, “Pompey and Caesar were men,” “Paris, London, and Calcutta, are cities.” “The Euphrates, the Tigris, the Indus, and the Ganges are rivers.”

2. **Absolute and Relative terms.** An object viewed as a whole without any reference to another with which it may be connected, is denoted by an absolute term; as, “a man,” “a living creature,” “a human being.” A relative term expresses an object considered as a part of a whole, viewed in reference to that complex object. Thus, “Teacher,” “Scholar,” “Master,” “Servant,” are relative terms, because they are each a part of the complex objects, “Teacher-and-scholar,” “Master-and-servant.” When objects are related to each other, and viewed in reference to that relation, they are expressed by Correlative terms. Thus, “Father and Son,” “King and Subject,” “Master and Servant,” are correlative. But “King and Servant,” “Father and Subject” are not correlative
terms, although the *servant* may be the *subject* of the
king, and the *subject* may be the *son* of the father.

3. *Opposite and Compatible terms.* When there
are two views of a single object which cannot be taken
at the same time, this is expressed by *opposite*
terms. When both views may be taken of the same
object at the same time, this is denoted by *compatible*
or consistent terms. Thus "hard and soft," "cold and
hot," "black and white," are *opposite* terms. But
"hard and cold," "white and soft," are *compatible*
terms.

4. *Abstract and Concrete terms.* An *abstract* term
expresses an object without any reference to the sub-
ject in which it exists. As, "wisdom," "folly," "po-
verty," "riches." When an idea is expressed in con-
junction with the object to which it refers, it is express-
ed by a *concrete* term. As, "wise," "foolish," "poor,
"rich."

5. *Positive and Negative terms.* A *positive* term
expresses a certain view of a subject actually taken of
it; as, "a man *speaking,*" "a bird *flying.*" When this
view cannot be taken of the object, it is denoted by a
negative term; as, "dumb," "motionless." When a
certain view of a subject *might* be taken of it, but
is not, this is expressed by a *privative* term; as, "a
man silent," "a person not walking."

6. *Definite and Indefinite terms.* A primative or
negative term, since it does not define and mark out
an object, is called an *indefinite* term. But the posi-
tive because, it does define and limit our view of an
object, is called *definite*. Thus, "a living creature," "a lion," "a lion roaring," are definite terms, because they mark out a particular class of beings, or a particular individual, or a single individual in a particular mode. But, "not a living creature," "not a lion," are *indefinite*, because they do not restrict our view to any class or individual. They merely exclude one, and leave all the rest undetermined.

7. *Contradictory and contrary terms.* When two terms are opposed to each other, the one having, and the other wanting, the negative practice *not*, either expressed or understood, these are called *contradictory* terms. Thus, "a living creature," and "not a living creature," "a lion," and "not a lion." It is impossible that any thing can be both these at the same time, and it is impossible also but that every thing must either be one of them or the other. Nothing can at the same time be both "a living creature," and "not a living creature," but every thing that is conceivable must be one of them. In this way a perfect division of any subject may be made. But *contrary* terms are merely those that are the most opposite of that class to which they belong. Thus "rich" and "poor," are *contrary* terms. They cannot be applied to the same object at the same time; but there are many persons to whom *neither* are applicable.
CHAP. II.

OF CLASSIFICATION.

Under this head the ancient Logic treated of the ten Categories, and the five Predicables. The categories were given as a complete enumeration of everything that can be expressed without composition and structure. They were intended to include all the possible objects of thought, knowledge, or discourse, and were supposed to be of special use in assisting the disputant to find middle terms. A regular distribution of things under proper heads is a great help both to the memory and the judgment; and the invention of a classification of this kind, which the speculative part of mankind acquiesced in for two thousand years, is a proof no doubt of superiority of genius which is seldom to be found. But that which was here attempted exceeded the reach of human power. The ten categories have therefore long been abandoned as of no practical utility. It will be sufficient, then, merely to mention them. They were Substantia, Quantitas, Qualitas, Relatio, Actio, and Passio;—these were considered of special use: the other four, Ubi, Quando, Situs, and Habitus, were reckoned of less importance. We may remark, however, that no general classification of the objects of thought, that has been substituted in the place of the ten categories, has, to the present day, been found more perfect.

The Predicables, however, have maintained their
authority to the present time. Of these therefore a more extended account is necessary.

A term which can be affirmed of several others has been called a *Predicable*. It must be evident that whatever is affirmatively predicated of another must express some relation that it bears to that object. It must point out, either its whole essence, which is called its *species*; or the material part of it, which is called its *genus*; or its distinguishing characteristic, which is called its *differentia*; or something joined to its essence, either separable or inseparable, which is called its *property* or *accident*. This has given rise to the doctrine of the five *universals*, or *predicables*; to wit, *Genus, Species, Differentia, Proprum, and Accidens*.

The *Genus* is the highest or most universal class, which includes two or more species. Thus, "animal" is a genus including "man," "beast," and all classes of living creatures.

The *Species* is a class comprehended under a higher class, and is composed of individuals. Thus, "Peter," "John," "Thomas," and all the individuals of the human race, are included in the species "man."

The *Differentia* is that which distinguishes one species from another; or it is an essential attribute which belongs to the species, but not to the genus. Thus "reason" is the differentia of man, because it distinguishes the species "man," from the species "brute:" or because it is a characteristic that belongs to the species "man," but not to the genus "animal."
The *Proprium* is some property peculiar to a species, belonging to the whole of it, to it alone, and to it always, yet not constituting its distinguishing property. Thus "risibility" is the proprium of man; it belongs to the whole species, to *this* species only, and to it at all times; yet it does not constitute its distinguishing property, for it is less essential to man than rationality. Some of these properties belong to the *whole* of a species, but are not *peculiar* to it; as, "to breathe air," belongs to *every* man, but not to man *alone*: other properties are *peculiar* to a species, but do not belong to the *whole* of it; thus, man *alone* can be a poet, but it is not *every* man that is so. These properties, however, are more properly reckoned *accidents*.

The *Accidens* is an attribute not essential to the species, which may or may not be absent without destroying its nature. Thus, "hot" or "cold;" "11ch" or "poor;" "a native of India;" "a native of London," are all accidents; because whether absent or present the essence of the species remains the same. Those accidents that can be separated from the individual are called *separable* accidents; those which cannot be separated are called *inseparable*. A man that is poor may become rich; "poverty," therefore, is a *separable* accident. He that is a native of England can never be otherwise in that respect; "a native of England," then, is an *inseparable* accident.
The above may be illustrated by the following Table.

Every predicative expresses either

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<th>The whole essence of its subject <em>viz.</em> Species</th>
<th>or part of its essence</th>
<th>or something joined to its essence</th>
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<td>Genus-Difference</td>
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<td>Property</td>
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<td>universal and peculiar</td>
<td>but not peculiar</td>
<td>Accident</td>
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<td>universal</td>
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The genus and difference make up the Species, thus, "rational," and "animal," constitute "man." When therefore the genus is spoken of as a *whole*, and said to *contain* the species, this is only a metaphorical expression, signifying that it has a more extensive signification; thus, "man" is a more full expression than "animal:" but "animal" is more *extensive* than man, because it can be predicated of several other species. In the same way the name of a *species* is more *extensive*, but less *full*, than that of an *individual*.

A genus may be either a *sumnum*, or a *subaltern* genus. It is the former when it has no genus above it, or when it cannot be considered a species of any higher class. Thus, "substance" is a *sumnum genus*, because it is not a species of any higher genus.
subaltern genus is both a species of a higher genus, and a genus in reference to the species into which it may be divided. Thus, "animal" is a subaltern genus, because it is included under the higher genus "substance;" and at the same time it is the genus of "man," "bird," and every species of living creatures. That genus which is the nearest that can be predicated of a species is called its proximum genus; thus, "juice," is the proximum genus of wine; "liquid," is its more remote genus. A species which has under it only individuals, and which cannot be considered a genus, because including no species, is called an infima species.

Of these predicables some are more universal than others; and this gave rise to what is taught in Logic respecting the extension and the comprehension of a term. By the former is meant the number of individuals of which the term may be predicated. The latter signifies all the simple ideas which united constitute what the term denotes. Thus, the term "bird" is applicable to every individual of all the various species of the feathered tribe. This, then, is the extension of the term. On the other hand the same term "bird" may be considered as including the idea of life, sensation, spontaneous motion, the possession of wings, a covering of feathers, and all the properties belonging to this class of living creatures. These ideas united give us the comprehension of the term. By attending to this distinction the logical rule will appear evident, that the greater the extension, the less the comprehen-
sion of a term; and the greater the comprehension, the less the extension. The term "animal" has a greater extension than "man," because it can be predicated of "man," "beast," "bird," and all living creatures. But "man" is more comprehensive than "animal," because it includes not only all that the term animal does, but all that peculiarly belongs to the rational animal man. In the same way the name of an individual is more comprehensive than the name of a species, but its extension is evidently less. "Pompey" can be predicated only of an individual, but it includes, besides all that belongs to the species, every thing that is peculiar to that individual.

CHAP. III.

OF DIVISION.

Nothing is more fitted to give us clear, distinct, and accurate ideas of a complex object, than to reduce it to its component parts. For this purpose division was invented. In its proper acceptation it means actually to separate the parts of which any thing is composed; and each of these parts thus physically divided must of course be absolutely less than the whole. This is not the case, however, in a logical division. Division, as employed in Logic, is a metaphorical expression, signifying the separate enumeration of several things expressed by one common term. The several parts
which compose the whole are here only enumerated; and each of the members comprehends more than the whole. A tree may be divided physically into root, trunk, branches, and leaves; and each of these members must be less than the whole tree. But if we divide logically a genus into its species, each of these species comprehends more than the genus; for it expresses not only the general notion of the genus, but its own peculiar characteristic which makes it a species. Thus, if the genus "tree" be divided logically into several species, as oak, elm, ash, and so on: the word oak, or elm, or ash, comprehends not only the general notion of a tree, but also that difference which belongs to that particular kind of tree. Care, therefore, must be taken not to confound a physical with a logical division, otherwise the rules that have been laid down for a good division will be misapprehended.

Logical division is the distribution of a whole into its several parts. If it be a genus it must be distributed into its species; if it be a species, into its individuals; if it is an individual, it is incapable of logical division, because it is strictly speaking only one object. The several partitions into which a whole is distributed are called the parts or members of the division. If our distribution be happy, it will greatly contribute to our gaining a complete knowledge of the thing divided; and for this purpose the following rules for division have been laid down.
1. Each of the parts, or any number of them short of all, must have a narrower signification than the thing divided. Thus, "mineral" may be divided into "stones," "metals," and so on; and "metals" again into "gold," "silver," "iron," because each of these, and any of them short of all, contain less than the thing divided.

2. All the parts together must contain neither more nor less than the whole. Thus, "medicine" has been divided into the "art of preserving health," and the "art of restoring health;" because there is no other kind of medicine besides these two. Everything that can be even conceived of must either be "corporeal," or "incorporeal." In this way a complete two-fold division may be made of any subject so as to exhaust it, that is, to make the division adequate to the subject divided. To divide "metals" merely into "gold and silver," would be an imperfect division, because these parts together do not make up the whole.

3. The parts must be opposed, not contained in each other. If "book" were divided into "poetical, historical, folio, quarto, French, Latin," the parts would be contained in each other; because a poetical book might be a folio; a quarto, French; and an historical book, Latin. Men may be divided into "rich and poor," or "young and old," or "learned and illiterate," because these classes are opposed to each other.

4. The natural order should be preserved in arranging the several members. Thus, "animal" may
be divided into "man," "beast," "bird," "fish," "insect;" but were we to reverse, or disarrange this order, our enumeration would be faulty, because a subject should be distributed into its proximate and nearest members.

5. *When an object can be divided in several ways, we should select the one most suitable for our purpose.* Thus, "mankind" may be divided politically according to their civil character, as Lawyer, Merchant, Tradesman; or physiologically, as Negro, Mulatto, White-man; or geographically, as European, African, American; or theologically, as Christian or Pagan, Heathen or Mahometan. We must therefore determine at the commencement which principle of division will most suit our purpose, and adopt it in preference to all others.

**CHAP. IV.**

**OF DEFINITION.**

Definition literally signifies, "laying down a boundary." In Logic it is used in a metaphorical sense to signify "an expression which explains any term, so as to separate it from everything else." It must be particularly remarked, however, that the object of a logical definition is not to give an adequate conception of the nature and essence of the object defined. This is in most cases impossible, from the limited nature of
our present powers. Its chief use is to see that a term shall not be used in different senses in any process of reasoning. Of course if there be no ambiguity in a term, there is no need to define it; but in those cases where definition is needed, the greatest assistance may be obtained from the rules which are laid down on this subject.

In a logical definition every thing essential to the thing defined must be contained. This includes, first, what is common to it with other things of the same kind; and secondly, that which distinguishes it from other things of the same kind:—in other words, its genus and its differentia. There are various kinds of definition, however, which must be clearly distinguished, otherwise we shall fall into confusion and error. Of these the following may be mentioned.

1. A Nominal Definition. This has been called the definition of the name, and is merely the explaining the meaning of a term that is not clearly understood, by giving an equivalent expression which happens to be better known. Thus, “Geography” may be defined, “a description of the surface of the earth;” “decalogue,” the “ten commandments;” a “triangle,” “that which has three angles.” These definitions are usually found in dictionaries.

2. An Essential Definition. This has been called by logicians the definition of the thing, and explains an object by pointing out its essential attributes. Thus, if called to define what the mathematicians call a square, we should say, “a square is a figure which
has four equal sides, and four right angles." A circle, we should say, "is a plane figure contained by one line, which is called the circumference, and is such that all straight lines drawn from a certain point within the figure to the circumference are equal to one another." This kind of definition belongs to the science that is employed about the particular object defined; and it is to be remarked, that in mathematics the Nominal and Essential Definition exactly coincide—the meaning of the word, and the nature of the thing, are exactly the same. This is the case also in the definition of most scientific terms.

3. A Logical Definition. This kind of definition consists of two parts; the first part points out those objects with which the thing to be defined essentially agrees; the second part points out those qualities which are peculiar to itself, and which distinguish it from all others:—in other words, a logical definition consists of the genus and differentia of the object defined. Thus, Logic may be defined "the science of reasoning." The first part of this logical definition points out the genus to which Logic belongs—it is a science; the second expresses its specific difference, or that which distinguishes it from all the other species included in that genus—it is employed about reasoning. "Wine is the juice of the grape;" "man is a rational animal;" "a flower is an organized being destitute of sensation;" in all these cases the object is logically defined by specifying the genus and the differentia.
4. An Accidental Definition. By this is meant a description, or as it is sometimes called, an imperfect definition, which is merely an enumeration of the accidental properties belonging to the object which we wish to define. A "landscape" may be described as containing corn-fields and meadows, hills and dales, running streams and lakes, villages, houses, and animals, all situated in such a manner as to distinguish it from other landscapes. In a description, however, it is only the non-essential attributes of the object that you enumerate. In the above example none of the particulars mentioned are essential to the existence of the landscape. They are necessary to distinguish it from other objects of the same kind; yet it would continue to be a landscape were any of them taken away. They are mere accidental properties, which may, or may not, belong to it. In this way alone individuals can be defined. We must enumerate the accidents which distinguish one individual from another, and add the species, and then they are accurately described; thus, "Philip was a man of Macedon, who subdued Greece." This kind of imperfect definition is resorted to when we cannot point out the essential difference of that which we wish to define. We collect its chief properties, and by enumerating them endeavour to communicate such an idea of it as may serve to distinguish it from all other objects. Thus "silver" may be described as "white, hard, ductile, fusible, and next in weight to gold." In describing a species in this manner, nothing that is merely an accident
must be mentioned, because if it does not belong to the whole of the species, it cannot clearly distinguish it from others. But in describing an individual, the accidents only can be enumerated, because it is by them that one individual differs from another. It must be observed, however, that the differentia is not always one quality, but is frequently made up of many, no one of which alone is sufficient to distinguish the object from all others. In this case a logical definition may be given which may seem to differ very little from a mere description. Thus, if it is said, "silver is white, hard, ductile, fusible, and next in weight to gold," this is merely a description; but if we say, "silver is a metal, white, hard, ductile," and so on, this is a logical definition; for we have here the genus "metal," and the differentia, made up of the several qualities enumerated.

The principal rules for definition are the following:

1. A definition must be adequate. By this is meant that it must neither be too extensive, nor too narrow, for the thing defined. Thus, if "insect" were defined, "an animal that flies," this would in one sense be too extensive, because it is applicable to birds as well as to insects; in another sense it would be too narrow, because there are many insects that only creep. But "wine" may be defined, "the juice of the grape;" because this can be affirmed of no other substance, and yet it applies to all proper kinds of wine. When a definition is thus adequate, it is reciprocal with the thing defined, and they may be mutually affirmed of
or substituted for each other. Thus we may say, "the juice of the grape is wine," or "wine is the juice of the grape."

2. A definition must be clearer than the thing defined. It must be expressed in language as plain and simple as the subject will allow. It may happen indeed that the term defined is to some persons more familiar than the definition given; but nothing doubtful or difficult should be admitted into a definition, so that it may be generally and easily understood.

3. It should be expressed in as few appropriate words as possible. Too great brevity is not to be sought after, because in this case the subject may not be pointed out with sufficient definiteness; on the other hand prolixity must be guarded against, as this would confuse the mind. Doubtful and equivocal, obscure and synonymous terms ought also, for the same reason, to be avoided. In a perfect definition we should not indulge in figurative and metaphorical language, as this might lead to indistinctness and ambiguity. But in an imperfect definition, or description, figurative language may be very properly introduced.
ELEMENTS OF LOGIC.

PART II.

OF JUDGMENT.

The second mental operation employed in reasoning is Judgment, which is the comparing in the mind any two ideas, whether complex or incomplex, and pronouncing whether they agree or disagree. Judgment is that faculty of the mind by which we carry on this process; and when the decision which is thus formed is expressed in words it is called an enunciation, or a proposition. Under this head, then, Logic treats of the doctrine of propositions.

CHAP. I.

OF PROPOSITIONS.

A Proposition defined logically is "a sentence indicative," that is, a sentence either affirming or denying; "sentence" is the genus, and "indicative" the difference. This definition expresses the two parts of a
proposition which cannot be separated from each other except in the mind. But it may be perhaps more clearly pointed out by mentioning its real parts which are actually separable. A proposition consists, then, of a subject, a predicate, and a copula. The subject is that respecting which any thing is affirmed or denied; the predicate is that which is affirmed or denied of the subject; and the copula is some part of the substantive verb "to be," expressed or understood, connecting the subject and the predicate together. Thus, "life is short," is a proposition, in which, "life" is the subject; "short," the predicate; and "is," the copula. It is not necessary, however, that each of these terms should be separately expressed; the same proposition may, in some languages, be expressed by one, two, or three terms; thus, "vivo," "Ego vivo," or "Ego sum vivens," all express the same proposition. "The mind thinks," is a complete proposition, although the copula be not expressed, for it is equivalent to "the mind is thinking:" "I live," signifies, "I am living:" "Troy was," means, "Troy was existing:" "I am," that is, "I am living." In all these cases the subject, predicate, and copula, are contained in the proposition, and are easily found out by expressing the proposition at length. Generally speaking, when the proposition is fully expressed, the subject stands first, and the predicate last in a sentence; but this is not necessary; nor are they to be distinguished from each other by the place they occupy in the sentence, but by carefully marking the import of
the expressions, and the design of the speaker. Thus, in the proposition, "Great is Diana of the Ephesians," the predicate "Great" stands first, and the subject "Diana of the Ephesians," comes last in the sentence. "It is proper to study Logic;" here the subject stands last, and the predicate first, as may be seen by expressing the proposition in the more usual way; thus, "to study Logic is proper." The properties of these propositions merit particular attention. We shall first consider the classes into which they have been arranged, and then notice their important affections or relations.

CHAP II.

OF THE CLASSES OF PROPOSITIONS.

1. Propositions are either categorical or hypothetical. A proposition may be expressed either absolutely, or under a hypothesis; and on this distinction the above division is founded. Thus, "Cæsar deserved death;" "Crassus was rich;" "Solomon was wise;" all these are categorical propositions, because they express the truth they contain in an absolute, unconditional form. But, "If Cæsar was a tyrant, he deserved death;" "If Crassus was rich, his temptations to pride were numerous;" "If Solomon was wise, his instructions should be regarded:" these are hypothetical propositions, because they are expressed in a conditional form, or in a hypothesis.
2. Propositions are either *pure* or *modal*. When a proposition asserts simply or purely that the subject does or does not agree with the predicate, it is called a *pure* proposition. But when it includes also the *mode* or manner in which the predicate is connected with the subject, it is called a *modal* proposition. Thus, "Brutus killed Caesar," is a pure proposition; but, "Brutus killed Cæsar *justly,*" is modal. "Intemperance will induce disease," is pure; "intemperance will probably induce disease," is modal.

3. With regard to their *matter*, propositions must either be *true* or *false*. When the terms in which it is expressed agree with the thing signified, the proposition is *true*; when they do not agree, it is *false*. Hence a proposition must not be *ambiguous*, for in that case it has more than one meaning, and is in reality not one proposition but several; nor must it be *imperfect* or *ungrammatical*, for such an expression has no meaning at all. When a proposition is properly expressed, it is impossible it can be both true and false at the same time, and in the same sense; yet two propositions, though both true, may seem to contradict one another, when used in different senses, or in different respects. Thus, *man* may be said to be both "mortal" and "immortal;" applying the one to his body, the other to his soul. Many seeming contradictions may be in this way explained.

4. With regard to their *quality*, propositions must either be *affirmative* or *negative*. They are *affirmative* when the predicate is said to agree with the subject;
thus, "man is an animal." They are negative when the predicate and subject do not agree; thus, "man is not a tree." An affirmative proposition may be known also by its copula being affirmative; thus, "man is mortal;" "not to advance is to go back:" a negative proposition on the contrary is one whose copula is negative; as, "man is not perfect," "no man is innocent."

5. In respect of quantity, propositions are universal or particular. When the predicate is affirmed or denied of the whole of the subject, the proposition is universal: when it is affirmed or denied only of a part of it, it is particular; thus, "all circles are figures;" Ireland is an island;" "no tyrant is happy," are universal propositions; and their subjects are said to be distributed, that is, each of them is understood to stand for the whole of its significates: but, "some figures are squares;" "some islands are fertile;" "all men are not just;" are particular propositions; their subjects are not distributed, being understood to stand only for a part of their significates. Universal propositions are generally denoted by the words, "all," "none," "every;" and particular propositions by "some," "many," "a few," and so on.

6. When the subject of a proposition is a common term, without any of the universal, or particular signs expressed with it, the proposition is called indefinite; and the quantity of the proposition must be ascertained by the matter of it, or in other words, by the nature of the connection between the extremes.
This may be either necessary, or impossible, or contingent. If the matter of an indefinite proposition be necessary or impossible, the proposition is understood as a universal; thus, "birds have wings," that is, "all birds have wings:" in this case the connection between the extremes is necessary. "Birds are not quadrupeds:" in this instance the connection is impossible, and therefore the subject is distributed; that is, it asserts that "no bird is a quadruped." In contingent matter, where the terms may or may not agree, an indefinite proposition is understood as a particular; thus, "food is necessary to life," that is, some food; "birds sing," that is, some birds sing; "animals are not quadrupeds," that is, all animals are not, or some are not quadrupeds.

7. Another class of propositions are those denominated singular propositions. Those whose subject is either a proper name, or a common term with a singular sign, are thus called; and they are considered universals, because in them we speak of the whole of the subject. When we say, "Plato was a philosopher," we mean the whole of Plato. If any qualifying term is inserted to indicate that the whole of the subject is not to be included, the proposition may be viewed as particular; thus, "this man is not wholly a philosopher;" "Caesar was not altogether a tyrant;" "I shall not wholly die." Singular propositions, however, are most naturally accounted universals:—it is only, when modified as above that they can be contradicted.
Of all these divisions the most important are those which class propositions into affirmative or negative, universal or particular; because, considered as to their quality and quantity, every pure categorical proposition must be included in these divisions. Every proposition is either affirmative or negative; and must either be universal or particular; they are therefore ranged under four great classes, viz. Universal Affirmatives, and Universal Negatives; Particular Affirmatives, and Particular Negatives. These are denoted, for the sake of brevity, by the symbols, A, E, I, O: thus, A, denotes a universal affirmative; E, a universal negative; I, a particular affirmative; and O, a particular negative. To aid the memory the following couplet is usually given, embodying the above symbols;

Asserit A, negat E, verum generaliter ambo:
Asserit I, negat O, sed particulariter ambo.

It must be particularly remembered that in every universal proposition, the subject is distributed, that is, is taken in the whole of its extension; but never in a particular proposition. But the distribution, or non-distribution of the predicate, does not depend on the quantity, but on the quality of the proposition. If any part of the predicate agrees with the subject, it must be affirmed of it, and cannot be denied of it. In an affirmative proposition, then, it is sufficient that some part of the predicate agrees with the subject; but in a negative proposition, it is necessary that the whole of
the predicate should disagree with the subject; thus, it is true that “to study Logic is useful,” although the whole of the predicate “useful” does not agree with the subject; for many things are useful besides the study of Logic. On the other hand, “no vice is useful” would be false, if any part of the predicate “useful” agreed with the term vice; that is, if there were any one thing really useful which was a vice. The rules to be observed, then, respecting distribution are these:

1. All universal, but no particular propositions, distribute the subject.

2. All negative, but no affirmative propositions, distribute the predicate.

3. Whatever is universally affirmed or denied respecting any term distributed, may be equally affirmed or denied respecting every thing contained under that term: thus, if any thing is affirmed or denied universally respecting “animal,” it may be equally affirmed or denied of any animal; of “man,” “brute,” “Alexander,” “Bucephalus.” This rule is generally expressed thus, “Dictum de omni et de nullo.”

CHAP. III.

OF THE AFFECTIONS OF PROPOSITIONS.

We now proceed to consider the affections, or relations of propositions, which is that property by which
they undergo various mutual changes. (It must be remembered that a proposition is either universal or particular according to its quantity; and affirmative or negative according to its quality:) and that these are denoted, A, universal affirmative; E, universal negative; I, particular affirmative; and O, particular negative. These four classes may be exemplified, thus:

A, Every vine is a tree.
E, No vine is a tree.
I, Some vine is a tree.
O, Some vine is not a tree.

Any given subject and predicate may thus form four distinct propositions; and these may undergo various changes by which one proposition may be deduced from another. A knowledge of these changes is of considerable importance in all kinds of argumentation. Of these the following are to be noticed; Subalternation, Conversion, and Opposition.

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Section 1.

Of Subalternation.

Subalternation is the deducing a particular proposition from a universal, when they agree in quality; thus,

“All men are mortal;” therefore,

“Some men are mortal.”
Or thus, "No tyrants are happy; therefore,
    "Some tyrants are not happy."

In subalternation the universal proposition is called the subalternans; and the particular, which is deduced from it, is called the subalterna. In this case the propositions differ in quantity alone; and the maxims laid down in reference to propositions affected in this manner, are;

1. That the truth of the particular proposition follows from the truth of the universal.
2. The falsity of the universal from the falsity of the particular.
3. Whether universal or particular, they may be sometimes both true, and sometimes both false.

Section 2.

Of Conversion.

Conversion of propositions is the transposing of their terms, so that the subject is made the predicate, and the predicate the subject: thus,

"Samson was the strongest man;" therefore,
"The strongest man was Samson."

It is to be remembered that no conversion is used for any logical purpose unless it be illative; that is, except the truth of the one proposition is implied in the truth of the other; or as it is expressed, the truth
of the Converse is implied in the truth of the Exposita. Thus,

"No virtuous man is a rebel; therefore,
"No rebel is a virtuous man."

"Some boasters are cowards; therefore,
"Some cowards are boasters."

No conversion is allowed but that which is thus ulla
tive; for in that case a term would be used universa-
ly in the one case, which was used only partially in the
er
er. There are some propositions which distribute
both terms; these, therefore, can easily be converted,
while they continue to preserve both their quantity
and their quality. This cannot, however, be done in
all cases: conversion is therefore modified so as to be
applicable to these cases; and the names given to these
various kinds of conversion, are, Simple Conversion;
Conversion per accidens; and Contraposition.

1. Simple Conversion takes place when the quanti-
ty and quality of the propositions converted remain
unchanged: thus,

"No man is a quadruped;" therefore,
"No quadruped is a man."

"Some tree is a vine;" therefore,
"Some vine is a tree."

In these cases the subject and predicate merely
change their places; and in this way E, and I, that
is, all universal negatives, and particular affirmatives,
may be converted with preservation of truth.
2. *Conversion per accidens*. This takes place when the *quality* of a proposition is preserved, and the *quantity* is changed. In some propositions the predicate is not distributed; in these cases, therefore, their simple conversion would not be illative, because there would be a term distributed in the *converse* which was not distributed in the *exposita*. Thus we cannot infer, because "all men are animals," that "all animals are men," because the term "animals," is distributed in the last instance, but not in the former. We must therefore limit its *quantity* from *universal* to *particular*, and then the conversion will be illative. Thus,

"All men are animals;" therefore,

"Some animals are men."

This is sometimes called conversion by *limitation*; but it is generally known as *Conversion per accidens*; and in this way A, and E, that is, *universal affirmatives*, and *universal negatives*, may be converted.

3. *Conversion by Contraposition*. This takes place when the term, that is, the *contradictory of the predicate*, is put for the *subject*, and the *quality* of the proposition is changed. In particular negatives, whether the quantity be changed or not, there will still be a term distributed in the *converse* which was not distributed before: the *quality* therefore must be changed by considering the negative as attached to the *predicate*, instead of being attached to the *copula*, and then the proposition may be regarded as a *particular affirmative*: for example,
"Some men are not wise."

This is a particular negative, the predicate of which is "wise"; take, then, the contradictory of this predicate, "not wise," and make it the subject of the proposition, and it will become a particular affirmative; thus,

"Some who are not wise are men."

This may be named conversion by negation; it is however generally called Conversion by Contraposition. In this way O, that is, particular negatives may be converted. But A, that is, universal affirmatives, may also be converted by this method; thus,

"Every animal is sentient;" therefore,
"What is insentient is not an animal."

In these three ways every proposition may be illatively converted; and to aid the memory, all these rules of conversion have been laid down in the following lines;

Simpliciter feci, convertitur eva, per accid.;
Asto per contra, sic fit conversio tota.

The two vowels in feci represent E, and I, which are converted simply; the two vowels in eva denote E, and A, which are converted per accidens; and the two vowels in asto, stand for A, and O, which are converted by contraposition.
SECTION 3.

Of Opposition.

Another affection of propositions is called Opposition. This takes place when two propositions, having the same subject and predicate, differ in quantity, or quality, or both. With any given subject and predicate four distinct propositions may be made, any two of which may be said to be opposed; but there are only three kinds of opposition properly so called; Contradictory, Contrary, and Subcontrary.

1. Contradictory Opposition takes place between two propositions when the one is universal, and the other particular; the one affirmative, and the other negative; thus,

A, "Every man is an animal;"
O, "Some man is not an animal." Or,

E, "No vine is a tree;"
I, "Some vine is a tree."

In this kind of opposition we infer from the truth of the one, the falsity of the other: for they can never be both true, or both false, at the same time.

2. Contrary Opposition takes place between two universal propositions, of which the one is affirmative, and the other negative; thus,

A, "Every man is wise;"
E, "No man is wise."
In this kind of opposition the propositions may be both false at the same time, but they cannot both be true.

3. *Subcontrary Opposition takes place between two particular propositions, of which the one is affirmative, and the other negative; thus,*

I, "Some horses are swift;"
O, "Some horses are not swift."

In this kind of opposition both propositions may be true at the same time, but they cannot both be false.

If the quantity and quality of a proposition be known, it is evident that its truth or falsity must depend on its matter. The following rules have therefore been laid down respecting the matter of propositions, which must be carefully remembered.

1. In necessary matter all affirmatives are true, and negatives are false. Thus, "all islands," or "some islands, are surrounded by water," must be true; because the matter is necessary; and to say, "no island is surrounded with water," or "some islands are not surrounded by water," would be false, for the same reason.

2. In impossible matter all negatives are true, and affirmatives false. Thus, "all circles," or "some circles are squares," is false, because the matter of these propositions is impossible; but, "all circles," "or some circles are not squares," is true, for the same reason.

3. In contingent matter all universals are false,
and particulars true. Thus, "some islands are fertile," or, "some horses are not swift," are both true, because they are particular propositions, and the matter is contingent; but, "all islands are fertile," or, "all horses are not swift," are both false, because they are universals, and the matter contingent. Hence in contingent matter, contradictories will always be one true, and the other false; contraries, both false, but never both true; and subcontraries, both true, but never both false.

All the maxims relative to Opposition have been arranged into the following scheme, in which the four propositions are expressed by their symbols; the different kinds of matter by the contractions, necess., imposs., conting.; and the truth or falsity of each proposition in each kind of matter expressed at length.
ELEMENTS OF LOGIC.

PART III.

OF REASONING.

The third operation of the mind employed in argumentation is Reasoning, which is that process by which we infer one thing from another. It often happens that we cannot at once perceive the relation which subsists between our ideas; we therefore compare them with some common medium, and from their agreement or disagreement with this medium, we perceive whether or not they agree with each other. In this way we deduce one truth from another; and when this process is regularly carried on, it is called discourse, or reasoning.

It is to be particularly kept in mind, that in every instance in which we reason, whether it be to refute an adversary, or to convey instruction, or to satisfy our own minds on any particular subject, a certain process takes place in the mind, which is, when correctly carried on, in all cases, and on all subjects, one and the same. Every one may not be conscious of this process, nor be able to explain the principles on which it proceeds; but this is not to be wondered at. It
is the case with all our mental operations, and with every process that has been reduced to regular system. The practice must have preceded the theory—just as men must have been able to speak grammatically before Language was reduced to a system of Grammar. It is indeed customary to speak of mathematical reasoning, and metaphysical reasoning, and political reasoning, and theological reasoning, as if they were essentially different. But these are not different kinds of reasoning, founded on different principles. The process is the same in all these instances; and it is no more affected by the nature of the subject to which it is applied, than is an arithmetical process affected by the nature of the objects that are the subject of calculation.

If then the process of reasoning is in all cases the same, it must be an interesting employment to analyse this operation, and become acquainted with the principle on which it rests, and the laws by which it is regulated; and since an unsound and inconclusive mode of reasoning is often employed, it must be of great service to be acquainted with some general rules applicable to all cases, which may be employed either to convince, or to confute; and by which we may judge of the validity of any reasoning process. This is what Logic furnishes. Its principal object is to guard us against inconclusive reasoning. The third part of Logic, therefore, treats of arguments, which is reasoning expressed in words. When an argument is stated at full length, and in its
regular form, it is called a syllogism; the nature and properties of the Syllogism must therefore now be considered.

CHAP. I.

OF THE SYLLOGISM.

Every Argument consists of two parts; that which is proved, and that by means of which the proof is given. The former, before it is proved, is called the question; but after it is proved, it is called the conclusion. The means of proof, if stated last, is called the reason; but if stated first, it is called the premises. Every conclusion is deduced from two premises, either expressed or understood, which are granted to be true, and from which it must be admitted that the conclusion necessarily results or follows. A syllogism has therefore been defined, "an argument so expressed, that the conclusiveness of it is manifest, from the mere force of the expressions, without considering the meaning of the terms in which it is expressed." Thus, in the syllogism, "Y is X; Z is Y; therefore Z is X;" the conclusion is inevitable, whatever the terms X, Y, Z, may be considered respectively to indicate.

The order generally observed in stating a syllogism, is first to lay down the premises, and then to draw the conclusion; thus,
"All tyrants deserve death:
Caesar was a tyrant; therefore,
Caesar deserved death."

Every syllogism has only three terms; the middle term, and the two terms found in the conclusion. The middle term is the medium of comparison by which each of the terms is separately compared, in order to ascertain their agreement or disagreement with each other. The other two terms are called the extremes, and are always found in the conclusion, in the following order:

1. The subject of the conclusion is called the minor term; and,

2. The predicate of the conclusion is called the major term, because it has the greater extension.

Every syllogism has only three propositions;

1. The proposition in which the major term is compared with the middle term, is called the major proposition.

2. The proposition in which the minor term is compared with the middle term, is called the minor proposition.

3. The proposition in which the minor term is compared with the major term, is called the conclusion, because inferred from them.

These several parts of a syllogism will be best illustrated by a example; take therefore the following:

"Every reasonable being is accountable:
Man is a reasonable being; therefore,
Man is accountable."
This syllogism consists of three propositions; the first and the second are the premises; the third is the conclusion. "Man" is the subject of the conclusion, and is therefore the minor term; "accountable" is the predicate of the conclusion, and is therefore the major term; and "reasonable being" is the middle term, because it is with this that the other two terms are compared. In the first proposition the major term is compared with the middle term; it is therefore the major proposition. In the second proposition the minor term is compared with the middle term; it is therefore the minor proposition.

CHAP. II.

OF THE LAWS OF SYLLOGISMS.

The axiom on which the validity of the Syllogism depends, is called "dictum de omni et nullo;" that is, "whatever is predicated of a term distributed, whether affirmatively or negatively, may be predicated in like manner of every thing contained under that term." Thus, in the above examples, X is predicated of Y taken in the whole of it extension; and Z is contained under Y; therefore Z is predicated of X: so, "to deserve death," is predicated of "tyrants" distributed; "Caesar" is contained in this number; therefore to "deserve death," is predicated of him. This axiom may be ultimately applied to all argu-
ments, and it is by their conformity to this rule that their validity must be ascertained. It cannot, however, be applied immediately even to all pure categorical syllogisms, except they be reduced to a particular form. To avoid the tediousness of doing this, two other axioms are commonly applied to practice, on which depends the validity of affirmative and negative conclusions. These are,

First, "If two terms agree with one and the same third, they agree with each other." On this canon rests the validity of affirmative conclusions.

Second, "If one term agrees, and another disagrees, with one and the same third, they disagree with each other." On this rests the validity of negative conclusions.

No categorical syllogism can be faulty which does not violate one of these canons; and none can be correct that does. Hence on these axioms are built all the general rules which are given below, and which are to be observed in order that we may ascertain whether syllogisms are valid arguments or not.

The general rules laid down for the construction of syllogisms are the following:

1. The middle term must not be taken twice particularly, but must be distributed at least once in the premises. If the middle term be not distributed it stands only for a part of its significates; hence it may happen that one of the extremes may be compared with one part of it, and the other compared with another. In this case there are therefore two middle terms, and
the extremes not being compared with the same, cannot be conclusively compared with each other. Thus.

"Some men are wise;
Some men are ignorant; therefore,
Some ignorant men are wise."

In this case the middle term "men" being taken particularly both in the major and minor proposition, it is not the same persons that are spoken of in these two propositions. There are therefore in fact two middle terms, or four terms in the syllogism; it is not therefore a valid argument. Again,

"White is a colour;
Black is a colour; therefore,
Black is white."

Here the middle term "colour" is not distributed, and the terms of the conclusion are compared, one with one part of it, and the other with another: And hence not being compared with the same, they cannot be conclusively compared with each other. Again,

"All vegetables grow;
An animal grows; therefore,
An animal is a vegetable."

It may be remarked also that the middle term must not be an ambiguous term used in different senses, for in this case there will be two middle terms in sense, though only one in sound: for example,

"Light is contrary to darkness:
Feathers are light; therefore,
Feathers are contrary to darkness."
In every case, then, the middle term must be distributed at least once in the premises, by being either the subject of a universal, or the predicate of a negative proposition: and if the middle term be distributed once, this is sufficient; because if one extreme has been compared to a part of the middle term, and another extreme compared to the whole of it, it is evident they must have been both compared to the same; and consequently they can be conclusively compared to each other.

2. No term must be distributed in the conclusion which was not distributed in one of the premises. Particular propositions are contained in universals, and therefore can be inferred from them; but universals are not contained in particulars; we cannot therefore infer a universal from a particular. But if a term is distributed in the conclusion, which was not distributed in one of the premises, this is to draw a universal from a particular; it is to employ the whole of a term in the conclusion, when you had employed only a part of it in the premises; and thus in reality to introduce a fourth term. When this rule is violated, it is called an illicit process, either of the major or of the minor term: thus,

"All men are animals:
A bird is not a man; therefore,
A bird is not an animal."

Here there is an illicit process of the major term. In the major proposition, "animal" is taken only in a
part of its extension, because it is the predicate of a universal proposition, the predicate of which is never distributed; whereas, in the conclusion, being the subject of a universal proposition, it is distributed.

"All tyrants are cruel:
All tyrants are men; therefore,
All men are cruel."

In this instance there is an illicit process of the minor; because "men," being the predicate of a universal proposition in the minor proposition, is not distributed; whereas in the conclusion, being the subject of a universal proposition, it is distributed.

3. From two negative premises no conclusion can be drawn. In this case the middle term is affirmed to disagree with both extremes; they cannot therefore be compared together; for when two ideas disagree with a third, we cannot infer either that they agree or disagree with each other: thus, if it be affirmed,

"A fish is not a quadruped;"
A bird is not a quadruped;"
nothing is proved, and therefore no conclusion can be drawn from it. But when the negative is a part of the middle term, it must be remembered that, though the proposition may appear to be negative, it is in reality an affirmative, and in that case a conclusion can be justly drawn; thus,

"What has no wings cannot fly:
A dog has no wings; therefore,
A dog cannot fly."
In this instance the middle term, "the-having-no-wings," is predicated of the minor proposition; it is therefore an affirmative, though it may seem to be a negative proposition, and hence the inference can be conclusively drawn.

4. *If one premise be negative, the conclusion will be negative.* In a negative premise the middle term is pronounced to disagree with one of the extremes; and the other premise, which must be affirmative, by the last rule, is pronounced to agree with the other extreme. They therefore disagree with one another; and as in this case they never can agree, the conclusion must be negative.

5. *From two particular premises nothing can be concluded.* If the two premises are affirmative, there will be no universal terms, and hence the middle term will be taken twice particularly, contrary to the first rule.

If the one be negative and the other affirmative, there will be an illicit process; thus,

- Some animals are sagacious;
- Some beasts are not sagacious; therefore,
- Some beasts are not animals."

6. *If one of the premises be particular, the conclusion will be particular.* To infer a universal conclusion would be an illicit process: for if both premises are affirmative, there are three particular terms in the premises, and only one universal, the conclusion must therefore be particular.
If one premise be negative, there are two particular terms in the premises, the *predicate* of the affirmative preposition, and the *subject* of the particular; the predicate of the conclusion will therefore be a universal, and its subject particular, and hence the conclusion itself will be particular. The last two rules are sometimes embodied in this one: "the conclusion follows the weaker part;" because negatives and particulars are considered inferior to affirmatives and universals.

It is to be remarked, that although from two universal premises a universal conclusion may be generally inferred, yet this is not the case always; from such premises, however, a *particular* may always be drawn; for whatever is predicated of all, may always of course be predicated of some. Every syllogism that violates none of these rules, must be considered valid.

**CHAP. III.**

**OF THE FIGURES OF SYLLOGISMS.**

The figure of a syllogism consists in the place which the middle term occupies with respect to the Extremes of the Conclusion. There are only four Figures; and their excellence is to be judged of from the manner in which Aristotle’s *dictum* can be applied to them.
The first Figure, which is by far the most clear and natural of all, is that in which the Middle term is made the Subject of the major premises, and the Predicate of the minor: thus,

"Every virtue is profitable:
Prudence is a virtue; therefore,
Prudence is profitable."

In the second Figure the Middle term is the Predicate of both premises : thus,

"Every virtue is praiseworthy:
Injustice is not praiseworthy; therefore,
Injustice is not a virtue."

In the third Figure the Middle term is the Subject of both premises : thus,

"All flowers are beautiful:
Some flowers are roses; therefore,
Some roses are beautiful."

The last, and the most awkward and unnatural of all the Figures, being the very reverse of the first, is that in which the Middle term is the Predicate of the major premise, and the Subject of the minor: thus,

"Every man is an animal:
Every animal is sentient; therefore,
Something that is sentient is a man."

"All vicious persons are unhappy:
Some unhappy persons are wise; therefore,
Some persons that are wise are vicious."
CHAP. IV.

OF THE MOODS OF SYLLOGISMS.

The mood of a syllogism is the legitimate determination of the three propositions according to their quantity and quality; for example,

"All wicked persons are miserable:
All tyrants are wicked; therefore,
All tyrants are miserable."

This syllogism is in the mood A, A, A, because each of the three propositions is a universal affirmative.

"All gold is precious:
All gold is a mineral; therefore,
Some mineral is precious."

This syllogism is in the mood A, A, I, because the major and the minor propositions are universal affirmatives, and the conclusion is a particular affirmative.

"He that is always in fear is not happy:
Misers are always in fear; therefore,
Misers are not happy."

This syllogism is in the mood E, A, E, because the major proposition, and the conclusion are universal negatives, and the minor a universal affirmative. Thus, when we designate the three propositions of a syllogism, in their order, according to their respective quantity and quality, we are said to determine the mood of that syllogism.
As there are four kinds of propositions, *A, E, I, O*, and three propositions in each syllogism, all the possible ways of combining these four propositions by threes will be sixty-four. Each of the four may be a major premise; each of these four majors may have four different minors; and these sixteen pairs of premises may have each four different conclusions. The statement will therefore stand thus; \(4 \times 4 (= 16) \times 4 = 64\). This is a mere arithmetical calculation of all the moods possible, without any regard to logical rules; but many of these are inadmissible in practice, because they violate the rules formerly laid down for judging of a legitimate syllogism. The mood *E, E, E* must be rejected, because it has negative premises; *I, O, O*, is also inadmissible, because it has particular premises; and so many others, for the same and other faults, must be rejected. Upon examination it has been ascertained that of the sixty-four possible moods there are only ten that can be used in a legitimate syllogism. Of these ten the following enumeration may be useful;

*A, A, A; E, A, E; A, I, I; E, I, O; A, E, E, A, O, O; A, A, I; E, A, O; I, A, I; O, A, O.*

All these moods are not allowable in each of the four Figures mentioned above; as they may violate some of the foregoing rules in one Figure, though not in another. For example, *I, A, I*, is an allowable mood in the third Figure; thus,

$I$, "Some afflictions are salutary:"

*A, All afflictions are unpleasant; therefore,*

$I$, "Some things that are unpleasant are salutary."
But this mood in the first Figure would be inadmissible; thus,

I, "Some herbs are fit for food:
A, Nightshade is an herb; therefore,
I, Some nightshade is fit for food."

In this instance we have an undistributed middle, and therefore the syllogism is not valid.

In the second Figure A, E, E, is valid, thus,

A, "Every virtue is praiseworthy:
E, Injustice is not praiseworthy; therefore,
E, Injustice is not a virtue."

But in the first Figure this mood would have an illicit process of the major; thus,

A, "Every man is an animal:
E, A horse is not a man; therefore,
E, A horse is not an animal."

In the first Figure the mood A, A, A, is a valid argument; thus,

A, "All human beings are entitled to liberty.
A, All slaves are human beings; therefore,
A, All slaves are entitled to liberty."

But in the third Figure this mood would have an illicit process of the minor; thus,

A, "All tyrants are cruel:
A, All tyrants are men; therefore,
A, All men are cruel."

By applying the moods to each Figure, it will be
found that each Figure will admit of only six moods which do not violate the rules against undistributed muddle, and illicit process. Of these twenty-four valid moods some are useless, because they have only a particular conclusion when a universal might have been drawn. For example, \( \text{A, A, I} \), in the first Figure is for this reason useless; thus,

\[ \text{A, "All human beings are entitled to liberty:} \]
\[ \text{A, All slaves are human beings; therefore,} \]
\[ \text{I, Some slaves are entitled to liberty."} \]

Five of the twenty-four moods are for this reason considered unworthy of particular notice. Some of these moods, however, conclude in more figures than one; hence the number of legitimate conclusive moods is increased to nineteen; and to distinguish these Moods, and the Figures in which they are found, names have been devised, and embodied in the following verses, which ought to be committed to memory.

Fig. 1. Barbara, Celarent, Dati, Ferio: dato prima.
Fig. 2. Cesare, Camestres, Festino, Baroco: secundæ.

\[ \{ \text{Tertiae, Darapti, Felapton, vult Datisi,-que} \]
\[ \text{Cum Ferison, Disamis, Bocardo: sed dato quartæ} \]

Fig. 4. Hae Bamarip, Cameres, Dimaris, Feslapo, Fiesison.

In these words the three vowels denote the propositions of which the syllogisms are composed, and indicate their quantity. The consonants, besides other uses, serve to keep in mind the figure of the syllo-
gism. The vowels which occur in the first syllable of each of these names shew the quantity and quality of the major proposition; the vowels of the second syllable shew the quantity and quality of the minor; and the vowels of the third syllable shew the quantity and quality of the conclusion. Thus, if it be said that any syllogism is *Cilarent*, this shews that it is in the second mood of the First Figure; that its major proposition is E, a universal negative; its minor, A, a universal affirmative; and its conclusion, E, a universal negative. By studying these lines carefully, and trying several Syllogisms in different moods, various particulars respecting these Figures will be ascertained, and the reasons for them will be found in the preceding rules. The following may thus be deduced.

1. In the first Figure the major premise must be universal, and the minor affirmative. It is also the peculiar excellence of this Figure that A, E, I, O, that is, all kinds of conclusions can be proved by it: and A, that is all universal affirmatives, can be proved only by this Figure.

2. In the second Figure the major premise must be universal, and one of the premises must be a negative. Hence the second Figure can only prove negative conclusions; because the middle term being the predicate in both premises, it would not be distributed unless one premise were negative; and if one premise be negative the conclusion must be negative also.
3. In the third Figure the minor must be affirmative, and hence the conclusion must always be particular; because as the middle term is the subject of both premises, there would be an illicit process of the minor if a universal conclusion were drawn; since no affirmative proposition distributes the predicate.

4. In the fourth Figure the major term is predicated of the minor, and the minor is predicated of the middle, and the middle is predicated of the major, so that the major appears to be merely predicated of itself. It is therefore an inverted and awkward way of stating an argument, which is seldom or ever used.

One Mood in each Figure may be given as an example, and the student can exercise himself by forming examples of the rest.

First, Barbara; (Bar) “Every X is Y; (ba) every Z is X; therefore (ra) every Z is Y.” Thus, let the major term, represented by X, be, “All wicked men,” the minor term Z, be, “all tyrants;” and the middle term Y, be, “miserable;” you will then have the following syllogism in Barbara of the first Figure; thus,

Bar- “All wicked men are miserable;
ba- All tyrants are wicked men; therefore,
ra. All tyrants are miserable.”

Second, Cesare; (Ce) “No X is Y; (sa) Every Z is Y; therefore (re) no Z is X.” Let the major term X, be, “No tyrant;” and the minor term Z, be, “Every benevolent person;” and the middle term Y, be, “happy;” you will then have the following syllogism in Cesare of the second Figure; thus,
Ce- "No tyrant is happy;  
sa - Every benevolent man is happy; therefore,  
re.  No benevolent man is a tyrant."

Third, Darapti; (Da) "Every Y is X; (rap) every 
Y is Z; therefore (ti) some Z is X." Let the major 
term X, be, "painful;" the minor term, Z, "profitable;" and the middle term Y, "All afflictions;" you 
will then have the following syllogism in Darapti of 
the third Figure; thus,

Da- "All afflictions are painful;  
rap- All afflictions are profitable; therefore,  
ti.  Some things that are profitable are painful."

Fourth, Bamarip; (Ba) "Every X is Y; (mar) 
every Z is Y; therefore (ip) some Z is X." Let the 
major term X, be "All tyrants;" the minor term Z, 
"unhappy;" and the middle term Y, "proud;" you 
will then have the following syllogism in Bamarip of 
the fourth Figure; thus,

Ba- "All tyrants are proud;  
mar- All proud persons are unhappy; therefore,  
ip.  Some persons that are unhappy are tyrants."

CHAP. V.

OF THE REDUCTION OF SYLLOGISMS.

The four Moods in the first Figure, as they are the 
clearest and most natural, are called perfect. The
Moods of the other Figures are called *imperfect*, because Aristotle’s *dictum* cannot be immediately applied to them. But as it is on this dictum that all reasoning ultimately depends, all the Moods of the other three Figures can be brought, in some way or other, into one of the four Moods of the first Figure. When a syllogism is thus operated upon it is said to be reduced from an imperfect to a perfect figure. This has given rise to the Reduction of syllogisms; and any argument that cannot be so reduced as to be stated legitimately according to the first Figure is not valid.

In the reduction of Syllogisms we are not allowed of course to change the terms, or introduce any new proposition. The premises being laid down, and their truth granted, all that is permitted is that we so convert, or transpose, or otherwise operate on these premises, that they may become subject to the laws of the first Figure. This may be done in two ways, either by *Ostensive Reduction*, or by *Reductio ad impossible*.

**Section 1.**

*Ostensive Reduction.*

By Ostensive Reduction we prove in the first Figure, from the premises of the imperfect syllogism originally given, either the very same conclusion, or one that implies it, and from which it may be justly and easily deduced. The truth of any proposition
implies the truth of its illative converse. We are therefore allowed to convert the major or the minor premise, by the methods of Conversion formerly explained; and, if necessary, to transpose the premises after they have thus been converted: in this way the imperfect Mood may be reduced to one of the four Moods of the first Figure. Take the following as examples:

"Every virtue is praiseworthy:
Injustice is not praiseworthy; therefore,
Injustice is not a virtue."

This is a syllogism in Camestres of the second Figure, and it may be reduced to Celarent of the first, by simply converting the minor, and then transposing the premises; thus,

"That which is praiseworthy is not injustice:
Every virtue is praiseworthy; therefore,
No injustice is a virtue."

Again:

"All tyrants are cruel:
All tyrants are men; therefore,
Some men are cruel."

This is a syllogism in Darapti of the third Figure; but it may be reduced to Darii of the first, by converting the minor premise per accidens; thus,

"All tyrants are cruel:
Some tyrants are men; therefore,
Some men are cruel."
Again:

"Some slaves are not discontented:
All slaves are wronged; therefore,
Some who are wronged are not discontented."

This is a syllogism in *Disamis* of the third Figure, and it may be reduced to *Darii* of the first, by converting the major by contraposition, and then transposing the premises; thus,

"All slaves are wronged:
Some who are not discontented are slaves; therefore,
Some who are not discontented are wronged."

In this case the conclusion is the converse by negation of the original conclusion, and therefore may be inferred from it. By these different methods all the imperfect moods may be reduced to the four perfect moods of the first Figure; and this is called *Ostensive Reduction*, because either the very same conclusion is proved, or one which implies it, and from which it may be justly inferred.

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**Section 2.**

*Of Reductio ad impossible.*

By *Reductio ad impossible* we prove in the first Figure, not directly that the conclusion of the imperfect syllogism is true, but that it cannot be false; or in other words, that an absurdity would follow on...
the supposition of its being false. The following will
furnish an example:

"All truly wise men live virtuously:
Some philosophers do not live virtuously; therefore,
Some philosophers are not truly wise men."

If this conclusion be not true its contradictory must
be true; viz.

"All philosophers are truly wise men."

Make this proposition, then, the minor premise of
the above syllogism, and a false conclusion will be
proved; thus,

"All truly wise men live virtuously:
All philosophers are truly wise men; therefore,
All philosophers live virtuously."

This conclusion is the contradictory of the original
minor premise; it must therefore be false, be-
cause the premises are always supposed to be grant-
ed. If this conclusion is false, then one of the pre-
\[\text{mises from which it has been correctly deduced, must}
\text{be false also; but the major premise, being one of}
\text{those originally granted, must be true; the falsity}
\text{must therefore be in the minor premise. But the mi-
\[\text{nor premise is the contradictory of the original con-
\text{clusion; hence the original conclusion must be true.}
\]

This kind of reduction is a very indirect and ob-
\[\text{scure mode of reasoning, and is seldom employed ex-
\[\text{cept for Baroco and Bocardo. These two moods,}
\text{however, can be reduced ostensively by contraposition.}

The verses formerly quoted are of great service in
the reduction of syllogisms. The names given to the various Moods in the several Figures, although they may seem harsh and unmeaning, have been framed so as to point out the manner in which each of the imperfect Moods is to be reduced. The initial letters of all the Moods are B, C, D, F. The first letter in every imperfect Mood indicates that it is to be reduced to that Mood of the First Figure which begins with the same letter. If its initial letter be B, it must be reduced to Barbara; if it be C, to Celarent; if D, to Darapti; and if F, to Ferio. This rule has been expressed by the old Logicians, thus;

Barbara demonstrat, B; Celarent, C, reducit;
D, redit ad Darapti; F, redit at Ferio.

Besides the initial letters there are other consonants found in the middle or end of the names which designate the different Moods, which are also made use of to indicate the kind of reduction that is to be employed. These letters are s, p, m, and c, and their meaning is as follows: s, shews that the proposition denoted by the vowel immediately preceding it, is to be converted simply; p, that the proposition denoted by the vowel immediately preceding it, is to be converted per accidens; and m, shews that the premises are to be transposed. Thus in Bamarip, the B shews that it must be reduced to Barbara; the m that the premises must be transposed; and the p, that the conclusion must be converted per accidens. So in Camestres, the C indicates that it must be re-
duced to *Celarent*; the \( m \), shews that the premises must be transposed; and the two \( ss \) shew that the minor premise and the conclusion must be converted simply. The other consonant \( c \) points out the *reductio ad impossibile*. Wherever it occurs it shews that the proposition denoted by the vowel immediately before it, must be left out, and the contradictory of the conclusion substituted in its place; consequently in *Baroco* the contradictory of the conclusion is to be substituted for the minor premise; and in *Bocardo* it is to be substituted for the major. These rules have been expressed thus;

\[
S, \text{ vult simpliciter verti; } P, \text{ vero per accid.} \\
M, \text{ vult transponi; } C, \text{ per impossibile duci.}
\]

**CHAP. VI.**

**OF HYPOTHETICAL SYLLOGISMS.**

We have hitherto been considering *pure* categorical syllogisms. It is often necessary, however, to introduce into Reasoning various kinds of *conditional* propositions; and as the force of the argument sometimes turns on these hypothetical premises, it is necessary that we notice this class of syllogisms, and explain the rules whereby their validity may be ascertained.

Sometimes a hypothetical conclusion is inferred from a hypothetical premise, while the reasoning pro-
cess remains, properly speaking, purely categorical. In this case the force of the reasoning does not turn on the hypothesis; the condition expressed is considered as attached to one of the terms; and the reasoning proceeds, and is to be judged of, in the same way as if it were a categorical syllogism. For example;

"Every conqueror is either a hero or a villain:
Caesar, was a conqueror; therefore,

Caesar was either a hero or a villain."

In this case if "either a hero or a villain," be considered as merely the predicate of the major premise, and the predicate of the conclusion, the syllogism may be considered merely categorical.

But when the reasoning rests on the hypothesis, and a categorical conclusion is drawn from a hypothetical premise, then the syllogism is to be considered hypothetical; and rules have been devised for ascertaining the validity of such arguments, without bringing them into the categorical form. Of hypothetical Syllogisms there are two kinds, the Conditional, and the Disjunctive.

Section 1.

Of Conditional Syllogisms.

When in any syllogism the major premise is a conditional proposition, the syllogism is called Conditional; thus,
"If there is a God, he ought to be worshipped:
   But there is a God; therefore,
   He ought to be worshipped."

In this example the major premise is conditional; the syllogism is therefore called by that name. It only the major proposition be conditional, as in the above example, the conclusion will be categorical: but if the minor be conditional, the conclusion will also be conditional; thus,

"All tyrants deserve death;
   If Cæsar oppresses the people, he is a tyrant;
   therefore,
   If Cæsar oppresses the people, he deserves death."

This kind of argument, however, should be avoided as much as possible, as it is an awkward mode of reasoning; but syllogisms whose major only is hypothetical may be used with great propriety and advantage.

In explaining this kind of syllogism, it is to be observed, that all conditional propositions are made up of two distinct parts, and only two, which are in fact two categorical propositions. Of these the one results from the other, and expresses the condition on which the predicate agrees or disagrees with the subject; the other joins or disjoins the predicate and the subject. The proposition from which the other results, or which expresses the condition, is called the antecedent; that which results from it is called the consequent; and the connection between the two, expressed by the word "if," is called the consequence.
natural order for such a proposition is, that the antecedent should come before the consequent; but this is not material, as we often find it reversed; thus,

"The poor are happy, if they are contented."

In all propositions of this kind, if they are correct in point of form, the relation between the antecedent and consequent must ever be true and real; that is, the truth of the antecedent must necessarily imply the truth of the consequent; for otherwise the proposition will be false, and ought not to be admitted into argumentation. The antecedent and the consequent may be both false, or they may be both true, in themselves considered; but it must in every case be true that the consequent follows from the antecedent: hence the truth or falsity of a conditional proposition depends entirely on the consequence. This will appear from the following examples:

"If Christianity is of divine origin, it ought to be embraced."

In this case both the antecedent and the consequent are true in themselves; and the whole proposition is true likewise, because there is a real connexion between the antecedent and the consequent.

"If Christianity is an imposture, it ought to be abandoned."

In this instance both antecedent and consequent are false, considered separately and in themselves; but the whole proposition is true, because the consequent
follows from the antecedent; that is, they are so connected that if you admit the one, you must admit the other also.

It is particularly to be remembered, however, that the truth or falsity of a conditional proposition does not at all depend on the truth or falsity of the two categorical propositions of which it is composed. In the last instance the antecedent and the consequent were both false; yet the whole proposition was true. But the reverse of this may take place; that is, the antecedent and the consequent may be both true in themselves, and yet the whole proposition be false; thus,

"If Christianity is from God, it is but partially known."

Here it is true that "Christianity is from God," and it is true also that "it is but partially known;" yet it is not true that the latter of these propositions results from the former, or depends upon it. The whole proposition, therefore, is false, because there is no necessary connexion between the antecedent and the consequent. No conditional proposition, then, must be admitted into argumentation which does not contain some certain and genuine condition; that is, in which the antecedent necessarily implies the consequent.

It follows, then, that when any conditional proposition is assumed in reasoning, if we admit the antecedent, we must at the same time necessarily admit the consequent; and if we reject the consequent, we are bound in like manner to reject the antecedent: for
as the antecedent always expresses some condition which necessarily implies the truth of the consequent, by admitting the antecedent we admit this condition, and therefore are bound to admit the consequent likewise. In like manner, if it appears that the consequent ought to be rejected, the antecedent ought evidently to be rejected also, because, as we have just shewn, the admitting of the antecedent would necessarily imply the admission of the consequent. There are therefore two rules, applying to conditional propositions, which must be kept particularly in mind, because conditional syllogisms are founded on them. These are,

First; *If the antecedent is granted, the consequent may be inferred*; and,

Secondly, *If the consequent be denied, the antecedent may be denied*.

In accordance with these rules there are two methods of arguing in conditional syllogisms, which lead to a certain and unavoidable conclusion. The first, founded on the first rule, takes place when *the minor premise admits the antecedent*; then we are said to argue from the admission of the antecedent, to the admission of the consequent. This is called a *Constructive* conditional syllogism, because the whole of the conditional proposition is thus established. Thus,

"If there is a God, he ought to be worshipped: But there is a God; therefore, He ought to be worshipped."

In this case *the antecedent is admitted in the minor.*
premise; it is evident, therefore, from the first rule, that the conclusion must admit the consequent; and thus the whole conditional proposition, both antecedent and consequent, is established. If A is B, C is D: but A is B; therefore C is D."

The other method of arguing legitimately in conditional syllogisms is founded on the second rule, and it takes place when the minor premise rejects the consequent; and we are then said to argue from the removal of the consequent to the removal of the antecedent. This is called a Destructive conditional syllogism, because the whole of the conditional proposition is thus rejected or destroyed. Thus,

"If the season has been good, rice must be cheap:
But rice is not cheap; therefore,
The season has not been good."

In this case the consequent is contradicted in the minor premise, and the antecedent is contradicted in the conclusion; thus the whole of the conditional proposition is removed. If A is B, C is D: but C is not D; therefore A is not B.

These two methods of arguing include all the classes of conditional syllogisms from which a legitimate conclusion can be drawn. It is to be observed, however, that in syllogisms of this kind, the rules given above respecting conditional propositions must be strictly observed, otherwise nothing can be legitimately proved. If, for instance, in the last case, the minor premise were to deny the antecedent, instead of
denying the consequent, which is called arguing from the removal of the antecedent to the removal of the consequent, no legitimate inference could be drawn: because, although the antecedent always expresses some real condition which when once admitted necessarily implies the consequent, yet it does not follow that there is no other condition from which the same consequent may follow; hence, after removing the antecedent, the consequent many still follow from some other antecedent. Thus, we see to say, "if a stone is exposed to the rays of the sun, it will contract a certain degree of heat," we affirm a true proposition; and admitting the antecedent, we must also admit the consequent. But as there are other ways in which a stone may contract heat, it will not follow from the denial of this antecedent, that therefore the consequent cannot take place. If, therefore, we deny the antecedent, and argue from it, the reasoning will be false. Thus,

"If a stone is exposed to the rays of the sun, it will contract a certain degree of heat:
But it has not been exposed to the rays of the sun; therefore,
It has not contracted a certain degree of heat."

This reasoning is evidently false, because there are many other ways in which a stone may contract heat besides from exposure to the rays of the sun. This mode of reasoning is therefore inadmissible in conditional syllogisms.
Again, if the minor premise admits the consequent, instead of admitting the antecedent, in this case also the conclusion will not be legitimate, because the same consequent may follow from some other antecedent. The admitting of any consequent does not prove in what way this result has happened, but only that some one of the antecedents that could lead to this result must have existed. Take the proposition above as an example; "if a stone is exposed to the rays of the sun, it will contract a certain degree of heat;" admitting the consequent, that it has contracted a certain degree of heat, we are not bound to admit the antecedent, that it has therefore been exposed to the rays of the sun; because there are many other ways in which this heat may have been contracted. This is called arguing from the admission of the consequent to the admission of the antecedent, and is evidently inadmissible.

The following rules must therefore be observed in conditional syllogisms.

1. If the minor affirms the antecedent, or denies the consequent, the conclusion will be valid.

2. If the minor affirms the consequent, or denies the antecedent, nothing can be inferred.

Section 2.

Of Disjunctive Syllogisms.

As when the major proposition is conditional the
syllogism is called conditional; so when the major proposition is disjunctive, the syllogism to which it belongs is called a disjunctive syllogism. For example, A is either B, or C, or D: but A is neither B nor C, therefore A is B. Thus,

"The world is either self-existent, or the work of some finite, or of some infinite Being:
But it is neither self-existent, nor the work of a finite being, therefore,
It is the work of an infinite Being."

A disjunctive proposition may consist of any number of categorical propositions; and of these some one at least must be true, or the whole proposition will be false. Each of these categorical propositions gives a particular predicate to the subject of the whole disjunctive proposition, and of these several predicates one is assigned necessarily to belong to the subject, to the exclusion of all the rest. This particular predicate, however, is left undetermined in the major proposition; in the minor we determine which it is; and then in the conclusion we prove that that predicate belongs to the subject. As soon as we determine the particular predicate that necessarily belongs to the subject, all the rest are to be rejected, and then the remaining one is affirmed to be true. When, therefore, in a disjunctive syllogism the several predicates are enumerated in the major, if the minor establishes any one, or any number of these predicates, the conclusion ought to remove all the rest; or if in the m-
nor all the predicates but one are removed, the conclusion must necessarily establish that one. Thus, in the disjunctive syllogism given above, the major affirms one of these predicates to belong to the earth—either self-existence, or that it is the work of some finite being, or that it is the work of an infinite Being. Two of these predicates are removed in the minor proposition, viz. self-existence, and its being the work of some finite being; hence in the conclusion the other predicate is necessarily ascribed to it; that is, it is affirmed to be the work of an infinite Being. A is either B, or C, or D: but A is not B or C; therefore it is D.

“It is either spring, summer, or winter:
But it is not spring or summer; therefore,
It is winter.”

In the above example all the categorical propositions except one are denied; and hence the conclusion is a categorical proposition. But sometimes after one or more of the categorical propositions are denied, there are more than one predicate remaining; in this case the conclusion will be a disjunctive proposition. For example; A is either B, C, D, or E: but A is not B or C; therefore it is D or E. Thus,

“It is either spring, summer, autumn, or winter:
But it is neither spring nor summer; therefore,
It is either autumn or winter.”

In these examples it is implied that only one of the categorical propositions can be true; hence if the
minor affirms that proposition, the rest must be denied in the conclusion. For example, in the above syllogism we may say, A is either B, C, D, or E: but A is B, therefore it is neither C, D, nor E. Thus,

"It is either spring, summer, autumn, or winter. But it is spring; therefore, It is neither summer, autumn, nor winter."

CHAP. VII.

REDUCTION OF HYPOTHETICAL SYLLOGISMS.

The rules laid down above are quite sufficient for trying the validity of all hypothetical arguments; as, however, all reasoning may ultimately be brought to the test of Aristotle's dactum, we must now show how a hypothetical syllogism can be reduced so that this test may be at once applied to it. This is called the reduction of hypotheticals.

If only the major premise be hypothetical, and the antecedent and consequent happen to have the same subject, the reduction of a hypothetical syllogism is easily effected. In this case the minor premise and the conclusion are categorical; they can therefore easily be formed into a regular categorical syllogism, by supplying a categorical major. Take for example the following hypothetical syllogism:
"If Cæsar was a tyrant, he deserved death:
But Cæsar was a tyrant; therefore,
He deserved death."

In this example the major premise is conditional, the antecedent and consequent have the same subject, and the minor premise and conclusion are categorical, because they merely express the fact that Cæsar was a tyrant, and that on that account deserved death. To reduce the whole syllogism to a categorical form a categorical major premise is wanted. Assume, then, as a major the proposition that "all tyrants deserve death," and the syllogism is reduced to Barbara; and the same conclusion is drawn as when the syllogism was in the hypothetical form. Thus,

Bar- "All tyrants deserve death:
ba- But Cæsar was a tyrant; therefore.
ra. He deserved death."

But it often happens in a hypothetical syllogism, that the antecedent and consequent of the conditional proposition have not the same subject. In this case the above method of reduction will not apply, because a categorical premise cannot be formed which will be equivalent to the original conditional proposition. Another method has therefore been adopted, which is, to consider every conditional proposition as a universal affirmative categorical proposition, of which the Terms are entire propositions, the antecedent answering to the subject, and the consequent to the predicate.
Take for example the following conditional syllogism:

"If the season is good, the rice is likely to be cheap:
But the season is good; therefore,
The rice is likely to be cheap."

In this instance to say, "If the season is good, the rice is likely to be cheap," is equivalent to saying, "the case of the season being good, is a case of the rice being likely to be cheap:" and the minor premise of this conditional syllogism, is equivalent to saying, "the present case is the case of the season being good." By adopting these as the premises a conclusion may be drawn in *Barbara*, exactly equivalent to the original conclusion of the conditional syllogism. Thus,

*Bar- "The case of the season being good, is a case of the rice being likely to be cheap:
ba- The present case is the case of the season being good; therefore,
aa The present case is the case of the rice being likely to be cheap."

The above is an example of a *Constructive* conditional syllogism reduced to *Barbara*. In like manner a *Destructive* conditional syllogism, may be reduced to *Celarent*; thus,

"If the Stoics are right, pain is no evil:
But pain is an evil; therefore,
The Stoics are not right."

This syllogism is equivalent to the following:
"The case of the Stoics being right, is the case of
pain being no evil:
The present case is not the case of pain being no
evil; therefore,
The present case is not the case of the Stoics be-
ing right."

In this form the syllogism is in *Camenes*, which
can easily be reduced to *Celarent*, by the method of
reduction formerly explained.

All hypothetical syllogisms may be reduced in
the manner above stated. The mode of expression,
however, in those cases where the antecedent and con-
sequent have not the same subject, is exceedingly
awkward and circuitous. A more convenient form
may sometimes be substituted, by taking "true" for
one of the terms; thus,

"That pain is no evil is not true:
That pain is no evil is asserted by the Stoics,
therefore,

Something asserted by the Stoics is not true."

In some cases also it may be better to unfold the
argument into two syllogisms. Take for example the
following syllogism:

"If Cæsar is a good king, Rome is likely to pro-
per:
But Cæsar is a good king; therefore,
Rome is likely to prosper."

This conditional syllogism may be reduced to *two*
categorical syllogisms; thus,
"Caesar is a good king:
The governor of Rome is Caesar; therefore,
The governor of Rome is a good king."

Again:
"Every country governed by a good king is likely to prosper:
Rome is governed by a good king; therefore,
Rome is likely to prosper."

These categorical syllogisms are in *Barbara*, and from them the very same conclusion is drawn that we have in the above conditional syllogism.

It is to be observed, however, that, in ordinary practice, it is not necessary to reduce Hypotheticals to Categoricals, in any of the ways mentioned above, in order to ascertain their validity. Their own rules are sufficient for this purpose, without our subjecting the argument *directly* to the test of Aristotle's *dictum*. The above rules shew, however, that they can be reduced if required; and that they, as well as Categorical syllogisms, depend on that one simple principle on which all Reasoning rests.

**CHAP. VIII.**

**OF IRREGULAR SYLLOGISMS.**

Thus far we have been considering syllogisms, which, not being defective, or expressed in an abridged
form, are denominated _regular_. In these arguments the parts are complete; that is, the three propositions of which the syllogisms consist are represented in due form. But there are various forms of Argument which are imperfect, as generally used, but which can easily be expanded into regular syllogisms. These have been called _irregular syllogisms_; the following are the most important.

1. _The Enthymeme_. This is a Syllogism which seems to consist of only two propositions, but the other is only suppressed. Thus,

"Caesar was a tyrant; therefore,

Caesar deserved death."

In this instance there are only true propositions expressed, and the syllogism appears to be imperfect, but it may be easily formed into a regular syllogism by merely supplying the premise that is wanting. If in the above instance the _major premise_ is supplied, the syllogism will be seen to be perfect, thus,

"Every tyrant deserves death:

Caesar was a tyrant; therefore,

Caesar deserved death."

Again:

"Every man is mortal; therefore,

Every king is mortal."

In this case the _minor premise_ is omitted; let it be supplied, and the syllogism is regular, thus,
"Every man is mortal:
   Every king is a man; therefore,
   Every king is mortal."

This form of reasoning is called *Enthymeme*, because one of the premises is retained in the mind. This is however in reality a prefect syllogism, although it seems mutilated in form. It is the ordinary mode of speaking and writing, not only on rhetorical subjects, but, generally speaking, even when engaged in close argumentation. It never was intended, that, on all occasions, reasoning should be carried on in a series of syllogisms regularly expressed. It often happens that some one of the premises on which our reasoning turns, is either a self-evident truth, or one that is familiar to us, or that is acknowledged by our opponent. In this case, unless for some particular purpose, it would be mere waste of time to state the syllogism at length, and draw the conclusion in due form. The Enthymeme, or this abbreviated method of reasoning, is therefore adopted, which shortens discourse, gives a lively vigour to our arguments, and by leaving something to be inferred by the mind itself, both pleases, and excites attention.

However long the reasoning process may be that is carried on in this manner, and however concisely the train of argument may be expressed, it may easily be reduced to a series of regular syllogisms; and where the conclusiveness of the argument is not evident from the mere meaning of the terms, it is only by this method that the validity of the arguments can be as-
certained. There is no difficulty, however, in filling up the Enthymeme, by supplying either the major or the minor premise, so as to make it a perfect syllogism. All the terms which are necessary to form the major or the minor premise that may be wanting to complete the syllogism, will be found in the premise and the conclusion of which the Enthymeme consists. And the following rules will direct us in what cases we should supply the one, and in what cases the other.

First: If the term twice repeated be found in the subject of the conclusion, the major premise must be supplied. Thus, in the first example given above, the term twice repeated is "Caesar;" and this term is the subject of the conclusion; hence the major premise is in that case supplied; thus,

"Every tyrant deserves death:  
Caesar was a tyrant; therefore,  
Caesar deserved death."

Again:

"Man is a reasonable being; therefore,  
Man is accountable."

Here the term twice repeated is "Man," and it is the subject of the conclusion; hence the major premise must be supplied; thus,

"Every reasonable being is accountable:  
Man is a reasonable being; therefore,  
Man is accountable."

Second: If the term twice repeated be found in the predicate of the conclusion, the minor premise must
be supplied. Thus, in the second example given above, the term *twice repeated* is "mortal," and this term is the *predicate* of the conclusion; the *minor premise* must therefore be supplied; thus,

"Every man is mortal:  
Every king is a man; therefore,  
Every king is mortal."

Again:

"A free people must be happy; therefore,  
The English must be happy."

Here the term *twice repeated* is "happy," which is the *predicate* of the conclusion; in this case, then, the *minor premise* must be supplied; thus,

"A free people must be happy:  
The English are a free people; therefore,  
The English must be happy."

In all these cases the reasoning is purely syllogistic, and must be judged of by the rules formerly laid down.

2. *The Sorites.* This is a mode of reasoning which consists of several propositions so arranged, that the predicate of the first becomes the subject of the second, and so on, in a regular progression, till at length, in the ultimate conclusion, the last predicate is affirmed of the first subject. In this way we have a string of syllogisms, in the first figure, in which the conclusion of each is made the premise of the next, till we arrive at the last conclusion. A is B, B is C, C is D, D is E, E is F, F is G, therefore A is G. Thus,
"The soul is a thinking substance;
A thinking substance is spirit;
Spirit has no extension;
What has no extension has no parts;
What has no parts is indissoluble;
What is indissoluble is immortal; therefore,
The soul is immortal."

This combination of propositions may be continued to any length without weakening the ground on which the conclusion rests, because the Sorites has as many middle terms as there are intermediate propositions between the first and the last; and consequently may be drawn out into as many separate syllogisms as there are middle terms. It is therefore nothing but a series of syllogisms, of the first figure, expressed in this abridged manner, in order that we may proceed with greater rapidity in our reasoning process. If we wish to ascertain the validity of this argument, we can easily do so, by resolving the series into the distinct syllogisms of which it is composed.

If the above example be drawn out into the separate syllogisms of which it consists, it will be found that the first syllogism in the series has for its major premise the second proposition of the Sorites, and for its minor premise it has the first proposition; thus,

"A thinking substance is spirit:
The soul is a thinking substance; therefore,
The soul is spirit."

The conclusion of this first syllogism must now be-
come the minor premise of the second syllogism, thus,

"Spirit has no extension:
The soul is spirit; therefore,
The soul has no extension."

This conclusion must now be made the minor premise of the next syllogism; and so on, to the end of the series. The first proposition in a Sorites is therefore the only minor premise that is expressed; because each successive conclusion becomes the minor premise of the succeeding syllogism. Hence in a Sorites only the first proposition and the conclusion can be particular; because in the first figure the minor proposition may be particular, but not the major; and all the propositions after the first, till the conclusion of the Sorites, are major premises. It is evident also that in a Sorites there may be one, and only one, negative premise, namely the last in the series; for if any of the others were negative, the result would be that one of the syllogisms of the Sorites would have a negative minor premise, which in the first figure is incompatible with correctness, since in that figure the minor must always be affirmative.

It is evident too that a Sorites may be formed of Hypothetical in the same way as it is with Categorical propositions. Any number of conditional propositions may be so joined together in a series, that the consequent of the one shall become successively the antecedent of the next, in which case by establishing
the antecedent of the first proposition, we establish the antecedent of the last; or by removing the last consequent, we remove also the first antecedent. The following is an example of a Constructive conditional Sorites; if A is B, C is D; if C is D, E is F; if E is F, G is H; but A is B, therefore G is H. Thus, “If the Scriptures are the word of God, it is important that they should be well explained: If it be important that they should be well explained, they deserve to be diligently studied: If they deserve to be diligently studied, an order of men should be set apart for that purpose: But the Scriptures are the word of God, therefore an order of men should be set apart for diligently studying them.”

In the same way a Destructive conditional Sorites may be formed; but in this case we must go back from the denial of the last consequent to the denial of the first antecedent. For example, if A is B, C is D; if C is D, E is F; if E is F, G is H; but G is not H, therefore A is not B. Thus, “If the soul is material, it must have extension; If it has extension, it must have parts; If it has parts, it must be dissoluble; But the soul is not dissoluble; therefore, It is not material.”

The validity of this kind of argument may be ascertained by resolving it into its distinct syllogisms, and trying them by the rules formerly laid down.

3. The Dilemma. This is a complex conditional
syllogism, which is generally employed to prove the absurdity or falsity of some assertion. In order to this we assume a conditional proposition, the antecedent of which is the assertion to be disproved, and the consequent is a disjunctive proposition, enumerating all the possible suppositions on which that assertion can take place. If then it appears that all these several suppositions ought to be rejected, it is plain that the antecedent, or the assertion itself, must be rejected likewise. When therefore a proposition of this kind is made the major of a syllogism, if the minor rejects all the suppositions contained in the consequent, it follows necessarily that the conclusion ought to reject the antecedent, which is the matter to be disproved.

The Dilemma, like Simple Conditional Syllogisms, sometimes, takes the Constructive form. When we have a major premise having several antecedents, all with the same consequent, and these antecedents are disjunctively granted in the minor premise; that is, it being granted that some one of them is true, then the consequent common to all these antecedents may be inferred, as in the case of a Simple Constructive Syllogism. For example, if A is B, C is D; and if X is Y, C is D; but either A is B, or X is Y; therefore, C is D. Thus,

"If the guilty are detected, their punishment makes them miserable;
If they are not detected, their own consciences make them miserable:
But they must either be detected or not;
Therefore, the guilty are miserable."
If the several antecedents have each a different consequent, then, if they are disjunctively granted, the consequents can only be disjunctively inferred. For example; if \( A = B, \ C = D; \) and if \( X = Y, \ E = F; \) but either \( A = B, \) or \( X = Y; \) therefore either \( C = D, \) or \( E = F; \) thus,

"If Eschines joined in the public rejoicings, he is inconsistent;
If he did not, he is unpatriotic;
But he either joined, or did not join, in the public rejoicings; therefore,
He is either inconsistent or unpatriotic."

In these two cases the syllogisms are evidently constructive.

The Dilemma, sometimes takes the Destructive form. When there is only one antecedent with several consequents, if in the minor premise you deny the whole of these consequents, you may in the conclusion deny the whole of the antecedents. For example; If \( A = B, \ C = D, \) and \( E = F; \) but \( C \) is not \( D, \) and \( E \) is not \( F; \) therefore \( A \) is not \( B. \) Thus,

"If the world existed from eternity, there would be writings prior to the Mosaic:
If it existed from eternity, the useful arts would be of unknown antiquity:
But there are no records prior to the Mosaic, and the useful arts are not of unknown antiquity; therefore,

The world is not eternal."
Again: If A is B, C is D; and if X is Y, E is F: but C is not D, and E is not F; therefore A is not B, and X is not Y. Thus,

"If the world existed from eternity, there would be no records respecting its commencement;
If it was produced by chance, it would not bear marks of design:
But there are records respecting its commencement;
and it does bear marks of design; therefore,
It neither existed from eternity, nor is the work of chance."

These arguments are generally called Dilemmas, but they differ very little from simple conditional syllogisms, two or more being expressed together, because in these cases you wholly deny the consequent. But when you have several antecedents with each a different consequent, and when you disjunctively deny them in the minor premise, instead of wholly denying them, as in the last example, and then in the conclusion disjunctively deny the antecedents, in that case the Dilemma is properly destructive. For example: If A is B, C is D; and if X is Y, E is F: but either C is not D, or E is not F; therefore, either A is not B, or X is not Y. Thus,

"If this man were wise, he would not speak irreverently of Scripture in jest;
If he were good, he would not do it in earnest.
But he does speak irreverently of the Scriptures, either in jest, or in earnest; therefore,
He is either not wise, or not good."
In these examples we have stated the arguments at length, and arranged the parts of which they consist in separate lines, in order that it may be at once seen how easily they can be reduced to two or more simple conditional syllogisms. Take for example the above Destructive Dilemma; it may be reduced to Destructive Conditional Syllogisms; thus,

“If this man were wise, he would not speak irreverently of Scripture in jest:
But he does thus speak irreverently of Scripture; therefore,
He is not wise.”

Again:

“If this man were good, he would not speak irreverently of Scripture in earnest:
But he does thus speak irreverently of Scripture; therefore,
He is not good.”

A Constructive Dilemma may also be reduced in the same way to two or more Constructive Conditional Syllogisms. Thus, in the example given above, we may say, “If Eschines joined in the rejoicings, he is inconsistent; but he did join in them; he is therefore inconsistent.” Again, we may say, “If he did not join in them, he is unpatriotic; he did not join in them; therefore, he is unpatriotic.” Now in all correct Dilemmas an opponent may deny either of the minor premises, but he cannot deny both; hence he must admit one or other of the conclusions; because when a Constructive
Dilemma is employed, it is supposed that *some one* of the antecedents must be true; and when a Destructive Dilemma is used, that *some one* of the consequents must be false. As they cannot, therefore, be both admitted, or both rejected, the opponent is left to choose which he likes, and in either case he is confuted. He is thus caught on the horns of the Dilemma whichever way he turns. This kind of argument can be applied to all subjects, and is often used in Mathematical demonstrations. Nothing is more common with Euclid, when about to shew the equality of two given figures, or, which is the same thing, to prove the absurdity of asserting them to be unequal, than to adopt this mode of argument, that if they are not equal, the one must either be greater or less than the other; and then having destroyed both these suppositions, on which alone their inequality can rest, he proves that they are equal to each other. By reducing the Dilemma to the several syllogisms of which it consists, and by applying to them the rules laid down for ascertaining their validity, we shall be taught how to use, and how to judge of these arguments.

4. The Epichirema. This is a syllogism which has to one or both of the premises the proof immediately subjoined. It is often desirable that each proposition in an argument should be clearly established before we advance to the next step in the reasoning, in order that we may carry conviction with us as we move on to the conclusion. This is often necessary in didactic and argumentative compositions, in public ad-
dresses, and in common conversation; in these cases we subjoin the proof of the premises as we announce them, and then afterwards draw the conclusion. Sometimes it may be deemed necessary to subjoin the proof to both premises; in other cases it may be unnecessary to prove more than one of them, the other being self-evident, or admitted; but in either case the syllogism is called an Epichirema, because the proof is thus furnished to the hand. Thus,

"Every thing is a blessing to men that leads them to prepare for eternity; because in so doing they act wisely—secure their present peace—and promote their best interests:

But affliction often leads men to prepare for eternity; because it disposes to serious thought—weans them from the world—and leads them to attend to divine things; therefore,

Affliction is sometimes a blessing to men."

The Orations of Cicero afford many examples of this form of syllogism. His oration in defence of Milo who had slain Clodius, has been noticed as a very happy instance. His major proposition is, that it is lawful for one man to kill another who lies in wait to kill him; this he proves from the custom of nations, from natural equity, and by examples. His minor proposition is that Clodius laid in wait for Milo; this he proves from his arms and guards; and then he draws his conclusion, that it was lawful for Milo to kill Clodius.
Sometimes the major proposition is self-evident, while the minor only needs confirmation: in this case it will be sufficient to prove the latter; thus,

"All useful studies deserve encouragement:
Logic is a useful study, because it assists us to detect error, and to reason accurately; therefore, Logic deserves encouragement."

The minor premise in this last example, and both the major and minor in the other instances of the Epichirema given above, are evidently enthymematic, and may be formed into regular syllogisms, as was shewn when treating of the Enthymeme. Although this abbreviated mode of reasoning is so commonly used, it can be so easily thrown into the syllogistic form, that it scarcely needs any explanation.

5. *Induction*. This is merely an abridged mode of stating an argument, which, when drawn out in due form, is purely syllogistic. By this method of arguing we infer universally concerning any subject that which we had before affirmed or denied separately of all its individual parts or subdivisions. Thus, if we suppose the whole tribe of animals subdivided into men, beasts, birds, insects, and fishes, and then reason concerning them in this way; "All men have a power of beginning motion; all beasts and birds have this power; all insects and fishes have this power; therefore, all animals have a power of beginning motion;" this argument is called an *induction*. When the subdivisions are just, and the enumeration perfect, the *
duction is complete, and the reasoning is evidently conclusive. The above argument, however, is nothing more than a string of syllogisms in *Barbara*, expressed in this abridged manner, which can so easily be reduced to regular syllogisms, that it is not necessary to dwell on them.

CHAP. IX.

OF FALLACIES.

We must now turn our attention to the nature and varieties of fallacious reasoning. Any unsound mode of arguing, which appears to demand our assent, or to be decisive of the question in hand, when in fairness it is not, is called a *Sophism*, or a *Fallacy*. The name *Sophist*, which is given to persons who knowingly adopt this fallacious mode of arguing, was not originally considered a term of reproach. It was given to those who were renowned for their wisdom, or for their skill in any of the arts and sciences; and had then nearly the same signification that *Philosopher* has at the present day. But when the art of wrangling took possession of the schools, and disputants arose whose only object was to entangle their opponents, and who contended for victory, not for truth, this name became their appropriate title; and the fallacious arguments which these persons used were called sophisms. As this method of reasoning is still pre-
valent, and is the fruitful cause of numerous errors, it is of great moment that we become acquainted with the doctrine of Fallacies;—not that we may practise them, but that we may learn how to detect and expose them. We shall, therefore, arrange them under distinct heads, analyse the process that takes place in each, and point out the fallacy that lurks in them.

Fallacies have been arranged by Aristotle into two great classes; those in the words, and those in the matter; the former he denominated *Fallacia in Dictione*, and the latter *Fallacia extra Dictionem*. It is perhaps impossible to form any division of Fallacies that shall be perfectly free from objection; or to lay down any rules that can be applied with mechanical readiness and certainty in detecting and exposing them. The elliptical form in which all reasoning is usually expressed, and the involved and oblique manner in which a fallacy is generally conveyed, render it sometimes doubtful, or at least a matter of mere arbitrary choice, to which class it should be referred. Still it is of importance to classify and describe these erroneous modes of arguing; and although, in the practical detection of them, much must of course be left to natural and acquired acuteness, still, a correct view of the subject will be of material service.

In every Fallacy the conclusion either does, or does not follow from the premises. Where the conclusion does not follow from the premises, it is evident that the fault is in the reasoning. All fallacies of this kind must therefore be considered Logical, because they
violate the rules of Logic; and their fallaciousness is exhibited by the mere form of the expression, without any regard being paid to the meaning of the terms. In other cases the fallacy lies concealed in the ambiguity of the middle term; and though in such cases it is seen, by the rules of Logic, as soon as the ambiguity of the middle term is ascertained, that the conclusion does not follow from the premises, yet to ascertain this ambiguity attention must be paid to the subject-matter, or to the sense of the term. In these cases, then, Logic only teaches us where to look for the fallacy, and on what principles to condemn it when it is ascertained, without pretending to be able, by any multiplication of rules, to determine the full and exact meaning of the terms that may occur. These fallacies, then, are only partly Logical; and all that can be done, in such cases, is to give some general rules that may be of service in reference to them. Fallacies of this kind we, therefore, denominate Semi-logical. On the other hand, when the conclusion does follow from the premises, we may still be deceived by the assumption of false or doubtful premises, or by a conclusion being drawn which is irrelevant to the subject. All fallacies of this kind are material; they take place in the subject-matter of reasoning, not in the reasoning process. They are therefore called Non-logical; and although it is vain to expect that any system of rules will enable us clearly to ascertain the meaning of every term, and the truth or falsity of every proposition, still, even in these cases, much assistance may be gained from
logical rules, and from the mental habits which a diligent study of them tends to produce. We shall therefore first consider those fallacies that are Logical; secondly, those that are Semi-logical; and thirdly, those that are Non-logical.

Section 1.

Of Logical Fallacies.

The rules already laid down will enable us to detect the fallaciousness of all apparent arguments in so far as the mere form of the expression is concerned. If we have an undistributed middle; or an illicit process of the major or minor; or negative premises; or an affirmative conclusion from a negative premise, or the contrary; or if there are evidently more than three terms, we shall be able, by the preceding rules, at once to detect and expose the fallacy. When these false arguments are singled out, and individually made the subject of careful examination, it is comparatively an easy work to detect the sophistry that lurks in them. But it must be remembered that fallacies most frequently occur in extended discussions, expressed in an elliptical and disguised manner; and that every effort is used by the Sophist to conceal the weakness of his arguments, and to draw away attention from them. Nothing, then, will be so serviceable in detecting real logical fallacies, as a thorough knowledge of the rules
on which all just reasoning depends, and good sense and ability in applying them with promptness and accuracy.

Of course it would merely be repeating what has already been laid down, were we to illustrate pure logical fallacies by examples. But there is one mode of fallacious reasoning which may with great propriety be referred to this head. We refer to that common error of supposing the conclusion false, because the argument is unsound; or of supposing the premises true, because the conclusion is a truth. If any person argues for the existence of a God from its being universally believed, another might perhaps be able to refute the argument by producing an instance of some nation destitute of this belief. The argument in this case ought to go for nothing; but it will be thought by some that it ought to go much farther. They suppose that it has disproved the existence of God, while it has only destroyed an unsound argument. In this case the person is guilty of violating the laws of correct argumentation, which will be at once seen by an examination of his reasoning. His argument expressed at length stands thus:

"Whatever is universally believed must be true:
The existence of a God is not universally believed; therefore,
The existence of a God is not true."

But this syllogism is a mere fallacy, because we have here an illicit process of the major. We have
the term "true" distributed in the conclusion, by being the predicate of a negative proposition, while it is not distributed in the major premise, being there only the predicate of an affirmative proposition. The argument is, therefore, unsound.

Again: were any person in this instance to argue from the truth of the conclusion to the truth of the premises, the reasoning would still be fallacious. Thus,

"Whatever is universally believed is true:
The existence of a God is true; therefore,
The existence of a God is universally believed."

In this case we have the Fallacy of an undistributed middle; because the middle term "true" is neither the subject of a universal, nor the predicate of a negative proposition. The argument is therefore inconclusive.

When the conclusion is a known truth, it is sometimes very difficult to perceive any fallacy in an apparent argument; and when it is discovered, it is often difficult to expose its fallaciousness, especially to those who are unacquainted with the reasoning art. Perhaps in such cases the best mode is to bring forward a similar fallacy, the conclusion of which is obviously absurd, and in this way expose and refute the unsound argument. There are many who would not perceive any fallacy in the following erroneous argument, especially if enveloped in a cloud of words:

"Every rational agent is accountable:
Brutes are not rational agents; therefore,
Brutes are not accountable."
But this apparent argument corresponds exactly with the following, the absurdity of which all will immediately perceive and admit:

"Every horse is an animal:
Sheep are not horses; therefore,
Sheep are not animals."

Again:

"All wise legislators suit their laws to the genius of their nation:
Solon did this; therefore,
Solon was a wise legislator."

This unsound argument corresponds exactly with the following, the absurdity of which is manifest:

"All vegetables grow:
An animal grows; therefore,
An animal is a vegetable."

These fallacies evidently do not conform to the laws of correct reasoning. In the one case we have an illicit process of the major, in the other a non-distribution of the middle term. In all these cases the fallacy is evident at once from the mere form of the expression, without any regard being paid to the meaning of the terms. This may be seen by substituting mere symbols for these propositions; thus,

"Every $Y$ is $X$; $Z$ is not $Y$; therefore, $Z$ is not $X$.

Again:

"Every $X$ is $Y$; every $Z$ is $Y$; therefore, Every $Z$ is $X$."


These, therefore, are evidently pure Logical Fallacies.

Section 2.

Of Semi-logical Fallacies.

There are, however, many apparent arguments, the fallaciousness of which cannot be perceived by the mere form of the expression. They are couched in equivocal or ambiguous terms, and the fallacy can only be detected and exposed, by a careful examination into the sense of the terms employed, and by removing their ambiguity. This it must be confessed is the most fruitful source of error in reasoning; and as it is impossible that any system of rules can be devised which can clear up the ambiguity of every term, numerous complaints have been made against Logic, that it leaves the greatest difficulty in reasoning unprovided against. But it must ever be kept in mind that the proper business of Logic is with the laws of correct Reasoning, and that it treats of Terms and Propositions only in a secondary way, and in subserviency to this its principal object. Some of its friends may have excited expectations which they could never realize, by laying down “rules for attaining clear ideas,” and for “guiding the judgment in the search after truth;” but no system can ever be devised that can perform what these persons have attempted. Yet Logic, al-
though it cannot perform impossibilities, may nevertheless materially aid us in this important matter. It cannot clear up the ambiguity of every term, but it can teach us where to look for the ambiguity. Hence we find it directs us to the middle term, as the one in which the ambiguity which contains the fallacy is most likely to be found. In this case Logic teaches us not how to find the fallacy, but where to seek for it, and on what principles to condemn it when it is discovered. The fallacies that come under this head are not therefore properly logical, because the form of the expression may comport with the laws of correct reasoning, while the sophism lurks in an ambiguous term. To discover this ambiguity attention must be paid principally to the subject-matter of reasoning, not to the reasoning process. Hence the fallacies that come under this head are called merely semi-logical; and to this class are to be assigned all those cases in which the middle term is ambiguous.

In real logical fallacies the extremes are compared with two parts of the same term; but in those now to be considered they are compared with two different terms, because the middle term is used in different senses in the two premises. Now, although the rules of Logic cannot alone clear up this ambiguity, they can point out where it is likely to be found, and thus materially aid us in detecting and exposing it. It will be useful, then, to classify and describe the different kinds of ambiguity that are likely to be met with, and to point out the fallacies to which they give rise.
It is certainly a much easier task to give examples of the various fallacies, than to detect them in ordinary practice. In the former case they are detected already; and by placing the two premises in juxta-position, their absurdity appears evident, even to the inattentive and illiterate. But in common practice the premises are generally kept at as great a distance as possible from each other; the weak part is carefully concealed; and the whole is enveloped in a cloud of words, that renders deception comparatively easy. Although, then, the examples that will be given below may appear so evident that they could scarcely impose on the most unwary, and although it may seem almost trifling to point them out, or dwell upon them, yet to classify and describe these fallacies is not so unimportant as some have attempted to represent. The mental habits thus formed are of immense advantage; an acquaintance with fallacious reasoning will put us on our guard; and prevent us from either using it ourselves, or from being imposed on when is it employed by others. We proceed, therefore, to enumerate and describe the semi-logical fallacies. Of these the most important are the following:

1. *Fallacia equivocationis.* This fallacy takes place when one of the terms in an argument has *in itself,* from its own equivocal nature, two significations. Thus,

"The dog barks:
But the dog is a star; therefore,
A star barks."
In this case we have an ambiguous middle term, which is used in different senses in the two premises. When the argument is thus stated in the form of a regular syllogism, the absurdity is so striking, from the two premises being placed so near each other, that no person can be deceived by the fallacy. Hence the mere mention of this sophism has often drawn down plentiful abuse on the logician, as if he were occupied with trifles, unworthy of attention. But it should be remembered that in practice these two premises are generally placed far apart, and the gliding from the one sense of the equivocal term to the other is generally managed in a disguised and dexterous manner, so that the ambiguity of the middle term is overlooked. In all cases, then, it is of the utmost importance that we particularly examine the principal terms of an argument; when a habit of this kind is once formed, we are not likely to be imposed on by the fallacy of equivocation.

2. Fallacia amphibolieæ. This happens when a sentence employed in reasoning is capable of two meanings, not from the double sense of any of the terms, but from its admitting of a double construction. This fallacy can scarcely be exemplified by any regular syllogism expressed in the English language, as the genius of the tongue, when a definite argument in proposed, scarcely admits of this construction. But nothing is more common than this fallacy in ordinary writing, in which some word or words may be referred either to the former or to the latter clause of a
sentence, and thus two very opposite meanings are conveyed. The heathen oracles of old afford us many examples of this ambiguity; similar to which is the witch prophecy in Shakspeare,

"The Duke yet lives that Henry shall depose."

In this sentence the meaning may either be, that the Duke lives who shall depose Henry, or whom Henry shall depose. When propositions of this kind occur in reasoning, they often cause much confusion and error. The fallacy, however, can easily be detected by paying close attention to the different meanings which the sentence can bear; and all arguments founded on the ambiguity of such propositions may be shewn to be erroneous, by pointing out the four terms of which, when drawn out into regular syllogisms, they will be found to consist.

3. Fallacia compositionis. This species of fallacy consists in assuming that to be true collectively which is so only distributively. Thus,

"Two and three are an equal and an unequal number:
Two and three are five; therefore,
Five is an equal and an unequal number."

Again:

"Three and two are two numbers:
Five is three and two; therefore,
Five is two numbers."

In these examples the middle term is evidently am-
biguous, being used in the *major premise collectively*, and in the *minor distributively*. For instance, in the last example, the middle term is ambiguous, because "three and two" are taken *distinctively* in the major premise; and in this sense that which is affirmed respecting them is evidently true: but in the minor they are *taken together*, and in this sense what is affirmed of them is evidently false.

This is a fallacy that prevails to a great extent in the transactions of every day, and there is scarcely any other with which men are more likely to deceive themselves. Many have been induced to indulge in games of hazard to their utter ruin by imposing on themselves by this fallacy. They have reasoned thus:

"What is no uncommon occurrence may reasonably be expected:
To be successful in play is no uncommon occurrence; therefore,
To be successful in play may be reasonably expected."

In this reasoning the middle term is evidently ambiguous; because, for the major premise to be true, the middle term must be understood as referring *to some one individual*; for the minor to be true, it must be understood as spoken of *some one or other*; in the conclusion, as it is applied in practice, it must be understood in the sense of being "reasonably expected by a certain individual." We have here, then, the fallacy of Composition, supposing that to be true in
reference to every person who engages in play, which is only true of some individual. The fallacy evidently lies in the ambiguity of the middle term, and may be exposed by shewing that there are in reality two middle terms, with which the premises are compared.

The form in which this fallacy is most commonly employed, is to establish separately some truth concerning each single member of a certain class, and then to infer the same of the whole collectively. Thus infidels have laboured to prove concerning some one of the miracles recorded in the Scriptures, that it might have been the result of some accidental conjunction of natural causes; then they infer the same respecting another; and so on; till at last they infer that thus it might have been respecting them all. But this is the same as if they were to argue thus: "It is not very improbable one may throw sixes in any one out of a hundred throws; therefore it is no more improbable that one may throw sixes a hundred times running."

4. Fallacio divisionis. This fallacy is nearly allied to the preceding, being merely the reverse of it; and takes place consequently when we affirm of any thing distributively what is only true of it collectively. For example;

"All the angles of a triangle are equal to two right angles:

A B C is an angle of a triangle; therefore,

A B C is equal to two right angles."
Again:

"Five is one number:
Three and two are five; therefore,
Three and two are one number."

In this case, in the *major premise*, the middle term is taken *collectively*; and in the *minor*, it is taken *distributively*. It is therefore merely the reverse of the preceding, and may be detected and exposed in the same way.

This fallacy often turns on the ambiguity of the word "all," which may however be dispelled by substituting for it the word "every," or "each," where that is its true signification. Sometimes "all" is taken in a *collective sense* in the *major premise*, while a conclusion is drawn which requires that it should be taken in a *distributive sense*. Thus,

"All the musical instruments in the Jewish Temple made a noble concert:
The harp was an instrument in the Jewish Temple; therefore,
The harp made a noble concert."

Again: this fallacy takes place, when the word "all" is made in one premise to refer to a *species*, and in the conclusion to *individuals*. Thus,

"Nothing that was in Noah's ark perished in the flood:
"All animals were in Noah's ark; therefore,
No animals perished in the flood."
The fallacy in this case may be dispelled by shewing that in one case the reference is to all kinds of animals; in the other, to individuals only.

5. Fälacia figureæ dictionis. This fallacy takes place when a term is introduced in an argument which resembles in sound the one for which it is substituted, but not in sense. Men generally take for granted that paronymous words, that is, those which resemble each other, which have the same root, or are connected with each other by the grammatical affinity of language, must have a correspondent meaning. This, however, is by no means the case universally; and when a term is introduced which appears to be equivalent, when in reality it conveys a very different meaning, the Sophist easily succeeds in his deception. It is scarcely possible to exhibit, in strict logical form, a fallacy of this class, which is at all likely to impose on persons possessed of merely moderate shrewdness; because, by doing so, it would be seen at once to have two middle terms in sound as well as in sense. Yet nothing is more common in practice than this fallacy. The terms employed in any lengthened argument are continually undergoing a change, in order to afford pleasing variety, or to subserve the purposes of taste or convenience; and provided the meaning is preserved unaltered, this is not to be deemed a fault, but a beauty in composition. No objection can be justly made to the following syllogism, although there is a considerable alteration in the terms employed:
“Murder should be punished with death:
This man is a murderer; therefore,
He deserves to die.”

In this case the changes that are made are perfectly allowable; because they proceed on the just assumption, that to commit murder, and to be a murderer,—to deserve death, and to be one who ought to die,—are, respectively, precisely equivalent expressions. This kind of liberty is perfectly allowable; and to be deprived of it would often prove a very great inconvenience. But the fallacy which we are now considering consists in the abuse of this liberty; as may be seen by the following example:

“Projectors are unfit to be trusted:
This man has formed a project; therefore,
He is unfit to be trusted.”

Here the fallacy lies in insinuating that he who forms a project must be a projector; although the sense commonly attached to the latter word, is not at all implied in the former. They are indeed derived from the same root, and resemble each other in sound, but cannot on any account be admitted into an argument as equivalent expressions.

Sometimes this fallacy lurks not in the ambiguous middle term, but in one of the terms of the conclusion. In this case the conclusion that is drawn will not be at all what the premises warrant, although it may seem to be so, by the resemblance which the term artfully brought in appears to have to the one for which it is substituted. Thus,
"To be acquainted with the guilty is a *presumption* of guilt:
This man is acquainted with the guilty; therefore,
We may *presume* that he is guilty."

The fallacy in this case proceeds on the supposition that there is an exact correspondence between *presume* and *presumption*. This, however, is not a just supposition; became "presumption," in the one premise, means evidently only a kind of *slight suspicion*; whereas "to presume" is used in the other, as it is commonly employed, to express *absolute belief*.

There are innumerable instances in which words are thus supposed to have exactly the same meaning, when in reality this is a false assumption, which may lead to very serious error. And the more slight the variation, the more likely is the fallacy to deceive, because persons are thereby thrown more off their guard. In order to detect these fallacious arguments, it is of great moment that we endeavour, by every means in our power, to obtain a correct knowledge of words, in all their varieties and shades of meaning, and more particularly that we become acquainted with *synonymes* and pseudo-*synonymes*, as an accurate acquaintance with them will be of the greatest service in detecting these fallacies. In order to refute them, after they have thus been detected, we must point out the different meanings which the words bear; and, by varying the construction, so that it may agree with the one word but not with the other, shew that in the case in hand they are not *synonymous*.
Sometimes this fallacy arises from a word being used at one time in its customary, and at another, in its etymological sense. Thus it has been argued that it is idle to speak of eternal or immutable "truth," because this word is derived from "to trow," that is, to believe. Assuming that its right meaning must correspond exactly with the strict, original sense of this verb, it has been contended that the one must be as fluctuating as the other. The best way to expose this kind of sophism is to bring forward another, founded on the same principle, the absurdity of which will be at once manifest. Thus in reference to the above fallacy it has been well replied, that the Sophist might have censured on as good grounds the absurdity of a person's saying he had sent a letter by the "post;" because a post, in its primary sense, is a pillar; or have insisted that "Sycophant" can never mean any thing but "Fig-shower."

As this Fallacy is sometimes founded on the etymology, so is it frequently on the prosody of a language. In some languages the accent often completely alters the signification of a word. Thus in the Latin words occīdo and occīdo, the meaning is completely changed, according as you put the short or the long accent on the penultima. In the Bengalee language there are many words which so nearly resemble each other, that the slightest change in the pronunciation will completely alter the meaning. Thus the words গুরু, গুড়া, have a meaning very distinct from each other, although the slightest inaccuracy in pronunciation may
lead to very awkward mistakes respecting them. The same may be remarked of numerous provincialisms in the English language. In some parts of Scotland there are many words which, in common conversation, seem to have made a fair exchange of significations; thus, in many places, *plum* and *plume* have fairly exchanged meanings; the *former* being applied to an ornament of feathers, which is the correct meaning of the latter; and the *latter* being given to the delicious fruit which bears the name of the former. Now, sometimes the Sophist seizes on these distinctions, trifling though they may seem, and makes them the foundation of his fallacious reasoning; and although the mere directing the attention to these cavils is sufficient to refute them, it is astonishing how much they sometimes mislead the unthinking multitude. In all these cases an *ambiguous middle* is the cause of the Fallacy.

6. *Fallacia accidentis.* This fallacy takes place when a person argues for or against anything, from what is merely *accidental*, instead of from what is *essential* to the subject. For example, were any person to object to the doctrine of fallacies, that the study of it is dangerous, because it furnishes the Sophist with weapons for his fallacious disputations, this would be a fallacy that might properly be referred to this class; since it is arguing against a useful branch of study, merely because it may happen to be abused. Such a sophism may be easily refuted by pointing out the difference that exists between the thing itself, and the mere *accidental concomitants* against which the objection is made.
This mode of fallacious reasoning must also be referred to an ambiguous middle. The middle term is used in one premise to signify something considered as to its essential properties; and in the other premise, it is considered as implying that its accidents are taken into account with it. Thus,

"What is bought in the market is eaten:
Raw meat is bought in the market; therefore,
Raw meat is eaten."

In this instance the middle term, in the major premise, is understood, as to its essential properties; in the minor, as to its condition and circumstances.

Again:

"Christianity existed from the days of the Apostles:
Protestanism did not exist from the days of the Apostles, but only from the time of Luther; therefore,
Protestanism is not Christianity."

This is evidently a fallacy; and the error lies in insinuating that what is true of any subject considered simply in itself, must be true likewise of it in all its particular modifications. It is true, as stated in the major premise, that Christianity existed from the days of the Apostles; but it is not true, as is implied in the minor, that all its possible accidental circumstances existed from that time also. This ambiguity is the cause of the fallacy; and by pointing it out the sophism will be detected. Perhaps a fallacy of this
kind may be most effectually refuted, by bringing forward another, on a similar principle, the absurdity of which will be at once manifest. Thus,

"Lord Auckland existed last century:
The present Governor General of India did not exist last century, but only from the time of his appointment to this high office; therefore, Lord Auckland is not the Governor General of India."

By thus bringing forward a parallel case, all such sophisms may be, in a popular manner, triumphantly refuted.

7. Fallacia a dicto secundum quid ad dictum simpliciter; aut vicissim. This fallacy is nearly allied to the preceding, and takes place when any person argues for a thing taken in an absolute sense, when it is only true in a restricted sense; or the contrary. The examples given of it are like the following; "An Ethiopian is white as to his teeth; therefore, he is white." "A man in particular circumstances acted prudently; therefore he will act prudently in all circumstances." Or thus;

"Prodigies and omens are not to be believed:
Livy in his Roman history describes omens and prodigies; therefore,
Livy's Roman history is not to be believed."

All these fallacies can be easily solved by shewing that a thing may be true in some respects, while it is not so in others; or that it may be true considered
simply in itself, while it is not so abstracted from these circumstances.

Again: this fallacy may take place by a person's arguing from what is true absolutely, to prove the same thing true in particular circumstances: thus,

"All men have a right to their personal liberty:
A madman is a man; therefore,
He has a right to his personal liberty."

The fallacy in this case is nearly the same as the fallacia accidentis. The sophism lurks in the ambiguity of the terms, and may be exposed by shewing the difference that exists betwixt things in their absolute nature, and as necessarily modified by special times, places, and circumstances.

8. Fallacia plurium interrogationum. This fallacy consists in asking several questions, which appear to be but one, in such a way, that whatever one answer is given, being of course applicable to only one of the implied questions, may be interpreted as applied to some one of the others. Thus, if asked, "Are virtue and vice desirable?" Whether you reply, Yes; or No, you are equally entangled. If, however, you reply to each question separately, you detect the ambiguity and expose the fallacy.

If the several questions that are proposed together, are avowedly brought forward as distinct questions, there is no fallacy in the case; for it is just as fair to put two or more distinct questions in this way, as it is to assert a string of distinct propositions, connected
together by the laws of grammar. It is only when the questions are put in such a way as shall elicit one answer to the whole apparent question, which can only be correctly answered by several, that this Fallacy is employed.

Sometimes the fallacy turns on some equivocal term artfully introduced into the question. Nothing gives so much life and apparent force to sophistical reasoning as to state one of the premises of an argument in the form of a question; and then, presuming that it is admitted, to fill up the rest of the argument as may best suit the person's purpose who is desirous to deceive. If, then, one of the terms in that question be ambiguous, whichever sense the opponent takes up and replies to, the Sophist assumes the other sense in the argument which he uses in reply. Thus if it be asked, "Is anything vicious expedient?" whatever answer is given to this question, whether in the negative, or the affirmative, a fallacy may be founded upon it, from the ambiguity of the term expedient. Sometimes this term means "conducive to temporal happiness;" sometimes "conducive to the greatest good." If the answer be in the negative, then the Sophist might argue thus;

"Whatever is vicious is not expedient:
Whatever conduces to temporal happiness is expedient; therefore,
Whatever conduces to temporal happiness is not vicious."

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If the answer be in the affirmative, he may reason thus:

"Whatever is expedient is desirable:
Something vicious is expedient; therefore,
Something vicious is desirable."

In these cases care must be taken to find out where the ambiguity lies; and by exposing it, the fallacy will be dissipated.

This fallacy sometimes take place also by employing a term in a question, in such a way, that it may be uncertain whether it is distributed or not; so that here again, whatever answer is given, the reply may be misrepresented and disproved. For instance, if it be asked, "Did Constantine embrace Christianity from a conviction of its divine origin?" the meaning may either be, "was this his sole reason for doing so?" or "was this only one of his reasons?" In the first case, the term is considered as distributed; in the other, not; and whatever answer is given may be perverted by the Sophist.

In all the above classes it will be evident, from a careful examination of each of them, that the fallacy lurks in ambiguous terms. They are therefore all placed under the head of Semi-logical Fallacies. It must, however, often be a matter of mere arbitrary choice to which of these classes any individual Fallacy should be assigned.
SECTION 3.

Of Non-logical Fallacies.

The Fallacies now to be considered are those in which the Conclusion does follow from the premises. In the other two classes the fallacy lurked, in some way or other, in the connection which the conclusion had with the premises. In this class, however, the connection between these is correct; the one follows justly from the other; and the sophism is to be found neither in the violation of logical rules, nor in the ambiguity of equivocal terms. The fallacy of the present class of arguments must be sought for either in the Premises that are assumed, or in the Conclusions that are drawn from them. They are therefore fallacies Extra Dictionem. In this case the fallacy consists not in the process of reasoning, nor in the ambiguity of the terms, but in the matter about which the argumentation is taking place. Such Fallacies are therefore called Non-logical, because no rules which Logic lays down can themselves enable us to detect and expose them. Under this head all those Fallacies may be ranged, which result from the Premises being unduly assumed, or the Conclusion not being the one required. The following may therefore be specified.

1. Fallacia non causae pro causa. This fallacy consists, as it is generally expressed, in assigning an event to a wrong cause—an error into which men have always been prone to fall. Many of the doctrines
of ancient philosophy are reducible to this head; as, for instance, when the Peripatetics gravely informed us, that "nature was terribly afraid of a vacuum, and that this was the cause why water would not run out of a long tube, if it were turned upside down."

This fallacy prevails to a great extent among the ignorant and superstitious. If a comet appears, or an eclipse of the sun or moon takes place, it is customary for them to look upon these natural phenomena as the forerunners of wars, pestilence, and famine. If a person has been guilty of some crime, and shortly after meets with some temporal calamity, the one is at once made the cause of the other. On the other hand, if a person is involved in a series of afflictions, they immediately conclude that these are judgments come upon him for his iniquities. But all these conclusions are mere sophisms, without any solid basis on which to rest.

Many of the popular objections brought against Christianity are to be referred to this head. All the persecutions that have been the disgrace of the professed Christian church; all the numerous sects and parties into which the Christian world is divided; all the inconsistencies and wickedness of those who have no other claim to be considered Christians, but that they have unrighteously assumed the name; these are often brought forward in such a way as to insinuate, that the whole is justly chargeable on Christianity itself; although any person that looks at the Christian religion, as it is revealed to us in the Sacred Volume,
must at once perceive the fallacy of such insinuations. In this case the Sophist, generally speaking, contents himself with merely insinuating his unfounded objections; for there are few who will come forward and directly charge Christianity with these flagrant evils. But what fair argument cannot do, a sneer, and a smart innuendo, may often accomplish; and the fallacy imposes even on those who plume themselves on their superior understanding, and freedom from all vulgar prejudices.

If we analyse the process that takes place in this fallacy we shall find that that which chiefly distinguishes it is the undue assumption of one of the premises. In reasoning from cause to effect two things are necessary; we must first shew the real existence of a sufficient cause; and then we must prove that this is the cause that is in operation in this particular instance. These are the two premises in this kind of argument. If, then, either of these premises is unduly assumed, this fallacy takes place. Thus; if one should contend from another person's being unjust and cruel, that he will certainly be visited with some heavy temporal calamity; in this case, he assumes a pretended cause in the premises, and then he infers in the conclusion that the supposed effect will certainly follow. Or, on the other hand, if a person has been involved in some grievous temporal calamity, how common is it to infer that he must have been peculiarly guilty; more so, at least, than those who have not been visited with the same distress. In this case the
pretended effect is employed to establish the supposed cause. In both these instances the fallacy lies in assuming a premise without having proper authority for so doing. In the one case a fact that really exists is supposed to be the cause of something that is only expected; and in the other, a fact that really exists, is assumed to be the effect of something which is only supposed to have an existence. In the one case the Sophist takes for granted a cause, in the other an effect; without either being self-evident, or satisfactorily proved.

Sometimes, when both the pretended cause and effect are granted, that is, when they both really exist as facts, the fallacy lies in assuming a connection between these facts, when there is no such thing. Thus, if a patient takes a particular medicine, and recovers, how common is it to affirm that he was cured by this medicine. In this case the two facts are incontrovertible; the patient took the medicine; and he recovered; but more than this we are not warranted to affirm. The Sophist, however, will go much farther; he will assume that, of these two admitted facts, the one is the cause of the other, and thus be guilty of a "non causa pro causa." In all these cases, however, the fallacy lies in the undue assumption of some premise that is doubtful, or unsupported.

When a premise is thus unduly assumed, the great object with the Sophist is to prevent the undue assumption from being perceived; for as soon as this is discovered the fallacy is detected. Very often the
doubtful premise is suppressed, as if it were too evident to need proof, or even to be stated. Thus a Sophist might affirm; "there will be war this year, because a comet has appeared;" and this argument might appear to the ignorant and superstitious sufficiently conclusive; because the other premise, which is manifestly false, is kept out of view. Let the suppressed premise be directly asserted, and there are few who would be imposed on by the fallacy. Thus,

"Whenever a comet has appeared, a war has taken place:
A comet has appeared this year; therefore,
There will be a war."

By merely mentioning the argument in this way, the attention is aroused, and the mind is led to consider whether the assertion is true or not; and as the person may recollect instances in which such an event took place, without being attended with this sad consequence, he begins to doubt the assertion, and then very soon discovers wherein its fallacy lies.

There is another form of this fallacy by which we may often be deceived; we refer to the very common practice of attributing to a proposition that is really probable, a greater degree of probability than rightly belongs to it. This often takes place when, in a long chain of argument, we omit to calculate the probabilities in each successive step. Each step may have an excess of chances in its favour, and yet the ultimate conclusion may have a great preponderance against it. This has been illustrated as follows;
“All Y is probably X:
All Z is probably Y; therefore,
All Z is probably X.”

Now, supposing the truth of the major premise to be more probable than otherwise; admit that the chances for it are more than \( \frac{1}{2} \); say \( \frac{4}{7} \); and suppose the chances for the truth of the minor to be greater still; say \( \frac{2}{3} \); then, by multiplying together the numerators and the denominators of these two fractions, \( \frac{4}{7} \times \frac{2}{3} \), we obtain \( \frac{8}{21} \), as intimating the degree of probability that belongs to the conclusion. This, however, is less than \( \frac{1}{2} \): the conclusion, then, is less likely to be true than the two preceding steps in the argument. For example:

“\begin{quote}
\text{The reports which this author heard are probably true:}
\text{This which he records is a report which he heard; therefore,}
\text{This statement is true.}
\end{quote}"

Suppose the \textit{majority} of the reports he heard, say \textit{four out of seven}, are true; and that he \textit{generally}, say, \textit{twice in three times}, reports faithfully what he heard; it follows that of \textit{twenty-one} of his reports, only \textit{eight} are true. When there is a long chain of argument of this description, of course the results are equally striking. And yet how often are persons deceived by hearing a long chain of probabilities brought forward in support of some conclusion; whereas each successive link in this chain is weaker than the one that preceded.
Elements of Logic.

The examples given above refer to that form of this Fallacy which is called "a non vera pro vera." There is another form, however, which it sometimes assumes, which has been called "a non tali pro tali." This takes place when a person argues from a case not parallel as if it were parallel. Thus, from the circumstance that some persons have abused charity, it has been contended that to give alms, in any case, is improper. Because a person from a particular class of society, when raised to a station of trust and importance, has acted improperly, it has been argued that to raise any other of that class to the same station, must be attended with similar ill-success. But in cases of this kind, the argument rests on the assumption of a prefect parallelism in the two cases; whereas there may be some circumstances, absolutely essential, lost sight of, which may vitiate the whole reasoning.

This Fallacy, in all its various modifications, consists in having one or other of the premises false, that is, unduly assumed. In the "non tali pro tali," the suppressed premise is false, for it is in this premise that the parallelism is affirmed. And in the "non vera pro vera," the expressed premise is false. It will often be a mere matter of choice, however, whether to refer any individual fallacious argument to this head, or to that of the Ambiguous middle; yet still the distinguishing characteristic of this species of Fallacy seems to be that which we have specified.

2. Petitio principiò. This Fallacy consists in beg-
gring the question, or taking for granted that which is to be proved. In this case the premise is either manifestly the same as the conclusion, although expressed in different words; or it is dependent on it for its own establishment. The philosopher’s proof of his own existence is an example of this fallacy; “Cogito, ergo sum.” If a Professor of Divinity were to begin his course of Lectures with the doctrine of Divine Inspiration, he must necessarily fall into this fallacious mode of reasoning. For, however true this doctrine may be, and however convincing the arguments by which it can be established, still, in that stage of his inquiries, it cannot be proved to the conviction of his hearers, because he has not yet established other truths from which it must be deduced. Thus, whether he appeals to the promises of Christ to his Apostles, or to the express declarations of the Apostles themselves, he must take for granted that these promises and declarations were really made; that is, he must take for granted the authenticity of the writings in which these promises and declarations are contained. In like manner if a person should attempt to prove the existence of God, from the authority of Scripture, he would be guilty of this fallacy; because the Scriptures derive all their authority from the fact that they are the word of God,—which necessarily implies his existence.

Sometimes, however, it may be perfectly allowable, at the commencement of an argument, to take for granted a premise that is not more evident than the
conclusion, or that may be disputed by your adversary, provided you engage fairly to prove that premise afterwards. This, however, should be avoided as much as possible; for if we undertake to prove a proposition by the aid of another, which is itself hereafter to be proved, we are in great danger of falling into this erroneous mode of arguing. The proposition in question becomes a link in the chain, by which we establish that very proposition. The preferable way is first to prove the proposition that is needed for your argument, and then your course is straightforward and plain.

It is also perfectly allowable in an argument to begin by deducing your conclusion from a premise which may be exactly equivalent to the one which is to be proved; provided that no undue advantage be taken as to the matter in question. But the Sophist in doing this, will endeavour either to blink the question altogether, or, in a flourish of words, merely bring forward the same proposition, expressed in synonymous terms, which may have no resemblance in sound, or connection in etymology, and yet mean precisely the same thing. Thus, were the question in dispute, whether "Christian unity is alone preserved in the Roman Catholic Church," and were a member of that communion to argue in the following manner, he would be guilty of this fallacy: "Examine the Catholic Church in every age, and in every country, and you will find it precisely the same. From His Holiness the Pope, down to the meanest member of
the true Church—from the days of the Apostle Peter, down to the present time, a sacred unity has ever been preserved." This is evidently a mere fallacy; instead of proving that the Catholic Church possesses and preserves this unity, the Sophist merely asserts and repeats what he ought to have proved. No language is so favourable for this kind of fallacy as the English tongue, from the numerous synonymous terms which it possesses, and which have in many cases no other point of agreement except their meaning.

There is another form of this Fallacy which is called Reasoning in a Circle, which must necessarily ever be unfair. This happens when the same propositions are made alternately premises and conclusion. The following argument will exemplify this fallacious mode of reasoning. Some have contended that the Scriptures are so ambiguous and obscure, that, when left to themselves, they are more likely to generate error than truth, to foment division rather than to produce unanimity and agreement. To this objection it has been eloquently and triumphantly replied; "What is the reason that the Scriptures may not be trusted alone? 'Why,' say our opponents, 'they are liable to be misinterpreted, and wrested to countenance the respective opinions and practices of different sects and parties.' Be it so: we admit this to be possible; but what remedy can be devised to obviate this evil? Is their use to be entirely proscribed? 'No,' say our opponents, 'but they must be invariably accompanied by another book, which may be considered in the
light of an authorized commentary.' But we would ask, again, Are we to judge of this commentary; or are we to receive it simply on the ground of authority, and upon the principle of implicit faith; or is any exercise of private judgment permitted to us? If it be replied that it is not, this is nothing less than open and barefaced popery. If the judgment is to be exerted at all, and every thing is not to be taken on trust, their commentary must be judged of by some criterion, and what can that be but the Scriptures? The Scriptures must then, after all, be appealed to before it is possible to determine on the correctness of the commentary; and thus we are led back to the precise point from which we set out, that is, the examination of the Scriptures. According to the views of our opponents, we are either to admit the principle of implicit faith to its utmost extent, which is open and avowed popery; or we are first to interpret the Scriptures by the commentary, and then judge of the commentary by the Scriptures. This is the circle, out of which it is impossible for our opponents to escape, and they may be lashed round it to all eternity!"

This fallacy evidently consists in the undue assumption of a premise equivalent to the conclusion, or necessarily dependent upon it. It is, therefore, very similar to the preceding; and the only way in which it can be detected, is, to observe narrowly the *Premises* which the Sophist may use; to strip them of their disguise; to point out the sameness of that
which he assumes with that which he establishes; and to require proof for what has been unduly taken for granted.

3. Ignoratio elenchi. This is the Fallacy of an Irrelevant Conclusion; and it takes place when the proposition which you prove is not the contradictory of your opponent's assertion. Thus, if a person were convicted of a crime in court, and his advocate were to attempt to disprove the charge, by proving that the prisoner had been greatly injured—that he was a person of excellent character—and that nothing of the kind had ever before been laid to his charge, he would be guilty of this fallacy; for none of these points were the matter under examination, and they might be all true, while his guilt remained nevertheless.

It often happens that this fallacy turns on some ambiguity in the proposition to be established. The Sophist sees that he cannot prove the matter in question in the sense in which it ought fairly to be understood; he therefore dexterously changes the meaning of the sentence, and, by establishing the proposition in its altered form, imposes on the unwary. Thus, if a person should attempt to prove that the inhabitants of a civilized country were not free, and in proof of this should prove that they must be subject to the laws, he would be guilty of this fallacy; because the truth of this conclusion does not at all invalidate the former statement, unless it be viewed in an unusual sense, and not in that sense in which it would generally be understood.
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This fallacy is most frequently resorted to in cases of protracted dispute. When the Sophist finds that he cannot maintain his point, he shifts the ground of argument to some other view of the subject which he can more easily defend. Sometimes he may substitute a particular for a universal term; or he may prove something to be possible, when it ought to have been proved probable; or probable, when it ought to have been proved necessary: or he may prove it to be not necessary when it should have been proved not probable; or improbable, when he should have shewn that it was impossible. When he has proved this point, which, through his dexterous management may not be perceived to be at all different from the one in dispute, he may exult over his adversary as having gained the victory, while he has only been imposing on him with the fallacy we are now considering.

Sometimes, too, this fallacy consists in proving or disproving only a part of that which is required, and then drawing a conclusion as if the whole had been taken into consideration. Nothing affords a better example of this fallacious mode of reasoning than the present system of reviewing works as they issue from the press. Almost every Review abounds with this fallacy, whether the Review be favourable or unfavourable. In the one instance the objectionable parts of the work are overlooked, and the parts that are not so liable to objection are brought forward and dwelt upon; and in the other case, the excellencies of the work are kept out of sight, and those parts that are
most objectionable, or most easily refuted, are made the subject of animadversion; and then a conclusion is drawn, which may be correct enough in so far as those parts of the works are considered to which the Reviewer particularly turns the attention of his readers, but which is quite unjustifiable when the works are considered as a whole.

It is therefore considered a maxim, that we never should advance more in argumentation than can be well established; for in this way we give our adversary an advantage over us. The truth of a proposition is not to be determined by the number of arguments that can be brought forward in its favour, but by the soundness and conclusiveness of these arguments, whether they be many or few. If any fallacy is admitted, either through inattention, or by design, it will in the end do more harm than good. However specious these fallacious arguments may be in our own eyes, or in the estimation of our own party, when closely examined by our adversary, they can scarcely escape. Hence the injury done to a cause by a weak advocate: the cause itself will appear to be overthrown, when his futile arguments have been exposed and answered. In controversy, then, we ought to state what is true, rather than attempt to bring forward all that can, with any degree of plausibility, be said on the subject. If there are objections to what we advance, and we are able to answer them satisfactorily, let them be stated in their full force, since it is better they should be fairly stated by ourselves, than by an uncandid opponent;
if we perceive that they are unanswerable, let us honestly yield the point, as it will always be found ultimately the wisest and safest plan to abandon every argument inconsistent with truth. Were we therefore to place ourselves in the room of our opponent, and examine our arguments as he might be supposed to do, we should prevent him from gaining the advantage which he is likely to derive from weak and easily refuted arguments.

This fallacy is sometimes practised, also, by shewing that there are objections which can be brought forward against the point in dispute; and thence inferring that it ought not to be received. If any person can indeed shew that the objections against it, are more numerous and strong than the arguments that can be brought forward in favour of it, the argument may be considered valid; but the fallacy to which we now refer, is that of rejecting any proposition or theory, merely because it is not free from objections. This is the fallacy that is most commonly brought forward by those who attempt to impugn the divine origin of the Christian Religion; and respecting which the young ought especially to be put on their guard. It has been most ably illustrated and refuted in the following manner.

"This is, as has been said, the principal engine employed by the adversaries of our Faith: they find numerous 'objections' against various parts of Scripture, to some of which no satisfactory answer can be given; and the incautious hearer is apt, while his attention is fixed on these, to forget that there are infinitely more,
and stronger objections against the supposition that the Christian Religion is of human origin; and that where we cannot answer all objections, we are bound in reason and in candour to adopt the hypothesis that labours under the least. That the case is as I have stated, I am authorized to assume, from this circumstance; that no complete and consistent account has ever been given of the manner in which the Christian Religion, supposing it a human contrivance, could have arisen and prevailed as it did. And yet this may obviously be demanded, with the utmost fairness, of those who deny its divine origin. The Religion exists: that is the phenomenon; those who will not allow it to have come from God, are bound to solve the phenomenon on some other hypothesis less open to objections: they are not indeed called on to prove that it actually did arise in this or that way; but to suggest (consistently with acknowledged facts) some probable way in which it may have arisen, reconcileable with all the circumstances of the case. That infidels have never done this, though they have had near 2000 years to try, amounts to a confession that no such hypothesis can be devised, which will not be open to greater objections than lie against Christianity."

In order that we may escape being imposed on by the fallacy of objections, we should remember that real and unanswerable arguments may be urged against a proposition that is nevertheless true, and which can be satisfactorily established by a preponderance of
probability. In what is called moral or probable reasoning there may be sound and valid objections on both sides. "There are objections against a plenum, and objections against a vacuum; but one of them must be true." The real question in such cases is, which of two alternates is the more probable, or on which side the evidence preponderates. Instead therefore of attempting to answer every objection, which the Sophist may bring forward merely to draw off attention from the more weighty arguments which you have advanced, the objector should be called on to frame an hypothesis that may be encompassed with fewer difficulties.

Sometimes, also, when irrefragable arguments have been advanced against something which is tacitly admitted to be indefensible, a sophistical refutation may be attempted by bringing forward something that is worse, taking it for granted that this is the only alternative. Thus, if objections are advanced against the Establishment Church, they may be answered by pointing out the evils of Dissent. If a person is blaming for being a spendthrift, he may dilate on the greater enormity of being a miser—as if there were any necessity for his being either. In all these cases the fallacy lies in establishing a conclusion which is irrelevant to the subject.

In order to detect and refute this Fallacy, in all the various forms which it assumes, we should particularly keep the attention fixed on the Conclusion that is to be established. The Sophist will generally avoid,
if possible, stating at the outset the proposition which he ought to prove. He will rather begin with the premises, and introduce as long a chain of argument as he possibly can before he comes to the conclusion; and, in order that he may the better draw the mind of his opponent from the precise point at issue, he will try if possible to suppress it altogether, and conclude the argument by merely stating that “that which was to be proved” has been established. In this way the inattentive are often deceived. If, however, we keep the precise point in dispute clear before the mind, and neither lose sight of it ourselves, nor suffer our adversary either to wander from it, or substitute any thing in its place, we shall generally escape the snare.

We have thus gone through the three divisions of Logic, and unfolded the principles and laws both of sound and of sophistical Reasoning. It will be necessary, however, before we close this brief treatise, to subjoin some general remarks on the application of the Science to practical purposes.