A Class Manual in Formal Logic

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This little book is dedicated
with reverence and regard

To

The Very Reverend Michael Andrew Lambing,
V.F., P.R.,
of Scottdale, Pennsylvania,

a Master of the Divine Dialectic, whose Ideas, Judgments, and Reasoning have, for more than Fifty Priestly Years, found expression in his Doctrine and Practice, and have taught unnumbered Souls the Logic of Life in the Love of the Lord.

PREFACE

There are several excellent manuals in Formal Logic now available, and a new textbook in the subject ought to justify its appearance by clear and compelling reasons. Such reasons, however, are not far to seek.

The curriculum of the modern college is much crowded. Formal Logic has a place in it indeed, but a minor place. A single semester, or, at the most, a single school-year, is the period of time usually allowed for the mastering of this fine science. Quite obviously, the splendid texts of Crumley, Joyce, Clarke, and others of similar scope, cannot be got through satisfactorily in five months—or in ten. On the other hand, the outlines of Logic, like Shallo's or Coppens', are of real value only to the student who wishes to make a rapid review of matter already studied and well grasped. The fact emerges that there is need of a new textbook in this subject.

There is need of a textbook that will be more than an outline, and yet not too ambitious in scope; a textbook that will avoid the more ponderous terminology (but not the traditional nomenclature) of the scientific logician, while expressing dialectical

doctrine in language both clear and precise. There is need of a text that will combine moderate brevity with relative completeness, concise expression with exactness, interest with directness.

This manual seeks to supply what is here described as requisite. It is designed to serve the young collegian who has need of the splendid training of a course in Dialectics, or Formal Logic, but who has all too little time to give to the subject. The book is a serious attempt to present the essentials of a noble science. It is no cheap or flippant attempt to entertain those who study it; it is not a statement of doctrine in words of one syllable; it is no brief for the patent falsehood that Dialectics may be mastered with small effort. Nor is the book in any sense a manual of self-instruction. It is purely the result of an attempt to supply a class-text that teacher and pupil alike will find usable in the difficult curricular conditions of the present time.

This book is not documented, for it is the writer's conviction that documentation in an undergraduate class-manual is not only a useless bit of ornamentation but a positive distraction to the average student. Besides, it is the teacher's work to direct the reading of his class—when reading is found possible or opportune—and the textbook which interferes in this matter may be described, not without justice, as presumptuous. A short bibliography, as a concession to convention, is all that can be reasonably asked in the

way of documentation in a book intended primarily for undergraduates.

It is the writer's earnest hope that this book may be found useful, and that it may be accounted as "teachable" a textbook as he and others have found it in its manuscript form.

The writer is indebted to the V. Rev. Justin FI. McManus, O.P., S.T.D., President of Aquinas College, Columbus, for a critical reading of the manuscript; and to the Rev. Herman E. Mattingly, A.M., of the Faculty of Saint Charles College, for a careful checking of the proofs.

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I. DEFINITION

Dialectics is the practical science of correct thinking.

a) Dialectics is *a science*. A science is a relatively complete and systematically arranged body of related facts (truths or laws) together with their hows and whys, their causes or reasons. Dialectics is a science because it sets forth, in an orderly, systematic, and complete manner, the laws which govern correct thinking, and it shows how knowledge of these laws is achieved, and why these laws must be accepted as valid.

b) Dialectics is a *practical* science. A science that presents facts which enrich knowledge, but which do not directly imply laws or norms for the guidance of thought or action, is called a *speculative* science. A science that presents facts from which directive norms or laws are immediately derived is called a *practical* science. The function of a speculative science is primarily cultural ; that of a practical science is primarily directive. Dialectics is a practical

science because the study of its data causes to emerge a body of laws by which the mind must be directed in order to think consistently and correctly. These laws are called the Laws of Thought; hence Dialectics is sometimes defined as the Science of the Laws of Thought.

c) Dialectics is a science of *thinking*. By *thinking* we mean reasoning, working out an implication, drawing a conclusion, inferring a consequence. Sometimes the word *think* is used in the sense of "have an opinion," as when we say, "I think you are right." Again, the word is often used in the sense of "remember" or "call up to pensive recollection," as when we say, "To think the old days over is a luxury divine." The word *thinking* is used in no such senses here. Nor do we confuse the word *thinking* with *knowing*. Thinking is only one of the processes by which knowing is achieved. We may know a thing by direct sensation (that is, by direct use of the senses), as, for instance, we know that it is raining, or that we have toothache. And we may know a thing by direct grasp of the understanding (that is, of the mind, or the intellect) without having to "think it out," as, for example, we know that a totality is greater than any of its parts. But when we come to know a thing by *thinking* we have worked the thing out by studious and progressive steps of mental activity. When, for instance, one has worked out the demonstration of

the theorem which states that the sum of the angles of any triangle is i8o°, one has been *thinking*. Such thinking is called reasoning or discursive thought; it connects up data and moves from point to point in order to reach a final conclusion. It is of such reasoning or discursive thought that we speak when we use the term *thinking* in our definition of Dialectics.

d) Dialectics is the science of *correct* thinking. Correctness means right order, consistency, legitimacy of procedure, justifiability of inference. It does *not* mean truth. Take a piece of reasoning in illustration :

All animals are rational
A lion is an animal
Therefore a lion is rational.

At once you object: "The first statement is not *true;* as a matter of fact, all animals are not rational." This is not the point of the matter for Dialectics. ..Take the statement as it stands; accept it as given. Ask only whether the last statement (the *conclusion)* is necessarily drawn from the first two statements (the *premisses').* Dialectics asks but a single question: "Is the conclusion necessarily inferred from the premisses as given?" If the answer to this question is affirmative, then the reasoning —the thinking—is correct. The sole function of

Dialectics is to see that the thinking process is justifiably employed upon data supplied to it. Dialectics does not investigate the *truth* of such data nor the *certainty* with which such data are known.

Dialectics then is the science of correct thinking, not of true and certain thinking. The science of true and certain thinking is called Epistemology or, more accurately, Criteriology. We see at once that Dialectics (which looks to correctness in thinking) and Criteriology (which looks to truth and certainty in thinking) are supplementary: together they make up the *Science of Logic.* Sometimes Dialectics is called Formal Logic, and Criteriology is called Material Logic. In modern usage the simple term *Logic* ordinarily means Formal Logic or Dialectics»

The differences as well as the positive relations that exist between these two sub-sciences or parts of Logic (viz., Dialectics and Criteriology) may be made clear by an illustration: A man who is to operate a mill must first of all understand the milling machinery. He must know the action of each mechanical part of the mill; he must understand how the motor force is applied; he must see that the belts run true. Only after he has mastered the mechanical operation of the mill need he concern himself about the quality of grain that goes into its hoppers. Similarly—although it must alwa^ ; be

remembered that the mind is no mere machine—a man who is to use his mind in complicated and involved thinking must first of all know how the mind operates. He must know how to make the mental process consistent, orderly, legitimate, justifiable—in a word, he must know how to make this process *correct.* Afterwards he will learn the tests for truth and certainty in the things about which he reasons, even as the miller will presently learn the tests for good grain. Ultimately, of course, Dialectics aims at achieving truth and certainty, just as the inexpert miller aims ultimately at good flour when he is studying the milling machinery and not thinking directly about flour. But *the special and immediate aim* of Dialectics is correctness in the process of thinking.

2. OBJECT

Now *the special and immediate aim* of a science is called its *Formal Object.* The Formal Object of Dialectics is, therefore, correctness in thinking. The thing or things with which a science deals in order to achieve its Formal Object constitute the *Material Object* of that science. The Material Object of Dialectics is the various mental acts that go to make up the thinking process. Dialectics studies these (the Material Object) in order to achieve correctness (its Formal Object).

Several sciences may deal with the same subject-

matter; in other words, several sciences may have the same Material Object. But no two sciences can have the same Formal Object. Anatomy and Hygiene, for example, have the same Material Object; each deals with the organs of the human body. But these two sciences have distinct Formal Objects, for Anatomy studies the bodily organs with the view of learning their structure, while Hygiene studies the same organs with the view of knowing their proper functions and the means by which proper functioning may be conserved. Similarly, Dialectics and Criteriology both study the mental operations. These sciences have, therefore, the same Material Object. But in studying the mental operations Dialectics looks to *correctness* therein, while Criteriology looks to *truth and certainty* to be achieved thereby. Thus these sciences have distinct Formal Objects.

We draw the line of demarcation between sciences that deal with the same subject-matter (Material Object) and discern the proper limits and scope of each in the light of the famous axiom: "Sciences are distinguished one from another by their Formal Objects."

3. IMPORTANCE

You may say: "This science of Dialectics appears useless to me. I am equipped by nature for thinking

things out with clearness and consistency. Did I not use my reasoning powers correctly when I mastered my very first lessons in elementary arithmetic? Did I not perform with great exactness some very complicated pieces of reasoning when I worked out, step by step, the proofs of the various theorems of geometry? Why should I study Dialectics when I already possess what it proposes to give me?"

It is true that you do possess a natural power for reasoning things out, and your natural capacity and aptitude for such reasoning is called Natural Logic. But Natural Logic is not sufficient for all the requirements of an educated person. You have, doubtless, a taste for things beautiful; but you would hot set yourself up for an art critic without some special study. You may have a fine ear for music, you may play admirably "by air"; still, it woutd~take 'âTông têrtn of study and diligent practice to entitle you to the naffiê Of rïiüàîCtâm."Similarly, you may have a keen and quick mind; your endowment of Natural Logic may be large; but you require, none'■"the less, the training of Dialectics to enable you to make ready and just analyses of complicated argument, or to penetrate easily and surely to the exact point of fallacy in a.n unjustified inference. Dialectics tends to perfect your gift of Natural Logic, to make it more smooth, more orderly

and consistent, more keen and penetrating, more graceful and artistic in its functioning.

Of course, a knowledge of the mere rules of Dialectics will not make a keen reasoner any more than a theoretical knowledge of the names and uses of tools will make a good mechanician. But Dialectics furnishes the technique of keen reasoning to anyone who will make use of it and diligently practise it. Dialectics may be said to offer its rules with the scriptural admonition, "He that can take it, let him take it." Now any person of diligence and good will can "take it" and make the most splendid use of it.

How much harm is done in the world by faulty reasoning! How many are convinced by fallacies in matters of mind, of religion, of morals, of politics, of education values! A knowledge of Dialectics, made usable and useful by unfailing practice, will enable one to analyze such fallacies, and not only to declare them fallacies but to show *where* and *how* and *why* they are fallacious. Now any science that can equip a mind for such a service as this is a very important science indeed.

4. DIVISION

Dialectics seeks correctness (Formal Object) in the mental operations (Material Object), and thus it must study the latter in order to achieve the

former. The plan of study in this science is, therefore, determined by the mental operations themselves.[1]

The mental operations may be reduced to three major processes, viz., *simple apprehension, judgment,* and *reasoning.*

a) The first mental process is the act by which the mind grasps or apprehends a reality and knows it essentially. This operation is called Simple Apprehension, and its product is *the Idea.* Therefore the study of the first mental operation is the study of the idea in its formation and nature.

b) The second mental operation is the act by which the mind, comparing two ideas, notices their relation, and pronounces (judges) them in agreement or in disagreement. This operation of the mind is called *Judgment.*

c) The third mental operation is the act by which the mind infers or draws out an explicit judgment that is implicity contained in other judgments. This act of the mind is called Inference or *Reasoning.*

These three mental operations make up the Material Object of Dialectics, and by studying them we learn the mode of the mind's functioning, and are enabled to state the laws which must govern the mind if it is to act correctly.

[1] Throughout this manual the words, *mental* and *intellectual,* are used as synonyms. The three nouns, *mind, intellect,* and *understanding,* are also taken as perfectly synonymous.

Our study will deal with the Idea, Judgment, and Reasoning in three Books, as follows:

BOOK FIRST

THE IDEA

This Book first discusses the idea as it is in the mind, briefly describing its formation and constituents, and offering a definition and classification of ideas.

Next, the idea is considered as expressed by *the Term*.

Finally, the idea is studied as explained by *Definition* and *Logical Division*.

The Book is therefore divided into three Chapters, as follows:

Chapter I. The Idea Itself
Chapter II. The Idea Expressed
Chapter III. The Idea Explained

CHAPTER I

THE IDEA ITSELF

This Chapter describes the idea, studies its formation and constituents, and offers a definition of *idea* in the light of such study. A list or classification of ideas is then set forth. Finally, after the general classification, a special study is made of the most important class of ideas, viz., the *universal idea*.

The Chapter is accordingly divided into the following Articles:

Article I. Description and Definition of the Idea
Article 2. Classification of the Idea
Article 3. The Universal Idea

Article i. Description and Definition of the Idea

a)Description b)Formation c)Constituents d)Definition

a) DESCRIPTION OF THE IDEA

Let ten circles of varying diameter be drawn on a blackboard with chalks of different colors. Here we have ten pictures that differ in size, in color, and in position or location on the blackboard. Yet, different as they are, the ten pictures represent an identical thing, and we say that each is "a circle."

Now this is a remarkable thing—ten pictures that

are different and yet represent the same thing. Studying the matter, we discern that the pictures are different only in points that do not necessarily belong to the identical thing that is expressed or represented in each of them. We find that the size of the pictured circle has nothing to do with its being a circle—it might be larger or smaller and still be a circle. Similarly, we understand that the color and location of the pictures might be changed without destroying them as representations of an identical thing. Now these points that may be altered without affecting the representative character of the pictures are non-essential points, they are accidental in the representations—that is to say, they *happen* to be this particular size, color, etc., but might just as well be another size, color, etc., as far as their effect upon the representative value of the pictures is concerned.

Yet these accidental points serve some purpose. They serve to distinguish each individual picture from the others. The accidental points of size, color, and location do not indeed affect the circle, for all the ten varying pictures represent the circle equally. But these points do serve to distinguish and identify each picture as *this* picture. These accidentals mark the individual picture, and they are called *individuating marks*. Inasmuch as the individuating marks are marks by which the individual picture is *noted* or known, they are called *individuating notes*. We

say therefore: these ten pictures differ in individuating notes, but they represent an identical thing, viz., *the circle.*

The identical thing which the pictures represent is an *essence;* it is the *essence circle.* But we do not grasp or apprehend this essence by our senses. Sensation (that is, the action of the senses) does not perceive the essence which the pictures express or represent. The eye does not *see* the essence *circle.* What the eye sees is the individual pictures, the individuating notes. It is the mind in us, the intellect or understanding, that peers beneath the individuating notes and apprehends the single identical thing represented in the ten varying pictures. The mind grasps or apprehends the essence *circle,* separating it out, so to speak, from the individuating notes that represent it. Now the mind's grasp of an essence is an *idea.*

The essence of a thing is that which makes the thing what it is in its basic reality. When the mind has a clear grasp of an essence, it can express that essence in a *'definition.* Thus when one knows that the circle is "A closed curved line, alike in all particulars, every point of which is equidistant from a point within or centre," one has the idea of *circle* clearly and distinctly formed in one's mind. One knows an essence; one has grasped an essence; and the mind's grasp of an essence is an *idea.*

b) **FORMATION OF THE IDEA**

Ideas are formed by the mental operation called Simple Apprehension, and this means separating out an essence from its individuating notes and grasping it. This operation involves two or more acts of the mind. The chief acts that can enter into the operation of Simple Apprehension are: attention, abstraction, reflection, comparison, analysis, and synthesis. Before defining these acts, we shall study two illustrations in which some of them are exemplified.

i. First Illustration

A boy who has never seen a representation of *circle* nor heard it described is shown such a representation drawn in white in the upper left corner of a blackboard.

First, sensation (that is, the action of the senses, —here, of *sight)* beholds the picture as a sensible (here, *visible)* object.

Next, the mind attends to what the sense perceives; it focuses, with more or less intensity, upon the picture and knows it as *this thing*.

Then the mind discerns that, while the color, the location, and the size of the picture are essential to it as *this* picture, these points are not essential to it as *a* picture of that which it represents. The mind of the boy adverts to the fact that the picture might be larger or smaller, or drawn in another place, or

with a different color of crayon, and still be a picture of *the thing* which is pictured here. In a word, the mind sees that the individuating notes *do not count* in the actual *thing* which is here represented. Therefore the mind leaves the individuating notes out of account, neglects to consider them, and lays hold of the *thing* which these notes happen to clothe and express in the present instance. Now the leaving individuating notes out of account is called *abstraction.* We say that the mind, in forming ideas, *abstracts* from individuating notes.

The mind of the observant boy has thus formed an idea by acts of *attention* and *abstraction* following upon *sensation.*

ii. Second Illustration

A little boy goes walking in the wood with his father. He is told to notice various things: grass, moss, vines, bushes, trees, weeds, wild flowers. He is told that all these things are *plants.* Slowly, and at the first obscurely, he forms the idea *plant.*

First, *sensation* presents the various objects to his perception. He sees the various things called plants, and touches them with his hands.

Secondly, he elicits an act of mental *attention,* knowing the objects thereby as *these* objects.

Thirdly, attention continuing, there comes a men-

tai *comparison* in which likenesses and differences in the objects are noticed.

Fourthly, there comes the act of *abstraction* by which all differences of size, shape, color, location, qualities of hardness and softness, roughness and smoothness, etc., are left out of account as non-significant (that is, as individuating notes) since all the objects under consideration differ in these points and yet are equally *plants.*

Thus through sensation and the mental acts of attention, comparison, and abstraction, the boy forms the idea *plant.* At first, of course, it is obscure in his mind; but if he could express in words what his intellect has really grasped, he would say something like this: "A plant is a bodily thing that lives and grows, but it cannot feel nor move about from place to place as an animal can."

The boy has, therefore, the grasp of an essence; he knows what *a* plant is, what *any* plant is, no matter how different (in accidentals, in individuating marks) individual plants may be. And: *the mind's grasp of an essence is an idea.*

In these illustrations we see exemplified the mental acts of attention, abstraction, comparison. There are yet others to be considered.

Suppose the lad mentioned in the Second Illustration were to turn over in mind the matter of *plant.* In the words attributed to him we discover **the fact**

that he has already formed the idea *animal* and that he uses this as a point of comparison in forming the idea *plant.* This is comparison again; but notice that it is the comparison of ideas in the mind, not of external objects of attention. The comparison of the ideas *plant* and *animal,* indicated in the words of the boy, is achieved by "thinking them over," and is therefore not only an act of comparison, but also an act of *reflection.* Now reflection, or reflex mental activity, is the turning of the mind upon itself, its acts, or its states.

Suppose again that the boy should investigate the make-up of his idea *plant.* He finds that it is made up of two notes, not individuating notes (for these are the known marks of external individual things) but *essential notes* (that is, ideas that come together to form a single idea). These essential notes are *bodily thing* and *living thing.* These are the notes that the boy discovers in his new idea, for he says: "A plant is a *bodily thing* that *lives,* etc." Now the reflex advertence of the mind to the essential notes of an idea is called *analysis.*

The converse of analysis is *synthesis.* When the boy puts together again (by reflex action of the mind) the notes that make up his idea, he elicits a mental act of *synthesis.* Another example of synthesis is found in the putting together of the ideas of *gold* and *mountain* to form the idea *golden mountain.* Notice that this is a real *idea;* one who has

formed it does not merely imagine (that is, form a *phantasm* of) what a certain golden mountain would look like, but one knows what *a* golden mountain, *any* golden mountain, would be if there were such a thing. One grasps an essence, one *understands* what such a mountain is or would be.

Now we list and define the various mental acts that may be involved in the process of Simple Apprehension or idea-forming. The first two mentioned must *always* be present in that process:

1. *Attention* is an act by which the mind fixes its consideration upon one object or group of objects to the complete or partial exclusion of all others.

2. *Abstraction* is an act by which the mind singles out for separate consideration a thing naturally bound up with other things and inseparable from them. Thus, for example, in any given representation of the circle, the size, color, and position of the picture are inseparable from that which they here and now represent. Yet the mind by abstraction can consider one accident apart from the others, and can consider the essence apart from all the accidents or individuating notes that clothe it.

3. *Reflection* (or *reflex act)* is an act by which the mind turns, so to speak, upon itself, becomes advertently aware of itself, of its act, or of its state, and considers or studies these things objectively.

4. *Analysis* is an act by which the mind resolves

an idea into the essential notes, the *other ideas,* that make it up.

5. *Synthesis* is an act by which the mind compounds two or more ideas into one, making these the essential notes of a single idea.

6. *Comparison* is an act by which the mind directly notices likenesses and unlikenesses in the objects of attention, or reflexly notices such likenesses and unlikenesses in ideas. Thus comparison is distinguished as *direct* and *reflex* comparison.

Before taking up the next point of our study, viz., the Constituents of the Idea, we must notice a few important matters that belong to the subject of the Formation of the Idea.

I. All ideas have their beginnings, immediately or remotely, in sense perception, that is to say, in *sensation.* No ideas are inborn *(innate)* in the mind. The senses present their findings to the mind through the imagination or fancy (which is itself a sense-faculty), and these are elaborated by attention, abstraction, etc., into *ideas.* This elaboration of sense-findings into ideas is not a groundless or gratuitous or arbitrary function of the mind: the mind does not "make up" its ideas without reference to reality. The process is a real working out of the essence of the realities perceived by the senses. The phrase "forming ideas" does not, therefore, indicate a turning out of a mental product by the grinding of men-

tai machinery; it indicates the function of getting at and knowing the objective essences of things.

2. Ideas of sensible things (that is, of things perceivable by the senses) are formed by the immediate activity of the mind upon sense-findings. Ideas of supersensible things (that is, of things above the reach of sense) are formed by justified derivation from directly formed ideas. Thus the ideas of man, hill, tree, fire, are formed directly; while the ideas of spirit, angel, soul, God, honesty, malice, are formed derivatively—that is to say, by derivation from other ideas which were formed directly upon sensation. Hence it is clear that *all* ideas have their first beginnings in sensation.

3. There are Qire£ *grades* of ideas :

i. Ideas of sensible things are are called *physical* ideas, and the abstraction by which such ideas are formed is called *physical abstraction.* Physical abstraction prescinds from the individuating notes of sensible objects. Ideas derived from physical ideas are still called physical if they represent *concrete* realities that are beyond the reach of the senses, such as, for example, the ideas of soul, angel, God. For the rest, derived ideas are *mathematical* or *metaphysical* ideas ; and these we consider in the following paragraphs.

ii. Ideas of merely *understandable* quantity are called *mathematical ideas,* and the abstraction by which such ideas are formed is called *mathematical abstraction.* Ideas of weights, numbers, measures, geometrical figures, etc., are mathematical ideas. The idea *line,* for example, is a mathematical idea, an idea of *understandable* quantity, not of *sensible* quantity. For the thing which we understand as *the line* cannot be perceived by any of the senses. A line cannot really be drawn ; it can only be understood. To "draw a line" means to make a mark which, however fine and tenuous, has always two dimensions, viz., length and width ; whereas a line has only one dimension, viz., length. Again, the idea *two* represents an understandable quantity, not a sensible one. We understand what "two" means quite apart from any numbered reality. We understand that "two and two make four" without having to inquire, "Two what?" It makes no difference whether the two be applied to men or angels, to thoughts or bricks ; it is a quantity understandable in itself ; it is a mathematical idea.

iii. Ideas applicable to material and immaterial things alike are called *metaphysical ideas,* and the abstraction by which such ideas are formed is called *metaphysical abstraction.* The idea of *being* is such an idea. A body is being, a spirit is being, the distinction between body and spirit is being, a creature is being, the Creator is being,—everything and anything that can be thought of as existing must be conceived

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as some *thing,* that is to say, as *being.* Other metaphysical ideas are those of unity, goodness, truth, substance, accident, etc.

These classes of ideas and the corresponding classes of abstraction (viz., physical, mathematical, metaphysical) are called *grades* because there is an ascending scale in their process; each presupposes the foregoing, like steps in a stairway. Thus mathematical abstraction is physical abstraction *plus* a further abstraction; and metaphysical abstraction is the other two *plus* a still further abstraction. Physical abstraction prescinds from individuating notes. Mathematical abstraction prescinds from individuating notes *and* from everything except understandable quantity. Metaphysical abstraction prescinds from individuating notes, from quantity, *and* refines the idea into the most general representation of reality, material and immaterial.

4. When we form an idea of a thing we *apprehend* it, we get it into the mind's grasp. Now we cannot get things literally into the mind; we can only get representations of likenesses of things into the mind. Such likenesses must conform to the nature of the mind (which is *immaterial')* to be intelligible. When abstraction has set aside individuating notes, there remains the understandable essence of a thing; this essence is suited for the grasp of the mind for it is not a material or bodily thing in itself; it is called *the intelligible species.* We may describe abstraction by

calling it the act by which the mind discerns the intelligible species (the understandable essence) of a thing. This species the mind actively impresses upon itself (this is the *species impressa),* and, in reacting to the impression, the mind, so to speak, images and expresses the species or essence (this is the *species expressa).* The *species expressa* is the idea.

5. Notice the following names, synonyms for *idea:*

i. Inasmuch as the mind is, so to say, impregnated by the *species impressa* and conceives the *species expressa,* the idea is called the *concept.* This name is accurately used in contradistinction to the *percept* or sense-image.

ii. Inasmuch as the mind is said to grasp or apprehend the species or understandable essence, the idea is called *apprehension.* And since the mind in apprehending does not affirm or deny anything of the essence apprehended, but simply grasps it, the idea is called *simple apprehension.* The same name is used for the *process* of forming the idea; here we use the name to designate, not the process, but its fruit, the idea.

iii. Inasmuch as the idea is that in which and by which an essence is *noted* or known, the idea is called the *notion.*

iv. Inasmuch as the idea is an essential representation or likeness of an essence, the idea is called the *mental image.* (The name *idea* itself is a form of the Greek word *eidos,* which means *image.)*

v. Inasmuch as the mind, reacting to the *species impressa, expresses the* essential likeness or representation of an essence, the *idea is called species expressa.*

vi. Inasmuch as the mind in eliciting the *species expressa* expresses or names the essence, the idea is called the *mental term* or *verbum mentis.*

vii. Inasmuch as the mind in apprehending tends to its object to grasp it, the idea is called the *intention* —a term which must not be confused with the inclination or determination of the will which we call by the same name. As the mind *in-tends* (tends to) its object in apprehending, and may afterwards view it or study it reflexly, we distinguish *first intentions* and *second intentions,* or *direct* and *reflex* intentions. A first intention is the apprehension of an understandable essence, the forming of an idea. A second intention is the act of advertence of the mind to its idea.

c) CONSTITUENTS OF THE IDEA

Most ideas are the product of synthesis, although the mind does not become aware of this until it reflects, and analyzes its ideas. Such analysis will show that most ideas are made up of other ideas compounded together. The component ideas are called the *essential notes* of the idea because they are that by which an essence is *noted* or known.

We shall analyze the idea *man* (that is, *human*

being) in order to find what essential notes make it up:

1. The idea *man* first of all represents a *thing,* a *being.* The idea *being* is the first essential note in all ideas made up or compounded of other ideas. The idea *being* is simple; it cannot be analyzed. The first essential note, then, in the idea *man* is "being."

2. We do not conceive man as a being such as wisdom or whiteness, but as a substance, as a subsistent being. Therefore, the second essential note in the idea *man* is "subsistent."

3. We do not conceive man as a spiritual substance but as a bodily one. The third essential note in the idea *man* is "bodily."

4. We do not conceive man as an inert body like a stone, but as a living being. The fourth essential note in the idea *man* is "living."

5. We do not conceive man as having mere plant-life like a flower or tree, but as endowed with sense and sensation. The fifth essential note in the idea *man* is "sentient."

6. We do not conceive man as merely sentient like a brute animal, but as thinking and willing, that is to say, as rational. The sixth and final essential note in the idea *man* is "rational."

Summing up these essential notes which are compounded together in the single idea *man,* we find that this idea is the representation of an essence that is a

"subsistent, bodily, living, sentient, rational being."

Now the sum-total of essential notes that make up an idea is called the *Comprehension* of that idea. Comprehension is sometimes called *Connotation*.

Notice an important matter here: the notes that compose the Comprehension *of* an idea are distinguishable *in the mind,* but they do not signify separate parts in the extramental object of the idea, that is, in the object outside the mind which the idea represents. The parts which make up an objective nature or *physis* are called *physical parts;* such, for example, are body and soul in physical man. The essential notes comprised in the Comprehension of an idea are called *metaphysical parts* because they represent a distinction which lies beyond *(meta-)* mere physical partition. Thus body and soul, although united substantially in physical man, are really separable parts of man; they are essential physical *parts,* not essential *notes.* So also hands, feet, arms, trunk, are physical parts of man. But the *idea man* comprises notes which the mind can distinguisn, but which do not imply a corresponding distinction of parts in physical man. Thus sentiency and rationality are not separable in physical man, as soul and body are separable.

Notice further: the essential notes that make up the Comprehension of an idea are called metaphysical *grades,* because one presupposes the foregoing. Thus in the idea *man* "bodily" presupposes "subsistent";

"living" (in this instance) presupposes "bodily substance"; "sentient" presupposes "living bodily substance," etc. Hence the *metaphysical parts* or *essential notes* of an idea are also called *metaphysical grades.*

After studying the idea in its Comprehension or *intrinsic* constitution, we turn to the consideration of the idea in *extrinsic* application. We ask, "What objects can the idea represent essentially in the mind?"

The sum-total of the objects that the idea can represent in the mind is called the *Extension* of the idea. Extension is sometimes called *Denotation.*

The "constituents" of the idea are Comprehension and Extension. Every idea has its intrinsic make-up, and this is its Comprehension. Every idea represents a thing or things, and this is its Extension.

The reason for the names Comprehension (Connotation) and Extension (Denotation) is seen in the following two statements:

1. Comprehension or Connotation is the sum-total of the essential notes which the idea *comprehends* or *co-notes* in itself, in its own *intrinsic* make-up.

2. Extension or Denotation is the sum-total of objects, *extrinsic* to the idea itself, which the idea represents or *denotes,* or to which its application *extends.*

Example: The Comprehension of the idea *man* is a sum-total of six essential notes, viz., being, subsistent, bodily, living, sentient, rational.

The Extension of the idea *man* is the sum-total of all human beings.

There is an important axiom to be learned here, viz., "As Comprehension increases (in number of essential notes), Extension decreases (in objects denoted), and vice versa."

The reason for this axiom is obvious. The more essential notes there are in the Comprehension of an idea, the more definite it is, and the more limited the field in which it is applicable. Conversely, the more objects and classes of objects there are in the Extension of an idea, the less definite and precise that idea must be. Similarly, the more lines an artist puts into a portrait, the more definite and limited the portrait becomes. In the mere outline of a few strokes, the portrait might represent man, woman, or child; but as the lines are filled in the portrait becomes less and less general; it becomes particular, and finally individual. The so-called "inverse ratio" of Comprehension and Extension is graphically represented in Bishop Turner's "Lessons in Logic" as follows:

Comprehension	Extension
Body	minerals, plants, animals, men.
Body with life	plants, animals, men.
Body with life and sentiency	animals, men.
Body with life, sentiency, and reason	men.

d) DEFINITION OF THE IDEA

An idea is the representation of the essence of a thingjn the mind.

1. It is a *representation*. It is not a picture. A picture is a material likeness of an individual bodily reality. Thus a portrait of a man is a material representation of the external appearance of one man, at one moment of time, in a certain place, attired in a certain manner, etc. The idea *man* is the living grasp of *what a man is*. It is a living apprehension in a living mind; it is therefore a *vital* representation. It is sometimes called an *intentional image* or *intentional representation* to indicate that it is the vital grasp *(apprehension or "intention")* of an essence by the mind. Notice that the idea is not limited like the portrait. The idea represents what *a* Qian is, what *any* man (male, female, infant, adult) is, at any time, in any place, irrespective of dress, nationality, manner, posture, etc. Nor is the idea like a picture in imagina-, tioii. Such a picture we call a *fancy* or a *phantasm*. A phantasm has all the limitations of a portrait or a moving picture : it represents an individual in a material way; but the idea represents the essence of a thing in an immaterial way.

2. The idea is the representation of *an essence*. The essence of a thing is that which makes the thing what it is. The essence is sometimes called the *quiddity* or *whatness* because it is the answer to the penetrating question, *"What is the thing?"* And the answer to

that question must be no mere description, no accidental or individual characterization, but it must be the actual *definition* of what the thing is in its basic reality. *If* one should ask, "What is the circle?" the answer would not be, "It is on the blackboard," or "The circle is drawn in white," or "The circle is ten inches in diameter." The answer is that a circle is a closed curved line, alike in all particulars, every point of which is equidistant from a point within or centre. This is the definition of *circle,* and it expresses what the mind knows the circle *is* and *must be if it* is to be a circle at all. This expresses *that which makes a circle what it is,* viz., the *essence* of *circle.*

3. The idea is a representation of an essence *in the mind.* The representation is not in the senses nor in the imagination; it is in the mind, the understanding, the intellect. The senses can perceive only individual bodily things; but the idea is the grasp of an essence abstracted from any and all individual and bodily limitations. The imagination forms phantasms which also represent individual bodily reality and are in themselves as limited as a portrait or moving picture; but the idea has not these limitations. The idea is a representation beyond the capacity of the senses and the imagination; it is necessarily in the *mind.*

SUMMARY OF THE ARTICLE

We have covered four important points in this Article:

1. We have studied the *description* of the idea, learning to understand it as the mind's grasp of an essence. We learned to distinguish individuating notes from the essence accidentally clothed in such notes.

2. We have investigated the *formation* of the idea, learning to define sensation, and the intellectual acts of attention, abstraction, comparison, reflection, analysis, synthesis. We have learned the three grades of abstraction and the corresponding grades of ideas. We have studied synonyms for *idea*.

3. We have studied the *constituents* of the idea, learning to define Comprehension and Extension, to notice their inverse ratio, and to understand what is meant by "essential notes" or "metaphysical grades" of the idea.

4. We have studied the *definition* of the idea, and hâve subjected each phrase of the definition to detailed examination.

Article 2. Classification of the Idea

This Article groups or classifies ideas according to various aspects in which ideas may be viewed. These aspects,—the bases of our classification,—are as follows:

a) origin
b) perfection in representing
ç) Comprehension
d) Extension
e) relations

a) origin *(intuitive-derivative)*

I. *Intuitive* ideas are those which originate in the direct grasp of that which they represent. Such are the ideas that are formed immediately upon sensation. Thus the ideas of sensible things, and the ideas one forms of one's own feelings (and even thoughts) are intuitive ideas.

2. *Derivative* ideas are derived from intuitive ideas. Such are the ideas of supersensible things like soul, spirit, God, unity, truth. Such also are the ideas that originate in arbitrary synthesis of intuitive ideas—ideas like a sea of fire, a golden mountain, a talking tree.

b) perfection *(clear-obscure; distinct-vague; complete-incomplete)*

I. An idea which represents its object as discernible from all other objects is *clear;* otherwise it is *obscure.* If, for instance, I know the circle merely as a plane figure, I have some sort of idea of it (for the circle *is* a plane figure) but my idea is obscure, because the circle as a plane figure is not discernible from the triangle, the quadrilateral, etc. When I come to know the circle as discernible from all other plane figures, my idea ceases to be obscure and becomes clear.

2. A clear idea that presents its object in such wise that the more important essential notes are distinguishable one from another is *distinct;* otherwise

it is *vague* or *confused.* If, for example, I am able to distinguish what the circle is in itself as well as to know it from other plane figures, my idea of the circle is clear and distinct; if, however, I merely know it as discernible from other plane figures, without being able to give any sort of definition of it in itself, my idea of the circle is clear but vague.

3. When an idea is so perfectly distinct that *all* its essential notes can be distinguished and enumerated, the idea is *complete;* otherwise, although clear and distinct, it is *incomplete.* If, for example, I know that man is a rational animal, my idea is distinct; but it is not complete unless I can enumerate the essential notes comprised in the idea *animal* (viz., bodily, living, sentient substance).

c) comprehension *(simple-compound; concrete-abstract)*

1. Ideas that have but one note in their comprehension are *simple;* ideas that have more than one such note are *compound.* The idea of being (and its synonyms and equivalents) is simple. The idea of man—although it represents a single essence—is compound, for it has six essential notes in its Comprehension, as we have already seen.

2. An idea that represents something as a substrate or subject together with its determinant is *concrete;* an idea that represents a determinant as separated from a subject is *abstract.* The idea *man* is concrete,

for it represents some *thing* with the determinant *humanity*. The idea *humanity* is abstract, for it represents a determinant apart from its subject. Examples of the concrete idea: body, spirit, object, white horse, pious man. Examples of the abstract idea: bodiliness, objectivity, whiteness, piety.

d) extension *(singular, universal, particular, transcendental)*

1. An idea that has only one object in its Extension is *singular*. Such are the ideas of this circle, my father, Herbert Hoover, Pittsburgh, Ohio.

2. An idea which represents an essence that many objects may have is *universal*. Such are the ideas of circle, father, president, city, state.

3. A universal idea taken partially and indeterminately is *particular*. Such are the ideas of some circles, many fathers, certain presidents, a few cities, numerous states.

4. An idea that is so general or universal that it transcends -the bounds of class and applies to all classes and individuals (though not in precisely the same manner and sense to each) is *transcendental*. Such an idea is that of being.

Notice that the universal idea differs from the *collective* idea. A collective idea signifies a number of individuals *taken as a unit,* but does not represent an essence common to the individuals, but only to the units. Thus the ideas of army, jury, family, com-

mittee, etc., are collective ideas. The collective idea may be *singular* (as, this army), *universal* (as, all juries), or *particular* (as, some families).

The universal idea is a subject of supreme importance in Dialectics. We devote to its study the next Article of this Chapter.

e) relations *(identical-different; associable-opposed)*

1. Ideas that have the same Comprehension or Extension are identical. Those that have the same Comprehension are *formally identical.* Such are the ideas *man* and *rational animal.* Ideas that have the same Extension are *materially identical.* Such are the ideas *John Brown* and *this sealot,* or *Herbert Hoover* and *our president.* Non-identical ideas are *different.*

2. Different ideas that are not mutually exclusive arid may be harmoniously joined or compounded in the same idea are *associable* or *congruotis.* Such are the ideas *living* and *sentient.* Ideas that are not associable are *repugnant* or *opposed.*

i. Two opposed ideas are *contrary* when they exclude each other but leave a ground between them ; they do not exhaust the possibilities. Thus the ideas *black* and *white* are contrary ideas. They exclude each other but do not exhaust the possibilities, for there are many things neither black nor white.

ii. Two opposed ideas are *contradictory* when

they exclude each other and leave no common ground between them; they exhaust the possibilities. Such are the ideas *white* and *not-white*. They exhaust the possibilities, for there is nothing conceivable which is neither white nor not-white.

iii. Two opposed ideas are *relative* when one implies the other as a different object. Thus the ideas *parent* and *child* are relative. The idea *parent* involves the idea *child,* but indicates that the object which is *parent* is not at the same time *child*. John cannot be at once the parent and the child of George. The idea involved in another is an *implicit* idea. Thus we say that the idea *child* is involved in the idea *parent,* and parent is the explicit idea while child is an implicit idea. Conversely, considering the idea *child* directly (explicitly) we find *implicit* in it the idea *parent*. Examples of ideas between which the opposition of relation exists; husband-wife; superior-inferior ; ruler-subject.

iv. Between two opposed ideas there exists the opposition called *privation* when one is the idea of a perfection that should be present in a given subject, and the other is a negation or denial of that perfection. Thus between the ideas *sight* and *blindness* (when used with reference to man, for example) there exists the opposition called privation. The idea which negatives or denies the perfection is called *privative*. Such an idea is merely *negative,* and not privative, when it denotes the absence of a perfection

in a subject that *could not have that perfection in any case,* Thus *blindness* used with reference to a stone is negative but not privative.

SUMMARY OF THE ARTICLE

In this Article we have learned to classify ideas as follows :

a) By Origin : intuitive and derivative

b) By Perfection : obscure / clear; clear: vague / distinct; distinct: incomplete / complete

c) By Comprehension: simple & compound; concrete & abstract

d) By Extension : singular, universal, particular, transcendental

e) By Relations : Cal; Cal: materially / formally; differ-ent: associable / opposed; opposed: by contrariety / by contradiction / by privation / by relation

Article 3. The Universal Idea

a) The Reflex Universal b) The Direct Universal

The *universal idea,* or, as it is often called, simply *The Universal,* is an idea that represents an essence which can be common to many things and is predi-

cable of each of these things in the same manner. Thus the idea *metal* represents an essence common to *gold,* silver, copper, lead, zinc, brass, aluminum, etc., and the idea can be predicated of all these together, and of each of them singly, in the same manner. All are metals; each is equally *a* metal. Thus also the idea *virtue* represents an essence common to honesty, purity, benevolence, charity, etc., and the idea can be predicated of all and each of these things in precisely the same manner: all come together in the class *virtue,* and each is equally *a* virtue. Thus again the idea *man* represents an essence common to Tom, Dick, Harry, Mary, Rose, Jane, etc., that is to say, an essence common to each and every human individual; and the idea is predicable of all mankind together, and of each human individual taken singly. Notice such predications in the *following*: "Man is mortal"; "John is a man." The ideas *metal, virtue, man* are therefore Universals.

Most of our ideas are Universals. Even many singular ideas are Universals in themselves, but are made singular by the use of some qualifier like *this.* Thus the idea *father* is itself a Universal: it is predicable of all fathers (thus the Christmas ads say: "Gifts for father.") and of each father. It is made singular by the use of qualifiers in "this father," "my father," etc.

The word *universal* is derived from the Latin *unum versus alia* (one in relation to other things).

For the Universal is *one,* that is, it is a single idea in the mind and represents a single essence. But this essence may be found in a plurality of things *other* than the idea itself; and so the Universal stands representatively related to other things.

Now the "other things," the things or objects that have the essence which is represented in the mind by the Universal, are called the *subjects* or the *inferiors* of the Universal. These inferiors are, first of ally *ideas* contained in the scope of the Universal. In a further sense, the inferiors are the extramental things represented by the Universal. Thus the Universal *body* is an idea that includes in its scope the *ideas* of *living-body* and *non-living body* inasmuch as these are *bodies.* The ideas *living-body* and *non-living body* are Universals themselves, but they are lesser Universals than the greater Universal *body.* Hence these lesser Universals are *inferiors* of the greater Universal in which they are included. Here we see that when a Universal is applied to its inferior the process in an application or predication of *idea, to idea.* This is, as we have learned, a *reflex* process. Therefore the Universal considered in applicability or predicability to its inferior ideas is called the *Reflex Universal.* In studying the Reflex Universal we ask: "In how many *ways* may a Universal be predicated of its inferior ideas?" In other words the question is: "In how many ways,—with what varying measure of exactness, necessity, completeness, or

«Ti,

possibility,—may a Universal be predicated of its inferior ideas?"

We sec from the above that the Reflex Universal is the Universal *adverted to as such.* But *before* the mind adverts to its Universal as such, it is already a Universal and can represent a plurality of *things understandable, as they are in nature,* apart from the consideration of the mind. In this aspect, the inferiors of the Universal are the extramental things which have the essence represented in the Universal. The Universal as a representation of these things is called the *Direct Universal.* In studying the Direct Universal we ask: "In how many classes do things (as understandable) exist in nature, apart from the consideration of the mind?"

The Reflex Universal is, therefore, the Universal viewed in relation to its inferior ideas. The Direct Universal is the Universal considered as directly representative of an essence which can be common to extramental things.

a) THE REFLEX UNIVERSAL

"In what modes or ways may the Universal be predicated of its inferior ideas?" In five ways. These ways or modes are called The Five Predicables, or simply *The Predicables.* Aristotle called them *Categoremata.* The Predicables are the five ways in one or another of which every Universal is predicable of its inferiors. The Predicables are *modes of predica-*

tion, not classes of extramental reality. They are the following:

1. *Species.* When a Universal is predicable of its inferior as one and coextensive with it in content, as completely defining it, then the Universal is the Species of its inferior idea. Thus the Universal *rational animal* is the Species of its inferior idea *man.* In the predication, "Man is a rational animal," the Universal *rational animal* completely defines the essence *man.* If you represent these Universals (viz., *rational animal* and *man)* by concentric circles, the circumferences will fall exactly one upon the other; the circles will coincide.

2. *Genus.* When a Universal is predicable of its inferior idea as defining that *part* of its essence which it has in common with another Species, then the Universa! is the Genus of its inferior idea. Thus the Universal *animal* is the Genus of its inferior idea *man.* In the predication, "Man is an animal," the Universal *animal* defines that *part* of the essence of its inferior mcm which man has in common with another Species contained in the scope of *animal,* viz., *brute.* If you draw a circle to represent the Universal *animal* and another to represent *man,* the circles will overlap in part. The field of their overlapping will indicate the Genus of the two Universals (inferiors of *animal), rational animal* and *non-rational animàl,* or simply *man* and *brute.* A Genus always includes two Species, not completely, but according to their

common part. In their parts which are *not* common these will be contradictories, and so will exhaust the possibilities; thus there will only be *two*.

3. *Specific Difference.* The common part of the two Species included under any Universal is their Genus. The part which is *not* common is their respective Specific Difference, viz., that by which Species is distinguished from Species under a common Genus. Therefore, when a Universal is predicable of its inferior idea as defining that part of its essence (or Species) by which it is distinguished from the other Species of the same Genus, the Universal is the Specific Difference of its inferior idea. Thus the Universal *rational* (i. e., rational being) is the Specific Difference of its inferior *man*. In the predication, "Man is rational," the Universal *rational* defines that part of the essence (or Species) of its inferior *man* which marks it off as distinct from the other Species with which it has a common Genus, viz., *non-rational* animal. In the circles just drawn to illustrate Genus, the overlapping area may be marked "animal" to indicate the Genus. Then the non-overlapping areas may be marked "rational" on the one hand, and "non-rational" on the other to indicate the respective Specific Difference of *rational animal* and *irrational animal,* that is, *man* and *brute*. Notice here that Genus plus Specific Difference gives the complete essence or Species.

4. *Attribute* or *Property.* When a Universal is

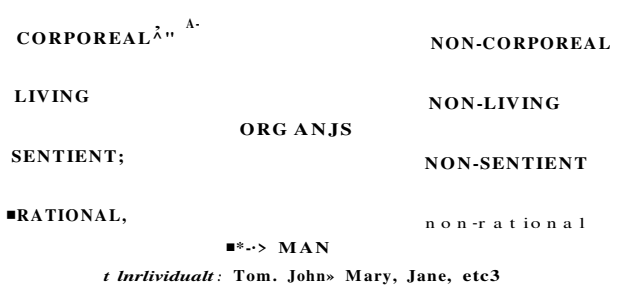
predicate of its inferior idea as defining *no part of its Species or essence* but as indicating something that belongs by natural necessity to that essence, then the Universal is the Property or Attribute of its inferior idea. Thus the Universal *risible* (that is, risible being, being that can laugh) is the Attribute of its inferior *man.* In the predication, "Man is risible," the Universal *risible* defines no part of the Species or essence *man,* but indicates something that man (when his nature is fully and integrally constituted) must have by natural necessity.

5. *Accident.* When a Universal is predicable of its inferior idea as defining no part of its Species (or essence) and as belonging to it by no natural necessity, but simply as *happening* to belong to it, or as *being capable* of belonging to it, then the Universal is the Accident of its inferior idea. The Accident indicates what may be or may not be present to the inferior idea. Thus the Universal *reading being* is the Accident of its inferior man. In the predication, "Man is a reading being," the Universal *reading being* defines no part of the Species or essence *man;* nor does it indicate something which belongs to that Species or essence by natural necessity ; it merely indicates what may *happen* to be predicable of its inferior, what *may* or *may not* be present to its inferior.

The Predicables are to be studied with the closest attention and application until they are thoroughly

and ineradicably impressed upon understanding and memory. In studying them the pupil must keep constantly in mind the cardinal principle: The Predicables are not classifications of *things;* they are *modes of predication,* modes according to which the mind applies idea to inferior idea. Of course, the process is not a mere arbitrary one; for the ideas do represent real essences, and the Universal is verified in each and every one of the extramental realities that have the essence which it represents.

An important matter to be studied after mastering the Predicables, is the so-called "Subordination of Genera and Species." This is graphically expressed in a scheme called the Porphyrian Tree, a drawing first made by Porphyry, a philosopher of the third century. We reproduce it here:



The Porphyrian Tree shows how a Universal may be a Genus with respect to its inferiors, and at the same time a Species with respect to a higher Genus.

Study the tree well. Notice the following points:

1, *Substance* is called the highest genus, for it is not itself a species of a higher genus. All the other genera *(body, organism, animal)* are themselves species of higher genera. *Body* and *organism* are intermediate genera, having gênera above and below them. *Animal* is the lowest genus, for it contains species which are not themselves genera of further species.

2, *Corporeal substance* and *non-corporeal substance* are called the highest species, for there is no species in a higher order. *Rational animal* (or *man)* is the lowest species for it is not in turn a genus of its inferiors, but is predicable only of individuals. All other species are intermediate species, since they have species above and below them, or, in other words, since each of them is a species of one genus, and in turn a genus of yet lower species.

3, Each genus considered in reference to the species immediately contained in it is called the Proximate Genus; other genera, higher up the "tree" than the Proximate Genus, are called Remote Genera. Thus *organism* is the Proximate Genus of *sentient organism* and *non-sentient* organism, but is the Remote Genus of *man*.

4. The lists on the right and left hand, that is, the "branches" of the tree on either side of the trunk, indicate Specific Difference. Notice that each species is constituted by Proximate Genus plus Specific Difference. Thus the species *living body* (or *organism*) is constituted by the Proximate Genus *body* plus the Specific Difference *living*.

5. Each genus (except the highest) is itself a species of a higher genus. Each species (except the lowest) becomes in turn a genus of a lower species.

b) THE DIRECT UNIVERSAL

"In what classes do things, as understandable, exist in nature?" In ten classes or *Predicamentals*. Aristotle called them *The Categories*. The Predicamentals are *substance,* and *nine accidents*.

substance is a being, bodily or spiritual, that is fitted for existence *in its own right,* not merely as a determination or qualifier of something else. Examples of substance: animal, man, body, soul, spirit, God, hill, tree.

accident is a being that is not fitted for existence in its own right, but regularly requires a substrate or subject in which to inhere. *Action,* for example, is a predicamental *accident:* we do not find action in bulk, so to speak, or independently existing, but only in an acting thing. Color is another example of accident; it is a *quality;* and color is not a thing fitted for independent existence but only as the determination or qualifier of a body.

There are nine accidents and only nine. Anything that can be conceived of as existing must be conceived as a substance or as one of the nine accidents. We shall list the accidents in a moment. Here we offer a reminder and a warning: the predicamental accidents are classes of understandable reality; the other Accident that we have learned about in the last few pages, that is to say the *predicable* Accident, is quite a different matter. The predicable Accident is not a classification of understandable reality; it is a mode of applying a Universal to its inferiors. Let the student make sure that he understands quite clearly the difference between the Predicamental Accident which is here studied in its nine branches, and the Predicable Accident which he has learned as a mode of predication in the mind.

The predicamental accidents are:

1. *Quantity:* the spatial extension of bodily substance.
2. *Quality:* determination of the character of a substance, bodily or spiritual:
   i. dispositions or habits, such as *prudence* or *health;*
   ii. capacity or lack of it, such as *rationality* or *blindness;*

iii. determination of passive character, such as *a color, temperature, age.*

iv. bodily outline or figure, such as *roundness, angularity.*

3. *Relation:* the order or standing of one thing with reference to another, such as likeness or unlikeness, identity or difference, paternity, servitude.

4. *Place:* position in reference to surrounding space. Place is indicated in such expressions as, in the street, at Rome, on the housetops, in the corner.

5. *Posture:* position in reference to parts of the same body. Posture is indicated in such expressions as, standing, sitting, lying down, huddled up, lolling, outstretched, sprawled out.

6. *Time:* position with reference to past, present, or future events. Time is indicated in such expressions as, at two o'clock, in the evening, after the ball, in five minutes, to-day, before noon.

7. *Habit:* determination of externals such as dress, equipment. Habit is indicated in such expressions as, armed, dressed, well caparisoned. (N. B. *Habit of mind or soul or body*—like studiousness, virtue, health—is *Quality.*)

8. *Action:* the production of change, the affect-

ing of an object. Action is indicated in expressions like, heating, striking, wounding.

9. *Passion:* the receiving or suffering of change, being affected. Passion is indicated in expressions like, being heated, being struck, being wounded.

There is an ancient Latin couplet,—used to exemplify the Predicamentals or Categories and at the same time to fix them in memory,—which may be loosely translated as follows:

The tree cools the six slaves worn out by summer's heat;
To-morrow I'll stand in the country in garments clean and neat.

Notice the manner in which the couplet exemplifies the Predicamentals:

tree: Substance
cools: Action
six: Quantity
slaves: Relation (indicates reference to *master)*
worn out: Passion
heat: Quality
to-morrow: Time
I'll stand: Posture
in the country: Place
in garments, etc.: Habit

SUMMARY OF THE ARTICLE

We have defined the Universal and learned what is meant by its inferiors. We have viewed the Universal in its reflex and direct aspects.

We have seen that the Reflex Universal is predicable of its inferiors as their Genus, Species, Specific Difference, Property or Attribute, or Accident. We have learned that these modes of predication are called *Predicables* or *Categoremata*.

We have studied the classification of things as they are in nature with reference to the understanding of the mind. We have thus learned that the mind grasps objective reality either as substance or as one of the nine accidents. These ten classifications of understandable reality we have learned to call *The Predicanientals* or *The Categories*.

CHAPTER II

THE IDEA EXPRESSED

This Chapter studies the idea as exteriorly expressed by *the term*. The term is defined and classified, and then viewed in its use in the expression of ideas.

The Chapter is accordingly divided into the following Articles:

Article I. Definition and Classification of the Term
Article 2. The Use of the Term

Article 1. Definition and Classification of the Term

a) Definition b) Classification

a) DEFINITION OF THE TERM

A *term* is a sensible, arbitrary sign which manifests an idea and the reality which that idea represents in the mind.

I. A term is *a sensible, arbitrary sign*. A *sign* is anything that gives knowledge of something other than itself. Thus smoke is a sign of fire; a red flag is the sign of danger; a portrait is a sign of the person it represents. A sign gives knowledge of something other than itself, and this is called *the thing signified*. We distinguish various types or kinds of signs:

i. If the sign *resembles* the thing signified, it is *a formal sign*. Otherwise it is *an instrumental sign*. A portrait is a formal sign of the person represented; smoke is an instrumental sign of fire.

ii. If there is a connection or relation *based on the nature of things* between an instrumental sign and the thing signified, the instrumental sign is called *natural;* otherwise it is *arbitrary* (or *conventional)*. Smoke is a natural instrumental sign of fire; a red flag is an arbitrary instrumental sign of danger.

A term must be a *sensible* sign, that is, it must be perceivable by one or more of the senses. A sign perceivable by the sense of hearing is an *audible* sign. Such a sign may manifest an emotion (such as pleasure, pain, surprise) ; thus laughter, sobbing, a groan, a sigh, a gasp, are audible signs of emotion. Again, an audible sign may manifest *an idea,* and then it is *an oral term*. An oral term is a word or group of words expressing, through articulate sounds of the voice, an idea and the reality which that idea represents in the mind. Notice that an oral term is a *word* or *group of words.* Single words that can manifest ideas are called *categorematic* words. Every *categorematic* word is a *term*. Words that must be grouped with others to express an idea are called *syncategorematic words;* and such words, taken by themselves, are never terms. Examples of categorematic words : house, home, hill, beauty, truth. Examples of syncategorematic words : of, because, very, etc. (prepositions, articles, adverbs, interjections). A sign perceivable by the sense of sight is a *visible* sign. Such a sign may manifest an emotion (pleasure, pain, surprise); thus a start, trembling, pallor, flushed cheeks, etc., are visible signs of emotion. Again, a visible sign may manifest *an idea,* and then it is either *a gesticular term* (as in the finger-language of the deaf and mute) or *a written term*.

2. A term *manifests an idea.* As we have just seen, there are signs which manifest emotion ; these are not terms; nor are any signs that manifest mere qualities or affective states called terms. Thus a devout attitude is a sign of attentive prayerfulness, but it is not a term. Thus the teeth of an animal and the compact consistency of a bit of beef are (each in its own way) signs of age; but these things are not terms. A. term to justify its name must manifest *an idea.*

3. A term manifests an idea and *the reality which that idea represents in the mind.* In other words, a term manifests an idea and the thing, the *object,* of which the idea is an essential representation. The term *sun,* for example, does not merely manifest the presence of the idea *sun* in the mind of the speaker; it also expresses (that is, conveys to the attention and knowledge of the hearer) the heavenly

body, the objective sun; and this is its first and direct function.

It is to be noticed here that while terms serve us most notably in conveying ideas to other minds, they also serve us in expressing ideas to ourselves. A little reflection will convince anyone that a man does his thinking in, or to the accompaniment of, a kind of internal speech. One cannot express ideas clearly to **others unless one has expressed these ideas with clearness to oneself.**

b) CLASSIFICATION OF THE TERM

Terms are classified according to three aspects which their study presents to consideration, viz., 1. the exactness with which they manifest ideas; 2. the Comprehension of the idea expressed (called also Comprehension of the Term), and 3. the Extension of the idea expressed (called also the Extension of the Term).

I. *Exactness.* A term used throughout a given context in precisely the same sense is called *univocal.* If a term be used in two or more utterly different senses in the same context, it is called *equivocal.* If a term be used in different but related senses, so that its use is not identical nor yet entirely different in any two instances in the same context, the term is called *analogous,* and between the uses *analogy* is

said to exist. To illustrate: In the sentence: "Man is mortal, man must die," the term *man* is univocal. In the sentence: "There is a bank (that, is, savings bank) on the bank of the stream," the term *bank* is equivocal. In the sentence, "O cruel slave, O cruel sword, that wrought so foul a death!" the term *cruel* is analogous. Analogy may also occur when only one term is used, its sense being metaphorical and therefore related to the normal and natural and ordinary sense of the same term. Thus there is analogy in the expression. "O cruel spear that pierced the Saviour's side!" The term *cruel* is used in a figurative or metaphorical sense, the cruelty of the user of the spear being thus attributed to the weapon itself. We distinguish two kinds of analogy:

i. Analogy of Proportion. When the relation between the normal and ordinary sense of a term and its figurative or metaphorical sense is based on likeness or resemblance, the analogy is one of proportion. Thus the term "smiling meadowlands" contains an analogy of proportion: for there is a conceivable resemblance between a smiling human face and bright sunlight on green fields. Other examples of this analogy: "frowning skies," "the running sea," "the rude, imperious surge."

ii. Analogy of Attribution. When the relation between the proper and ordinary sense of a term and the figurative sense of it is based on something other than likeness or resemblance, the analogy is one of

attribution. Thus the term "cruel spear" involves an analogy of attribution; for cruelty, which, in proper sense, can only be attributed to a person, is here attributed to a weapon which a person can use; and there is no relation of *resemblance* here, but one of instrumentality—that is, the spear serves as the *instrument* of cruelty. Another example of such analogy is the term "a healthy climate."

2. *Comprehension.* Terms are divided under this head into *positive, negative,* and *privative* terms; into *simple* and *complex* terms; and into *concrete* and *abstract* terms.

A *positive* term expresses a thing, an affirmation; a *negative* term expresses the absence of a thing; a negative term becomes *privative* when it denotes the absence of a perfection that ought to be present. Examples: *positive terms:* man, game, wealth, love of God, loyalty to the country's cause; *negative terms:* non-living, the not-self, unmindfulness, indisposition, immensity, infinity; *privative* terms: ignorance (in one who could and should know), blindness (in one who could and should have the perfection of sight).

Notice carefully that negative terms denote the absence of something, whether this be a perfection or an imperfection. Thus *infinity* denotes the absence of limitation; the term expresses the greatest perfection thinkable; and yet it is a *negative* term. An-

other negative term is *immensity;* it denotes perfection by denying limitation or measurability, but it is still a *negative* term. Thus it will be seen that terms are positive or negative by reason of their form or make-up; if they have a negative or privative particle as prefix (such as *in-, un-, non-, il-, im-,* etc.) or suffix (like *-lessness)* they are negative terms.

A *simple* term consists of a single word; a *complex* term has more than one word. Examples: *simple terms:* man, brother, humanity, blindness; *complex terms:* love of God, a sin against Faith, the President of these United States, something of importance.

A complex term always has a *principal member* and an *incidental member,* the former expressing the leading idea, and the latter qualifying that idea. Thus in the complex term, "The love of God," the principal member is "love," and the incidental member is the adjective phrase "of God." Again, in the term, "The books on your table," the principal member is "books," and the incidental member is "on your table." It is important to learn this matter well, for we shall recur to it presently.

A *concrete* term expresses a concrete idea. Examples: man, wood, animal, wise and prudent leader. An *abstract* term expresses an abstract idea. Examples: humanity, woodiness, animality, wisdom, prudence, leadership.

3. *Extension.* Terms are divided under this head into *singular, universal, indefinite, particular,* and *collective* terms, according as they express ideas of the same names. *Examples of singular tenus:* this circle, my father, Alfred E. Smith. Examples of *universal terms:* all circles, every father, each candidate. Examples of *indefinite terms* (that is, of terms in which there is no word to indicate the scope of their extension) : circles, fathers, candidates. Examples of *particular terms:* some circles, many fathers, several candidates. Examples of *collective terms* (that is of terms expressing "groups." These terms are singular, universal, particular, or indefinite) : this family; all juries; some armies; committee, delegation, crowd.

A singular term is *proper* or *common* according as it is a singular and individual *name* or a general name limited to an individual by a restrictive particle. Thus the following singular terms are *proper:* Al Smith, St. Charles College, Nevada. The following singular terms are *common:* this candidate, one college, that state.

SUMMARY OF THE ARTICLE

In this Article we have studied the term as the expression of an idea and the reality represented by the idea. We have learned that the term is the sign of an idea. We have distinguished signs as formal and instrumental, and the latter we have sub-

divided into natural and arbitrary signs. We have discussed signs as audible and visible, and terms as oral, gesticular, and written.

In classifying terms we have listed them as univocal, equivocal, and analogous. We have studied analogy, and have learned what is meant by "analogy of proportion" and "analogy of attribution." We have learned the following further classification of terms: positive, negative, privative, simple, complex, concrete, abstract, singular, universal, indefinite, particular, collective. Singular terms we have distinguished as proper and common.

Article 2. The Use of the Term

a) Supposition b) Appellation

A term may be used in two ways, viz., a) to signify a definite reality, and b) to modify or qualify the signification of another term. The first use is called Supposition; the second use is called Appellation.

a) supposition of terms

If you look up a term in the dictionary you are likely to find a *list* of meanings. Suppose you look up the word "body," a common term. You will find a long litany of definitions. Among others you will notice:

1. the total organized substance of an animal or plant, living or dead ;
2. the trunk or main part as distinguished from limbs and head ;
3. a person, a human being—often in composition, as anybody, ^everybody ;
4. a kind or form of matter; a material substance ;
5. a number of things or individuals collectively, as "a body of troops" ;
6. that part of a garment designed to cover the body;
7. a distinct mass of matter, as "a body of water" ;
8. consistency, substance, thickness, as "a paint of good body";
9. a corpse.

Now when you use the term "body" in a given context, you select one definite sense of that term. That selection is your *supposition* or *taking* of the term. For example, if you say, "The body rested in state in the Cathedral," your supposition of the term body is in the sense of "corpse."

The whole list of senses in which it is possible to use a term constitutes its meaning or signification ; or, more accurately, its *general meaning* or *general signification.* Supposition is *special;* it is the taking of a term in a special meaning, a definite

and restricted signification. We distinguish different kinds of supposition:

i. Material Supposition. When a term is taken to signify itself as a group of words, letters, or sounds, its supposition is *material.* In the statement "Man is a monosyllable," the supposition of the term "man" is material. Other examples of material supposition: "Jones is a proper name"; "Mankind is accented on the last syllable"; "Good name is not hyphenated."

ii. Formal Supposition. When a term is used to signify a reality other than itself, it is *formal* in supposition. Formal supposition may express a mode of being which a reality has in the mind, or according to one's understanding of the reality, and then its formal supposition is *logical.* Examples of logical supposition: "Man is a species" (that is, an inferior of the Universal *animal;* not a material or biological class).—When formal supposition expresses a mode of being which a thing has in nature apart from the consideration of the mind, the supposition is *real* or *ontological.* Examples: "Man is mortal"; "Man wants but little here below." When a collective term is used, its real supposition may be *collective* or *distributive,* according as it signifies a group as a unit or as individuals. Example of collective supposition: "The jury reached a verdict" (that is, as a unit). Example of distributive supposition: "The jury went home" (that is, the members of the jury went to their several homes).

b) appellation of terms

Appellation is the application of the idea expressed in one term to a reality expressed in another term. When one says, for example, "a good philosopher," the idea expressed in the term "good" is applied to the reality expressed in the term "philosopher." The appellation of terms amounts to the application of one term to another. The term applied is *the appellant;* the term to which application is made is *the appellate.* Thus in the term, "a good philosopher," the appellant is "good," and the appellate is "philosopher."

When an appellant is applied to a concrete term, two senses are possible. For a concrete term means two things, viz., a subject reality, and a determinant or modification. Thus the concrete term "man" means "something" (subject) which has the determinant of "humanity." Again, the term "philosopher" means "somebody" (subject) who has the determinant "knowledge of philosophy." Now the subject or substrate reality involved in the concrete expression is called the *matter-signified,* while the determinant or qualifier is the *form-signified.* This leads us to the following classification of appellation:

i. Material Appellation. When the appellant is applied to the matter-signified, the appellation is *material.* Thus if the term, "a good philosopher" is taken to mean *a good man* who knows philosophy,

the appellation is material. If the term, "a truthful artist" means a truth-telling individual who happens to know how to paint, the appellation is material.

ii. Formal Appellation. When the appellant is applied to the form-signified, the appellation is *formal.* Thus if the term "a good philosopher" is taken to mean a man *who has a good understanding of philosophy,* the appellation is formal. Again, if the term, "a truthful artist" is taken to mean an artist *whose work expresses truth,* the appellation is formal.

SUMMARY OF THE ARTICLE

In this Article we have learned carefully to distinguish between the general meaning of a term and its use, or supposition, in a special instance. We have divided supposition into two classes, material and formal, and the latter we distinguished as logical and real; real supposition of collective terms we distinguished as collective and distributive.—We also studied the application of terms to terms, or Appellation, and this again we distinguished as Material and Formal Appellation.

CHAPTER III

THE IDEA EXPLAINED

This Chapter sets forth the method of explaining ideas. Ideas, as we have seen, may be obscure or vague, and explanation is needed to render them clear and distinct. Such explanation is required not only for the proper conveying of ideas to others, but also for the clarifying of ideas in our own minds.

Now ideas are explained by analyzing them and setting forth the results of the analysis. We may analyze the Comprehension of an idea and show the essential notes that make it up; and we express the results of such analysis in an essential *Definition*. And we may analyze the Extension of an idea and group its inferiors into classes convenient for the purpose we have in hand; and such grouping or classification is called *Logical Division*. That Definition and Logical Division may serve their purpose of clarifying ideas and rendering them distinct and complete, it is necessary that these explanations be developed according to well defined laws or rules. This Chapter therefore discusses the matters of Definition and Logical Division and the rules by which these are rendered serviceable in the work of explaining ideas.

The Chapter is accordingly divided into two Articles, as follows:

Article x. Definition
Article 2. Logical Division

Article i. Definition

a) Doctrine of Definition b) Rules of Definition

a) DOCTRINE OF DEFINITION

In the widest sense, definition is the explanation of an idea or term according to its content or use. Varieties of definition may be set forth, beginning with this general description, and thus we may arrive at a precise knowledge of the nature of *real essential definition* with which alone Dialectics is concerned. We distinguish the following types of definition :

I. *Nominal Definition.* Nominal definition explains a term by telling something about it considered as a *name.* Nominal definition may be constructed :

1. according to *etymology,* as, " 'Hippopotamus' is derived from two Greek words, *hippos* (horse) and *potamos* (river)" ;

ii. by *translation,* as " 'Hippopotamus' means 'river horse' " ;

iii. by *substitution,* as, "Theodicy is Natural Theology."

2. *Real Definition.* Real definition tells the content of an idea with more or less completeness and accuracy. It tells something about the *thing* for which the idea (and term) stands. It is :

i. *Essential,* when it declares exactly what the

essence of a thing is. Essential definition is either *physical* or *metaphysical* according as it expresses the essential objective elements that make tip a reality, or the essential notes that make up an idea in the mind. Thus, "Adan is a creature made of body and soul" is a physical definition ; while "Alan is a rational animal" is a metaphysical definition. In simpler language, a physical definition explains an essence by naming its parts ; while a metaphysical definition explains an idea by naming its essential notes.

ii. *Descriptive* definition (or simply *Description'),* when it tells something about an essence in itself, or its properties or accidents, but does not *adequately* express what that essence is. Description may be *accidental,* as, "Man is a biped without feathers" ; it may be *proper* or *attributiz>e,* as, "Man is a walking and talking being"; it may be *genetic* (showing origins), as, "Man is formed of the slime of the earth" ; it may be *causal,* as "Man is made by God *(efficient cause)* to know and love God *(final cause)*

Dialectics, as we have remarked, has to do only with real essential definition.

b) RULES OF DEFINITION

The following rules are most important. Remember that Dialectics is the science of correct thinking. Now no one can think correctly—in matters intri-

cate and involved—without a clear grasp of the elements of thought (ideas), and such clear knowledge depends largely upon adequate essential definition. Thus one must know what a definition is and should be. The test of definition, as well as the manner of constructing it, is contained in the following set of four rules.

Rule I. The definition must be exact

The rule means that the definition must square precisely with the idea (term) defined, not falling short or extending beyond the limits of the latter. Another way of expressing this rule is: Let the definition be neither wider nor narrower than the term defined. The following definitions offend against this rule:

Cats are domestic animals;
Charity is that which covers a multitude of sins;
Man is an animal;
A circle is a plane figure.

Rule II. The definition must be clear

The purpose of definition is to clarify ideas. That purpose is defeated if the definition be as obscure as what it should clarify. This rule is violated by the use of ambiguous, metaphorical, or indefinite terminology, and sometimes by the use of complex technical expressions. The following definitions violate this rule:

A window is an orifice in an edifice for the exclusion of elemental disturbances, and the admission of illumination through translucent substances ;

Evolution is the transit from the homogeneous to the heterogeneous ;

A biological species is a class marked by morphological discontinuity and interspecific sterility.

Rule HI. The definition must not contain the term defined, even implicitly

The definition is meant to clarify, but we do not clarify or explain a thing by repeating its name. I do not clarify the idea of *circle* by defining it as "a circular line." The following violate this rule:

A metal is a metallic substance;

A body is any substance of bodily character;

Psychology is the scientific study of psychic activities ;

"The duties of an archdeacon are purely archidiaconal."

Rule IV. Essential definition consists of proximate genus and specific difference

The Proximate Genus sums up all the essential notes that enter into the Comprehension of an idea save the last. And the Specific Difference gives this ultimate note. Hence Proximate Genus plus Specific

Difference equals the sum of essential notes—the entire essence. The student is referred to the study of The Porphyrian Tree, page 34. Definitions that violate this rule are exampled above in the paragraph on *Description*.

The following jingle, wretched as doggerel may be, is yet a valuable mnemonic, and sums up the Four Rules of Definition in proper order:

Defining, be *exact* and *clear;*
Don't let *the term defined* come near;
Essential Definition mocks
All but *Spec. Diff. and Genus Prox.*

SUMMARY OF THE ARTICLE

In this Article we have learned what is meant by nominal definition, which is only the explanation of the sense of a term. We have also learned what real definition is, and this we have subdistinguished as essential definition and description. We have studied and exemplified the Four Rules of Definition.

Article 2. Logical Division

a) Doctrine of Logical Division b) Rules of Logical Division

a) DOCTRINE OF LOGICAL DIVISION

Logical Division is the orderly and systematic grouping or classification of the inferiors of a Universal. If one divides the inferiors of the Universal

man thus: white men, red men, yellow men, black men, one has made a Logical Division.

Thus Logical Division explains ideas by exemplifying them in classes.

Logical Division differs from Real Division. Real Division is the division of a reality into its component parts. Real Division is *physical* when actual objective parts of a reality are distinguished; thus man is physically divided into body and soul; thus a tree is divided into trunk, roots, and branches. Real Division is *metaphysical* when it is the distinction of essential notes in an idea. Thus when the idea *man* is divided into the ideas *rational* and *animal* we have metaphysical division.

It will be seen from the above that *Definition depends upon metaphysical division;* for an idea must be analyzed or divided into its essential notes before these can be summed up in an essential definition. Thus Real Division looks (as does definition) to content; *but Logical Division looks to Extension or application of an idea.*

In every Logical Division *three elements* are distinguished:

1. The Principle of Division. This is the base, the aspect, the point of view, from which the division is made. If I divide "Books" into Books on Theology, Books on Philosophy, Books on History, etc., the Principle of Division is "Nature of Contents." If I divide "Books" into red books, blue

books, green books, brown books, etc., the Principle of Division is "Color of Binding." If I divide "Books" into Latin Books, Greek Books, Hebrew Books, German Books, English Books, etc., the Principle of Division is "Language in which books are written."

2. A Totality Divided. This is a universal idea considered as applied in Extension. In examples given above, the "Totality Divided" is the Universal *book* taken in extension.

3. Dividing Members. These are the groups effected by the Logical Division. Thus if I divide the Universal *man* (taken in Extension as *all human beings'),* into white men, black men, yellow men, red men, each of these classifications or groups is a "dividing member" of the Logical Division.

To illustrate the elements of Logical Division:

1. Totality Divided: man
2. Principle of Division: race
3. Dividing Members: men of the white race, men of the black race, men of the yellow race, men of the red race.

b) RULES OF LOGICAL DIVISION

Logical Division, like Definition, is a means of clarifying ideas (and terms). Now if it be not regular, consistent, systematic, and complete, it will defeat its purpose, and will only muddle and ob-

scure idea (terms) instead of clarifying them. Hence the following rules must be carefully learned and faithfully observed. The reason for each rule will be made apparent by examples.

Rule I. In each Logical Division there must be only one *Principle of Division*

If there is a shift of base, a change of principle, the Division cannot be otherwise than confusing; hence it will be rather a hindrance than a help in the matter of clarifying ideas. The following example offends against this rule:

Totality Divided: Americans
Principle of Division: Religion
Dividing Members: Catholics, Protestants, Democrats, Quakers, etc.

Rule II. The sum of *The Dividing Members* must equal *The Totality Divided*

This rule means that the Division must be complete—no Dividing Members omitted. If the rule is not observed, the Division can serve no purpose of clarifying, for it will lack definiteness because it is incomplete. The following example of Division offends against this rule:

Totality Divided: chairs
Principle of Division: service

Dividing Members: Useful chairs, ornamental chairs.

The list of Dividing Members is incomplete; for there are chairs which serve neither use nor ornament.

Rule III. Let no single *Dividing Member* be Co-extensive with *The Totality Divided*

To propose as a Dividing Member what is equal in Extension with the Totality Divided is to fail to divide; hence, in such instances, the supposed Logical Division is inane and useless. The following example offends against this rule:

Totality Divided: Animals
Principle of Division: Cognitive capacity
Dividing Members: Sentient animals, rational animals.

Notice that "sentient animals" is not a proper classification or group of animals, for *all* animals are sentient.

Rule IV. *The Dividing Members* must be properly arranged

To fail in proper arrangement—coordination and subordination—of Dividing Members is to make the Division a confusing jumble, and hence to defeat its purpose, which is to *clarify*. The following Division offends against this rule:

Totality Divided: Americans
Principle of Division: Place of Residence
Dividing Members: North Americans, South Americans, Central Americans, Mexicans.

"Mexicans," a national group, should not be co-ordinated with the continental groups. Its place is one of subordination to "North Americans."

The following is a correct Logical Division:

Totality Divided: Americans
Principle of Division: Place of Residence
Dividing Members: North Americans, South Americans, Central Americans'

Canadians; Inhabitants of U. S. A.; Mexicans, Alaskans

(States:) Pennsylvanians, Ohioans, New Yorkers, etc., etc.

(Counties:) Westmoreland County residents; Fayette County, etc.

(Towns & Cities:) People of Latrobe, Scottdale, etc., etc.

(Townships:) People of Unity Township, East Huntington Township, etc., etc.

(Wards.) First Ward residents; Second Ward etc., etc.

The Rules of Logical Division are summed up in the following jingle:

One principle; all members call;
And let no member *equal all;*
Arrange—with due deliberation—
Coordinate subordination.

SUMMARY OF THE ARTICLE

In this Article we have learned what is meant by Logical Division. We have contrasted Logical with Real Division, physical and metaphysical. We have learned the use of Logical Division, studying its essential elements, and exemplifying the rules which must be observed in order to make Logical Division serve its purpose of clarifying ideas (or terms).

BOOK SECOND

THE JUDGMENT

This Book discusses the second operation of the mind, viz., Judgment. It describes, defines and classifies the Judgment. It then considers the Judgment as expressed in the Proposition.

The Book is therefore divided into two Chapters, as follows:

Chapter I. The Judgment Itself

Chapter II. The Judgment Expressed

CHAPTER I

THE JUDGMENT ITSELF

a) Description b) Definition c) Elements

This Chapter describes and defines the second mental operation, viz., *the Judgment,* and analyzes it in order to study its constituent elements.

The Chapter is not divided into Articles.

a) DESCRIPTION OF THE JUDGMENT

The mind not only forms ideas; it also *compares* one idea with another and notices and *enunciates* their relation as *agreement or disagreement.* This operation of the mind is the Judgment.

Now how can ideas agree or disagree? Obviously, in their essential make-up, their Comprehension. If the essential notes (Comprehension) of two ideas are precisely the same, these ideas are *identical,* and are in full agreement. If two ideas are identical *up to a certain point,* they are in so far in agreement, and beyond that point they are in disagreement. Thus the ideas *man* and *animal* agree inasmuch as all the essential notes in the Comprehension of *animal* (viz., being, subsistent, bodily, living, sentient) are also in the Comprehension of the idea *man* (which is, being, subsistent, bodily, living, sentient, rational).

The agreement of these two ideas can be enunciated by the mind in the judgment, "Man is an animal." Inasmuch, however, as the ideas also disagree in point of rationality, the mind can enunciate the judgment, "Man is not an irrational animal."

b) definition of the judgment

Judgment is the pronouncement of the mind upon the agreement or disagreement of two ideas. When agreement is enunciated, the judgment is *positive* or *affirmative*. When disagreement is enunciated, the judgment is *negative*.

The judgment is a pronouncement of the mind; it is a mental enunciation, *a predication*. When one idea is enunciated of another as its inferior *{subject}*, the idea so enunciated is called the *predicate*. Thus, judgment may be called the pronouncement of the mind in which a predicate-idea is enunciated of a subject-idea. All this will make clear the following somewhat difficult statement: Judgment is the pronouncement of the mind that one idea (subject) is or is not contained in the Extension of another idea (predicate) as an inferior.

You may illustrate the matter by circles. Draw a circle to indicate the idea *animal*. Draw another circle, partially overlapping the first, to indicate the idea *man*. The overlapping area indicates the point in which man and animal agree, and we may say—in so far—that man is an animal, and enunciate this

mentally in the judgment, "Man is an animal." The part of the *man*-circle which does not overlap, justifies the judgment, "Man is not a brute." On the other hand, the part of the *animal-circle* which does not overlap, justifies the judgment, "A brute is not a man."

c) ELEMENTS OF THE JUDGMENT

Three elements enter into every judgment:

1. two ideas in the mind;
2. comparison of the two ideas by the mind;
3. pronouncement by the mind *(predication)* on the agreement or disagreement of the two ideas.

The first two of these elements are taken together to constitute *the material element* of the judgment; the last is *the formal element,* the judgment proper.

We may mention here in passing that there are such things as sense-judgments. With these Dialectics has nothing to do, for this science treats of intellectual judgments wherein pronouncement is made upon *ideas.* Sense-judgments may be elicited by brutes, by those of undeveloped mind, and by normal adults acting without intellectual advertence. Thus the judgment that such a being is friendly or unfriendly (that is, is one to be sought after or avoided), that one sound is a summons and another a dismissal, are sense judgments. So also are judg-

ments upon bodily things formed immediately upon sensation, such as "It is raining," "I feel cold."

SUMMARY OF THE CHAPTER

In this brief Chapter we have learned what is meant by judgment, by the terms subject and predicate, by the term predication or pronouncement of judgment. We have distinguished positive and negative judgments, and have listed the elements of judgment, classifying these as material and formal.

CHAPTER II

THE JUDGMENT EXPRESSED

Just as the idea is expressed exteriorly by the term, so the judgment is expressed exteriorly by *the Proposition.*

This Chapter studies the nature of the Proposition, defines and classifies it, and sets forth the relative properties of Propositions.

The Chapter is accordingly divided into the following Articles :

Article I. Definition of the Proposition
Article 2. Classification of the Proposition
Article 3. Relative Properties of Propositions

Article i. Definition of the Proposition

A proposition is a judgment expressed in terms. In other words, it is a formula of terms which affirms or denies a *predicate* of a *subject,* such affirmation or denial being expressed by *the copula.* Thus every proposition has three elements :

1. subject : a term expressing the idea of which another idea is affirmed or denied ;
2. predicate: a term expressing the idea which is affirmed or denied of the subject;
3. copula : the present tense of the verb "to be," by which the affirmation or denial is expressed.

The subject and predicate together constitute *the material element* of the proposition, and the copula (which is the expression of the judgment proper) is *the formal element.*

The copula is always the present tense, indicative mood, of the verb "to be." Propositions that contain other verbs and other tenses are *reducible to logical form,* that is to say, such propositions may be restated in the subject-copula-predicate form. Examples of propositions in logical form are: "Gold is precious"; "The man is not old." Examples of *reduction to logical form* are

Original Form	*Logical Form*
John ran away	John *is* one-having-run-away
Mary will play	Mary *is* one-about-to-play
Charles has not arrived	Charles *is not* one-having-arrived
Patience brings blessings	Patience *is* a-thing-bringing-blessings
No man has been prejudged	All men *are not* those-prejudged

Notice two things here: I. The mode or manner of reducing a proposition to logical form, and 2. the fact that negative propositions have their negation

essentially *in the copula,* even when the verb is positive and the negative is expressed in a particle prefixed to the subject. The last example given above illustrates the point.

When the verb "to be" is used in the sense of "to exist," as in the proposition, "God is," the reduction is effected by substituting "to exist" for "to be" and proceeding as shown above. Thus "God is" becomes, in logical form, "God *is* one-existing."

Every proposition has the properties known as "quality" and "quantity." The "quality" of a proposition is determined by the copula as *affirmative* or *negative.* The "quantity" of a proposition is determined by the Extension of its subject as *universal* or *particular.* Thus the proposition, "All men are mortal" is universal in quantity, and affirmative in quality; while the proposition, "Some men are not wise" is particular in quantity, and negative in quality.

SUMMARY OF THE ARTICLE

This short Article has furnished us the definition of the proposition; has set forth its elements in detail, and has classed these as formal and material. It has furnished us with a short but sufficient account of what is meant by the "quantity" and "quality" of propositions.

Article 2. Classification of the Proposition

a) Simple Propositions b) Compound Propositions

The most general classification of propositions presents them as *simple* and *compound*. A simple proposition has one subject and one predicate. A compound proposition is a combination of two or more simple propositions: such combinations may be variously effected. It will be necessary here to discuss these classes of propositions in detail.

a) SIMPLE PROPOSITIONS

A simple proposition has but one subject and one predicate. Examples: "Man is mortal"; "God is good"; "Aluminum is not heavy"; "A circle is a closed curved line."

In quality, simple propositions are, of course, either *affirmative* or *negative*. In quantity, such propositions are *universal, particular, singular,* or *indefinite*. But, for practical purposes, the singular and indefinite propositions are not distinguished as classes, because they are always reducible to the other forms. Thus a singular proposition (that is, a proposition with a singular term as subject) *always* takes its subject in full Extension; it must, for its subject has the extension of only *one;* it is individual, and, if used at all, must be used in full Extension. Now the definition of a *universal* proposi-

tion is that it takes its subject in full Extension. Therefore, practically speaking, singular propositions are always universal propositions. And the indefinite proposition (that is, one that uses the subject in indeterminate Extension, such as, "Men like sports") will always convey by adjunct or context a *definite* knowledge of the scope of its Extension, and therefore will always be reducible to a universal or a particular proposition. Thus the indefinite proposition, "Men are mortal" obviously means *"All* men are mortal"; the indefinite proposition is, in effect, universal. And the indefinite proposition, "Men like sports," quite evidently means that *"Most* or *some* men like sports," and so the indefinite proposition is seen to be really a particular proposition.

Therefore, propositions are distinguished in quantity as *universal* and *particular.* A universal proposition is one that has a universal term as its subject. A particular proposition is one that has a particular term as its subject.

To sum up the classifications : simple propositions are:

1. in quantity : universal and particular propositions ;
2. in quality : affirmative and negative propositions.

Combining the classifications, it appears that we

may have the following kinds of simple propositions :

1. universal affirmative propositions—called "*A*" propositions;
2. universal negative propositions—called "E" propositions;
3. particular affirmative "I" propositions ;
4. particular negative propositions—called "O" propositions.

To illustrate the A, E, I, and O propositions, the following examples are offered. The student is to formulate other examples for himself :

A-propositions : All men are mortal ; All colors are beautiful; John is wise;
E-propositions : No man is wise; No tyrants are just;
I-propositions : Some man is wise ; Some laws are silly; Men like sports;
O-propositions: Some man is not wise; Some sports are not laudable.

The division of simple propositions on the bases of quantity and quality and the letter-symbols of the different propositions so distinguished are matters of first importance. The student must master these

things thoroughly, for they are supposed as known in all that follows.

Now we are to study two supremely important principles which determine the Extension of the predicate in simple propositions. The value of these principles will appear when we come to the analysis of the reasoning process. The principles are:

First Principle: In an *Affirmative Proposition* the Predicate is undistributed.

The principle means that in affirmative propositions the predicate is not taken in full Extension. Take the proposition, "Every stone is a body." Here the predicate "body," while taken in full Comprehension (so that all the notes in the idea *body* are found in the idea *stone) is not taken in full Extension.* If it were so taken, the proposition would mean that there is no other sort of body but a stone. It is taken in *partial* Extension, and the proposition really means, "Every stone belongs to the class (Extension) *bodies*^ although there are other bodies, which are not stones, in that class also." In other words, the proposition means, "Stones are *some* members of the class *bodies*/' When a term is used in full Extension, it is said to be *distributed;* when used in partial Extension, it is said to be undistributed. We should now be able thoroughly to understand the principle: In an affirmative proposition the predicate is undistributed.

Notice two exceptions to this principle: i. λλTεη the predicate is a *singular term*. In this case the predicate is individual, it has an Extension of *one;* if used at all it *must* be used in full Extension. Example: "That man is Λ1 Smith." 2. When the predicate is an *essential definition*. In this case, the definition must be absolutely equal in all respects (Comprehension and Extension) with the subject, and the proposition should read both ways with equal truth. Example: "Man is a rational animal." The essential definition is necessarily an A-proposition; its subject is therefore a universal term. The predicate is coextensive with the subject, and is therefore taken in full Extension.

Second Principle: In a *Negative Proposition* the Predicate is Distributed.

The principle means that in a negative proposition the predicate is taken in full Extension. Take the proposition, "An animal is not a stone." Here the predicate "stone" although *not* taken in full Comprehension (so as to exclude from the idea *animal* every essential note found in the idea *stone)* is taken in full Extension, and the entire class *stone* is denied to the class *animal.* The meaning is *"No stone at all* is predicable as *animal."*

4;

b) COMPOUND PROPOSITIONS

Compound propositions are combinations of simple

propositions. Such combination may be effected in various ways, and we divide compound propositions into the following classes :

1. Modal Propositions;
2. Categorical Propositions (Compound) ;
3. Hypothetical Propositions;
4. Complex Propositions ;
5. Multiple Propositions.

These classes are not entirely exclusive one of the other, but the points at which some of them overlap will be readily seen and understood when the different types have been studied. The present classification seems the least likely to lead to confusion in the student's mind.

i. Modal Propositions

A modal proposition not only expresses the agreement or disagreement of subject and predicate, but also indicates the *manner* in which the subject and predicate agree or disagree. This manner of agreement or disagreement is expressed by the use of an adverb, a phrase, a clause, or by the implication of the verb. Now in modal propositions the simple agreement or disagreement of the subject and predicate is expressed in what is called *the dictum;* while the manner of their agreement or disagreement is

expressed in what is called *the -mode.* Thus, in the proposition, "God is necessarily just," *the dictum* is: "God is just"; and *the mode* is, "necessarily."

We distinguish four types of modal propositions, according as the subject and predicate of such a proposition is expressed as agreeing or disagreeing *of necessity, by chance, by possibility,* or *by impossibility.* We name these types *necessary, contingent, possible, impossible.* Examples will make the matter clear:

i. *Necessary* modals: "A circle has to be round"; "A sentient being must be alive"; "God is necessarily just." In each of these propositions the student will distinguish *the dictum* and *the mode.* Then he will observe that *the mode* itself may be expressed in a proposition. Thus it appears that modal propositions are always combinations of at least two simple propositions, one expressing *the dictum,* the other expressing *the mode.* Thus we see that modals are always compound propositions, never simple propositions. To illustrate, we may express the modal, "A circle has to be round" in two simple propositions, as follows: "A circle is round"; "This roundness is requisite."

ii. *Contingent modals:* "John is, it happens, ill"; "A rider chanced to come his way"; "As luck would have it, the doctor was away from home." Here again, it appears that *the dictum* and *the mode* may be expressed in respective simple propositions; and

so we see that modals of this type are necessarily compound, and not simple propositions. Notice that *the mode* expresses *contingency,* that is, the chance or accidental relation of subject and predicate.

iii. *Possible* modals: "The earth may possibly collide some day with another planet"; "A living being may be sentient" ; "Such accidents can happen." Again, *dictum* and *mode* show that such modals are compound propositions.

iv. *Impossible* modals: "God cannot be cruel"; "A circle cannot be square" ; "It is not possible that a triangje have four sides." Here again it is clear that modals are always compound propositions.

Study the types of modal propositions well. Then notice the following facts: 1. Necessary modals are always A-propositions. For if the predicate *must* be enunciated of the subject, it applies to it universally ; that is, the subject of such propositions will always be a universal term. And an A-proposition is precisely a proposition (affirmative) with a universal term for subject.—2. The impossible modal is always an E-proposition. Why?

ii. Compound Categorical Propositions

A *categorical* proposition expresses an unconditional judgment. It may be simple or compound, but it

is only of compound categoricals that we speak here.

Sometimes it is difficult to determine at sight whether a categorical is simple or compound; sometimes, of course, it is quite obvious that a given proposition is compound. For this reason we divide the present consideration of compound categoricals into two parts: in the first, we study categoricals that are obviously compound; in the second, we study those that are not obviously compound.

I. *Categoricals Obviously Compound.*—There are four types in this group:

i. *Copidative* propositions. These have more than one subject, more than one predicate, or more than one of each; and these are joined by conjunctions such as *and, or, nor,* etc. Examples: 'Peter and James were Apostles"; "Simon and Jude were Apostles and martyrs"; "John was an Apostle and Evangelist." The truth of copulative propositions depends upon the truth of the several simple propositions to which they may easily be reduced.[1]

ii. *Adversative* propositions. These express opposed judgments, and show the opposition by par-

[1] **The student may be puzzled here to find mention of the *truth* of the propositions discussed. He may say, "What has Dialectics to do with truth? Its aim is correctness." We answer; We study nothing of the nature of truth here, nor of tests for truth as such. But we must take account of the fact that propositions are necessarily true or false, and this property sometimes determines them as veritable specimens of a given type of proposition or excludes them from such type. There-**

tides like *but, however, nevertheless, yet, still,* etc. Examples: "Happiness lies not in the possession of earthly but of eternal goods"; "Now you are clean, yet not all"; Samson was strong; nevertheless he fell through the power of one weaker than himself." The truth of adversative propositions depends upon the truth of the simple propositions to which they may be reduced, and also upon the fact of true opposition existing between these component simple propositions. Thus we have a false adversative in, "Peter was a martyr; nevertheless he went to heaven." Here the component simple propositions are true, but the opposition expressed in "nevertheless" does not exist between them.

iii. *Relative* propositions. These are made up of partial propositions connected by correlative particles like *when— then, so— as, as— as, whoever— he, where— there,* etc. Examples: "Where a man's treasure is, there is his heart also"; "Where two or three are gathered together in my name, there am I in the midst of them"; "As the shepherd is, so is the flock"; "Like father, like son"; "Whoever doth the will of my Father, he shall enter the kingdom of heaven." The truth of relative propositions depends upon the truth of the component simple propositions and also upon the existence of a true relation obtaining between or among them.

fore in determining the limits of types, mention must be made of truth and falsity. Here the questions of truth and correctness have something in common.

iv. *Causal* propositions. These consist of propositions united by causal particles such as *because, since, as, for,* etc. Examples: "Man is free because he is rational"; "You will be sick, for you have eaten tainted food"; "Since Simon has no penny, he shall have no pie." The truth of causal propositions depends upon the truth of the component simple propo-

II. *Categoricals Not Obviously Compound.*— Since these propositions need to be drawn out of the obscurity of their composition and shown to be compound, they are called *exponible* propositions. The simple propositions into which they may be resolved are called their *exponents.*— There are four types of propositions not obviously compound:

i. *Exclusive* propositions. These have attached to subject or predicate an exclusive particle like *only, alone, etc.* Examples: "Patrick alone stood up for me"; "God only knows." The *exponents* of the second example are: "God knows" and "Others do not know."

ii. *Exceptive* propositions. These include the expression of a limited predication, that is, they show that some inferiors of the subject do not receive the predication, or that some inferiors of the predicate

are not enunciated of the subject. This exception is indicated by particles such as *except, but, save, omitting,* etc. Examples: "All save John had gone''; "Mary likes all her studies except history''; "The class, omitting the consistent idlers, passed a brilliant examination." The exponents of the first example may be stated as follows: "John had not gone"; "All others had gone."

iii. *Comparative* propositions. These declare that a predicate is to be enunciated of one subject equally with another; or more or less truly, extensively, emphatically, of one than of another. Comparative particles are used, such as *more, less, better, worse, equally,* etc. Examples: "Good name is better than great riches"; "Kind hearts are more than coronets"; "John and Jim are equally enthusiastic"; "Mary is less diligent than Alice."

iv. *Reduplicative* propositions. These view a subject from different angles, and make partial predications about it, using such words as *inasmuch, as, in as far as,* etc. Examples: "Shakespeare as a man was of upright character, as a poet he was supreme, as a philosopher he was notable, as a dramatist he was unexcelled, as an actor he was indifferent." "The physician, inasmuch as he is a physician, treats human ailments; inasmuch as he is a man, he thinks and wills; inasmuch as he is an animal, he eats and sleeps." If the reduplicative particle is equivalent to *because,* the proposition is to be first reduced to the

causal type, and then resolved into its simple components. If the reduplicative particle merely indicates a changed point of view, the proposition is called *specificative,* and is to be reduced to the copulative type, and then into its simple exponents. The first example given above is *specificative;* the second is implicitly *causal.*

Hi. Hypothetical Propositions

A hypothetical proposition is conditioned: it makes no absolute predication, but expresses a *dependency* existing between two or more propositions. The matter is made clear by an example: "If a fast day falls upon Sunday, the fast is not observed." Notice that the proposition does not say simply, "The fast is not observed," but makes that proposition depend upon the fulfillment of a condition. There are three types of hypotheticals to be considered:

I. *Connective* (or simply *conditional')* propositions. These always have a member introduced by the particle *if.* The member so introduced is called the *condition* or antecedent; the other member is called the *consequent.* We may define a connective hypothetical as a proposition in which the consequent depends in such wise upon the antecedent that if the antecedent be true, the consequent must be true. Examples: "If you go, I shall not remain here"; "If the storm comes before we reach home, we are in for a wetting." The truth of connective hypotheticals

depends solely upon the relation of dependence enunciated as existing between antecedent and consequent. Thus the following is not a true connective hypothetical: "If you vote the Republican ticket, you will go to heaven." Now you may actually vote the Republican ticket, and you will (one hopes) actually go to heaven by and by; but there is obviously no relation of dependency between these things.

II. *Conjunctive* propositions. These enunciate the impossibility of two things occurring simultaneously, or of two facts being true at one and the same time. Examples: "Socrates is not at once a philosopher and an ignoramus"; "One cannot stand and sit at the same time"; "Oscar Skavinsky cannot be simultaneously a Republican and a Free-Stater." The truth of such propositions depends solely upon a true exclusive opposition existing between their component parts. Propositions of this type are easily reduced to two connective hypotheticals. Thus the first example may be reduced as follows: "If Socrates is a philosopher, he is not an ignoramus"; "If Socrates is an ignoramus, he is not a philosopher."

III. *Disjunctive* propositions. These enumerate exhaustive lists of possibilities no two of which can be simultaneously true, nor can all be simultaneously false, but one must be true and the rest false. Example: "It is either day or night"; "It is spring, summer, autumn, or winter"; "The thing is possible or it is not possible." For a proposition to be a true

disjunctive hypothetical two things are required: I. The enumeration of possibilities must be complete; and 2. There must be an exclusive opposition between or among the enumerated possibilities. The following is therefore no true disjunctive: "It is spring, or autumn, or winter." The following also fails of the character of a true disjunctive: "It is either white or sweet."

iv. Complex Propositions

A *complex* proposition has a complex term as subject. A complex term, as we have learned, is one that consists of two or more simple terms. Such a term has always a principal member and an incidental member. In the term, "the love of God," the principal member is "love" and the incidental member is "of God." Now complex propositions may be reduced to their exponents, and these will always be two, one containing the principal member of the complex term, and the other containing the incidental member. Example of the complex proposition: "The fear of God is the beginning of wisdom."

v. Multiple Propositions

A *multiple* proposition formally expresses more than one *predication*. Now a compound proposition may contain many simple propositions as exponents, and still not be multiple. Thus, "Peter, James, and John beheld the Transfiguration" is a compound

proposition, and may be reduced to three simple propositions; yet it is not multiple, for it has only one predication, viz., "beheld the Transfiguration." On the other hand, "John runs and jumps" is a compound and a multiple proposition; even though it has only one subject, there are two distinct predications concerning that subject. Let the student determine whether the following are compound and not multiple, or compound and multiple:

Brothers and sisters I have none;
Peter believed and was baptized;
I hope and pray that you are well;
The army, the navy, and the marines took part in the battle;
Gold and silver I have not and desire not.

Learn the axiom: A multiple proposition is always compound, but a compound proposition is not necessarily multiple.

SUMMARY OF THE ARTICLE

In this Article we have studied in detail the various types of propositions. This study will be well repaid when we come to the consideration of reasoning and the syllogism. Accurate thinking, correct reasoning, demands a clear knowledge of the values of terms and propositions, and of the principles immediately detived from such knowledge. We have learned to classify propositions as follows:

I. In Quantity and Quality:

A—propositions (Universal affirmative)
E—propositions (Universal negative)
i—propositions (Particular affirmative)
O—propositions (Particular negative)

U. In Structure:

1. SIMPLE.

a) Modal — **necessary, contingent, possible, impossible**

b) Categorical — **obviously compounded** — **copulative, adversative, relative, causal**

2. COMPOUND.- — **not obviously compounded** — **comparative, reduplicative**

c) Hypothetical — **connective, conjunctive, disjunctive**

d) Complex

e) Multiple

Article 3. Relative Properties of Propositions

a) Opposition b) Equipollence c) Conversion

We have hitherto considered propositions in themselves. Now we are to consider them in relation to

other propositions made up of the same terms. This consideration will show certain *relative properties* that exist among propositions, and these properties serve as a means of *direct* or *immediate inference.* By immediate inference through the relative properties of propositions we may conclude to *other propositions,* or to a knowledge of the truth or falsity of other propositions.

We are to study three relative properties of propositions. The first of these is *opposition* which exists between propositions that have the same subject and predicate, but which differ in quantity or quality or both. The second relative property is *equtpollence,* or "equivalence," which exists between two propositions that have the same subject and predicate and the same force of meaning ("equivalent propositions") yet differ in the number of negations they contain. The third relative property is *conversion* which exists between a proposition and *itself transposed* (that is, subject and predicate having changed places), the truth of the proposition being conserved.

a) opposition of propositions

Opposition is a relative property which exists between two propositions that have the same subject and the same predicate but differ in quantity or

quality or both. Example: *"All* men are wise"—"Some man is not wise."

There can be no opposition without a basis of agreement; indeed, there can be no disagreement without agreement,—a point where divergence begins. Thus we cannot discern any opposition between the propositions, "The snow is deep" and "This book is tiresome." These are simply independent and unrelated propositions. They are in no sense *opposed.* For opposition to exist between two propositions, these must have *the same subject and the same predicate.* Thus we see that there is opposition between these propositions: "The snow is deep" and "The snow is not deep."

There are two kinds or types of opposition, viz., opposition properly so called, and opposition improperly so called. Of the first type we have two sorts, viz., *contradiction* and *contrariety.* Of the second type we have also two sorts: *subcontrariety* and *subalternity.* A word on each of these follows:

I. *Contradiction* exists between an affirmative and a negative proposition (which have the same subject and predicate) when one expresses precisely that which is requisite and sufficient to overthrow the other. Such propositions leave no middle ground between them; they exhaust the possibilities. Therefore we say: *Of contradictories, one is necessarily true, the other necessarily false.* Example: "Every man is wise"—"Some man is not wise." These

propositions cover the whole ground. Study will show that they verify the description and definition of contradictories, and that they justify the principle enunciated about the truth and falsity of such propositions.

2. *Contrariety* exists between a universal affirmative and a universal negative proposition, each having the same subject and predicate. Such propositions leave a middle ground between them. They do not exhaust the possibilities. Thus, although contraries are sweeping denials of each other, they are not in such complete and accurate opposition as contradictories. Examples: "Every man is wise"—"No man is wise." The principle concerning truth and falsity here is: *Of contraries, both cannot be simultaneously true, although both may be false.*

3. *Subcontrariety* exists between two particular propositions, one affirmative and one negative, both of which have the same subject and predicate. Example: "Some man is wise"—"Some man is not wise." Obviously, the "some man" need not be the same individual, and hence there is no *proper* opposition between the propositions. They have an opposition improperly so called. Yet such propositions have a definite relation, and of them we enunciate the following principle: *Of subcontraries, both may be true, but both cannot be false.* If it could be false that "some man is wise," and also false that "some man is not wise"—then thought is annihilated.

4. *Subalternity* exists between a universal affirmative proposition and a particular affirmative having the same subject and predicate. It also exists between a universal negative proposition and a particular negative having the same subject and predicate. Examples: "Every man is wise"—"Some man is wise"; "No man is wise"—"Some man is not wise." Here again the opposition is *improper*. Yet such propositions have a definite relation and we may enunciate a relative principle about them. First, however, we must name the subalterns: the universal proposition is called the *subalternant* and the particular proposition (which differs only in quantity from the universal proposition) is called the *subalternate*. The principle is: *Of subalterns, the truth of the subalternant involves the truth of the subalternate, but not vice versa; and the falsity of the subalternate involves the falsity of the subalternant, but not vice versa.* In other words,

if subalternant is true—subalternate must be true;
if subalternate is true—subalternant may be true or false;
if subalternate is false—subalternant is false;
if subalternant is false—subalternate may be true or false.

Apply the principle in these examples:

subalternant : "Every man is wise"
subalternate : "Some man is wise"

subalternant: "All men are mortal"
subalternate: "Some men are mortal"

subalternant : "No man is a spirit"
subalternate : "Some man is not a spirit."

All the principles enunciated above may be studied and justified in the "Logical Square" which graphically illustrates the opposition of propositions. We give the Logical Square here, reminding the student of the letter-symbols of propositions, viz., A-pr©position is universal affirmative; E-proposition is universal negative; I-proposition is particular affirmative; O-proposition is particular negative:

THE LOGICAL SQUARE

Principles

I. Of contradictories, one is necessarily true, the

2. Of contraries, both cannot be simultaneously true, although both may be false.
3. Of subcontraries, both may be true; both cannot be false.
4. Of subalterns, if the subalternant is true, the subalternate must be true, but not vice versa; and if the subalternate is false, the subalternant must be false, but not vice versa.

NOTE: The practical value of opposition appears in argument or debate. From this relative property we gain important points of knowledge, such as: I. Not to make general and sweeping statements (A or E propositions), lest our whole argument be blown to pieces by the proof of the *contradictory*—a single opposed instance; 2. Not to try to prove the *contrary* of a general statement, but the *contradictory*. To try to prove the *contrary* would be mountainous labor, and even if we should succeed, the argument would not be settled, or "both contraries may be false." Hence we see the justice of the adage: "He who proves too much, proves nothing"; 3. To recognize the *contradictory* as the most valuable, and the thoroughly invincible argument; 4. To be on guard lest an opponent try to

disprove our position by establishing the *subcontrary,* for "both subcontraries may be true." 5. To avoid concluding to the truth of a subalternant from the truth of a subalternate, and to watch for this illogical proceeding on the part of an opponent.

The Logical Square also reveals Opposition of Propositions as a means of immediate inference. We can infer from any *true* A- or E-proposition the truth of its subalternate, the falsity of its contrary and contradictory. From any *false* I- or O-proposition we can infer the falsity of its subalternant and the truth of its contradictory. Let the student determine what can be inferred from any *false* A- or E-proposition, and from any *true* I- or O-proposition.

b) EQUIPOLLENCE OF PROPOSITIONS

Equipollence (or "equivalence") is the relative property existing between two propositions that have the same subject and predicate and mean the same thing, but which differ in point of one or more *negations.* Example: "All men are animals"—"No man is not an animal."

The practical value of equipollence appears in the following facts: 1. The study of equipollence makes for accuracy of thought and expression; 2. Sometimes a seeming denial may be shown by equipollence to be in reality an affirmation; 3. Equipollence affords a means of direct inference by which an ob-

scure or vague proposition may often be expressed in clear and distinct form.

By équipollence, then, we *infer* the equivalent of a proposition or of its opposites from the proposition itself, To form the *equivalent of the opposites,* the following rules are to be followed:

I. To form the *equivalent of the contradictory* of any simple proposition, place a negative particle before the subject. "All men are wise"—"Not all men are wise." "Not all men are wise" equals "Some men are not wise," the *contradictory* of the original proposition.

2. To form the *equivalent of the contrary* of any simple proposition, place a negative particle before the predicate. "All men are wise"—"All men are not-wise." The latter proposition equals, "No man is wise," the *contrary* of the original proposition.

3. To form the *equivalent of the subaltern* (subalternant, if the original proposition is I- or 0-; subalternate, if the original proposition is A- or E-), place a negative particle before both subject and predicate. "All men are wise"—"Not all men are not-wise." The latter proposition equals, "Some man is wise," the *subalternate* of the original A-proposition. Again, "Some man is not wise"—"Not some (i. e., *any)* man is not not-wise." the latter proposition equals, "No man is wise," the *subalternant* of the original O-proposition.

The equipollence of compound propositions need

not be discussed in detail in this manual. As a general rule, let such propositions be reduced to the simple propositions that they contain, and equipollence be shown as indicated in the foregoing rules.

c) CONVERSION OF PROPOSITIONS

Conversion is that process by which one proposition is immediately inferred from another by transposing the subject and predicate and keeping the resultant proposition as true as the original proposition. The original proposition is called the *convertend,* and the resultant proposition is the *converse.* Between convertend and converse there exists, therefore, a definite relation, which we call the relative property of conversion. Example: "Some man is wise"—"Some wise (being) is a man."

Conversion is a very serviceable means of immediate inference. By its use the dialectician may draw true and valid propositions from other propositions. But there are rules that must be carefully followed, else this sort of immediate inference is unwarranted. The rules are:

1. The converse must be of the *same quality* as the convertend. This rule means: if the convertend is affirmative, the converse will be affirmative; and if the convertend is negative, the converse must be negative.

2. No term in the converse can have a wider Extension than it had in the convertend. Else the in-

ference would be unwarranted as stating *more* than the proposition whence it was inferred.

3. Special rules: An E- or an I-proposition is converted *simply,* that is, II- will be converted to E-, and I- to I-. An A-proposition is converted *accidentally,* that is, A- will not convert to A-, but to I. An 0-proposition cannot be converted directly. In other words:

A converts to I (accidental conversion)
E converts to E (simple conversion)
I converts to I (simple conversion)
O is not convertible

Let us study some examples of conversion. Suppose the A-proposition, "All men are wise" is to be converted. We first look at the terms of the proposition to make sure of their extension. "All men" is universal; "wise (beings)" is particular, being the predicate of an affirmative proposition. Therefore, when the proposition is converted we cannot make the subject "All wise beings" but "*some* wise beings." Can we use "men" in a narrower, more restricted Extension in the converse than in the convertend? Yes, the rule forbids only the expanding of the Extension of terms. Certainly, if we have something stated as true of *all* men we may infer it as true of *some* men: for the principle is, "If a subalternant is true, the subalternate is true." Now we

proceed to the conversion of "All men are wise." The converse is, "Some wise beings are men." Notice that this justifies the dictum, "A converts to I."

Take the E-proposition "No man is wise." This is a negative proposition. Now in negative propositions the negation *affects the copula,* even if it be expressed in a particle prefixed to the subject. The accurate expression of "No man is wise" is "All men *are-not* wise." Now examine the Extension of the terms of this proposition. The subject is universal; the predicate is also universal, being the predicate of a negative proposition. Therefore we may use both terms in full Extension (i. e., as universal terms) in the converse. We proceed to convert "No man is wise." The converse is, "No wise (being) is a man." Notice that this justifies the dictum, "E converts to E."

Take the proposition "Some men are wise." Both terms are particular: the subject, because it is qualified by the limiting "some"; and the predicate, because it is the predicate of an affirmative proposition. Therefore the converse will have both subject and predicate *particular.* And since the quality may not change, the converse will be a particular *affirmative,* that is, an I-proposition. Hence we see that "I converts to I." The converse, therefore, of "Some men are wise" is "Some wise beings are men."

Take the O-proposition "Some men are not wise."

The subject is particular, and the predicate—being predicate of a negative proposition—is universal or in full Extension. Now the converse will have to be negative *by the* first rule of conversion: "The converse must be of the same quality as the convertend." Therefore when the particular "some men" becomes the predicate of the converse it will have to be changed to "all men." But this conflicts with the second rule of conversion: "No term can have a wider Extension in the converse than it had in the convertend." Therefore in the case of the O-proposition direct conversion is impossible.

SUMMARY OF THE ARTICLE

In this Article we have learned what is meant by Opposition, Equipollence, and Conversion of propositions. We have learned these as properties of propositions and as processes of immediate inference. They are valuable processes of such inference, for they enable the dialectician to see the faulty and illogical nature of statements unwarrantedly made in virtue of other statements, and they equip him for the task of forming clear and valid inferences. Suppose the student, after mastering this Article, should hear a lecturer remark: "I have been for many months a close observer of the life of the Catholics of French Canada. These people are intensely religious. Yet their life is barren of those

little comforts and conveniences that modern science has made available to us here in America. Can anyone, seeing this, doubt the well-known fact that the Catholic religion stands in spirit and in fact against the progress of science?" The words may be "boiled down" to the following: "French Canadian Catholics are unprogressive." This proposition is then converted into "All Catholics are unprogressive." The dialectician sees at once the point of fallacy in the whole argument: the speaker has inferred the truth of a subalternant from the truth of its subalternate,—an unwarranted procedure.

We have learned that Equipollence and Opposition of propositions also serve as means of inference and as "checks" or bases of criticism upon unwarranted inference. In all the matter studied in this Article there is much that can be put to practical use, much that makes for clear thinking, even though the student must pay for this service by hard study of dry rules and tedious explanations of principles.

Let the student put his knowledge to immediate service in daily reading of books and newspapers. He will be amazed at the number of instances of unwarranted inference he will discover. Let him in each instance reduce the inference to a proposition in logical form, and then criticize it according to the rules learned in this Article for the relative properties of propositions. He will find the work interesting, and he will be stirred to greater effort by the

consideration of the fact that the inferences he sees as unwarranted (and sees *how* and *why* and *where* they are illogical) convince a great many people—even educated people—who accept them as sound reasoning and correct thinking.

BOOK THIRD

REASONING

This Book discusses the third and most complex of the mental operations, viz., reasoning.

First, reasoning is studied as it goes on in the mind; then as expressed in argumentation, the most perfect form of which is the syllogism. The laws of the syllogism are stated and justified.

Finally, the Book discusses some examples of fallacious reasoning so that the student may have practical warning of the pitfalls that lie in wait for him, and may be wary in his evaluation of argument.

The Book is therefore divided into the following Chapters:

CHAPTER I

REASONING ITSELF

a) Description b) Definition c) Methods

This Chapter describes and defines the operation called *reasoning,* and discusses two methods of using it. The Chapter is not divided into Articles.

a) DESCRIPTION OF REASONING

In the last Chapter of the foregoing Book we learned that propositions may *imply* other propositions, and that these may be *immediately inferred* by the aid of Opposition, Equipollence, and Conversion. Such *immediate inference* is, indeed, a kind of reasoning, for it is "thinking things out." But reasoning ordinarily means *mediate inference,* and it is in that sense that we understand the term *reasoning* in the present Book.

When two ideas are compared, their relation of agreement or disagreement is enunciated by the mind in a judgment. But sometimes the mind, because of obscurity in the ideas, cannot tell whether they agree or disagree. Direct judgment is therefore impossible. Judgment must be reached in an indirect,

roundabout, *mediate* way. When such a judgment is worked out, we have *mediate inference* or *reasoning proper.*

Now the roundabout or *mediate* process of arriving at judgment may be illustrated as follows: The mind compares ideas A and B, but because of their obscurity, finds immediate judgment impossible. However the mind sees that idea A agrees with idea *C;* it also sees that idea C agrees with idea B. Thus, by using idea C as *the medium* it arrives at the judgment "A agrees with B." This is *mediate inference;* this is *reasoning.*

To illustrate further: Suppose the mind compares the two ideas *oak* and *plant.* Let it be further supposed that the ideas are obscure or vague, so that *oak* is associated in the mind chiefly with rugged sturdiness and strength, and *plant* with green and tender growth. The mind, comparing the two ideas, is not inclined to pronounce the judgment, "The oak is a plant." Still, in spite of vagueness, there is in the idea *oak* the partly grasped note of *growth.* For this reason the mind is not inclined to enunciate the judgment, "The oak is not a plant." Judgment is baulked; the mind cannot pronounce upon the agreement or disagreement of the two ideas. Suppose, however, that the mind knows clearly that the oak is a *tree.* Suppose further that it understands that all trees are plants. Thereupon, using *as medium* the idea *tree,* the mind can work out the judgment con-

cerning *oak* and *plant* in the following manner: All trees are plants; the oak is a tree; therefore, the oak is a plant.

The two examples given may be graphically illustrated as follows:

From the foregoing we see that reasoning is a roundabout way of arriving at judgment. We also see that the judgment is worked out of *two other judgments,* thus:

All trees are plants
The oak is a tree
Therefore, the oak is a plant

The two judgments from which the judgment sought is worked out are called *premisses.* The judgment worked out is the *consequent* or *conclusion.* Notice that the conclusion is worked out of the premisses by the mind. It must therefore be *in* the premisses. From this we learn that the conclusion is nothing more than an *explicit enunciation of what is implicitly contained in the premisses.*

Analyzing the premisses we see that they involve *three ideas.* The mind seeks to pronounce judgment

upon *two* ideas; for the purpose it calls in a *third* idea known in relation to the other two. Now the idea which the mind seeks to *predicate* of another is the *major idea,* and the idea about which predication is to be made is the *minor idea.* In other words, the mind in reasoning seeks to know whether one idea is or is not contained in the Extension of another idea as its inferior or subject. Technically, the mind seeks to know whether the minor idea is or is not included in the Extension of the major idea. The mind seeks to make a predication, to predicate the major of the minor idea, affirmatively or negatively. Therefore the major idea will always be the predicate of the conclusion, and the minor idea will always be the subject of the conclusion. In the illustration given above, the major idea is the idea *plant;* the minor idea is the idea *oak,* and judgment upon these ideas is rendered possible by using a *middle idea* viz., the idea *tree.*

Summing up, we find that the reasoning process involves three judgments and three ideas. The judgments are two premisses and a conclusion. The ideas are the major, middle, and minor ideas. In the next Chapter we shall learn that these elements of reasoning find respective expression in three *propositions* and three *terms,* which have the names here ascribed to the mental elements of reasoning, viz., premisses and conclusion; major, middle, and minor terms.

b) **DEFINITION OF REASONING**

Since reasoning has as its elements three judgments and three ideas, we may define it on the basis of its ideas, and on that of its judgments:

1. Reasoning is an operation of the mind by which the agreement or disagreement of two ideas is inferred from their known relation to a common third idea.

2. Reasoning is an operation of the mind by which a judgment is explicitly inferred from two other judgments in which it is implicitly contained.

A little study will show that the two definitions are identical in meaning. The first definition tells us that the thing to be accomplished by reasoning is the inference of "the agreement or disagreement of two ideas," and this is *judgment*. The second definition simply tells us that *judgment* is sought.

c) METHODS OF REASONING.

The two methods of reasoning are inductive and deductive reasoning, and these are usually called simply *Induction* and *Deduction*.

I. Induction reasons from individual and particular data to a general or universal conclusion. Thus if one experiments with a specimen of each of the known metals, and finds that every one of them is heavier than water taken in equal bulk, one must conclude: "All the known metals are heavier than

a

water." This is induction, and *complete* induction. Again, suppose one observes that various bodies, in all circumstances of time, place, temperature, etc., tend to fall towards the center of the earth. One may (although experiment has by no means been made with each and every existing body) assert as a conclusion: "All earthly bodies tend towards the center of the earth." This is incomplete (but sufficient) induction. Again, suppose one perforins the experiment reported as follows in a newspaper: "An English scientist hitched a fly to a tiny wagon, and discovered that it could pull seventy times its own weight over smooth surfaces." If one concluded from such an experiment: "All flies can pull seventy times their own weight over smooth surfaces," one would give evidence of *incomplete and insufficient* induction.

Induction is the only method available to the experimental sciences. Its conclusions are known as scientific facts and scientific laws. It is valid when *complete* (a thing hardly possible) and also when *incomplete but sufficient,* that is, when its conclusions are drawn from *representative* data, thoroughly and exhaustively investigated. Induction when *incomplete and. insufficient* has no scientific value, although it may indicate to the investigator a line of experiment that will eventually result in valid and scientific conclusions. But induction, however valuable, is not of first importance in rational

science. Dialectics is concerned with *deduction,* not with induction. In passing, however, let us notice that the two methods are not opposed, one to the other, but are supplementary. Deduction starts with a general or universal datum; and induction seeks to establish a universal truth so that particular truths can be *deduced* therefrom.

2. Deduction reasons from the universal to the particular and individual. The example of mediate inference (reasoning) given above illustrates the fact. Let us repeat it here:

All trees are plants (a universal datum)
The oak is a tree
Therefore the oak is a plant (i. e., *one* kind of plant—a particular datum).

Deduction proceeds from two important principles, called the *Dictum de Omni* and the *Dictum de Nullo*. These are:

1. *Dictum de Omni:* Whatever is affirmed of a class as a whole, is thereby affirmed of each and every member of that class. To illustrate:

All trees are plants *(plant* affirmed of whole class *tree)*
The oak is a tree (member of the class)
The oak is a plant *(plant* affirmed of that member)

ii. *Dictum de Nullo:* Whatever is denied of a class as a whole, is thereby denied of each and every member of that class. To illustrate:

No tree is a spirit *(spirit* denied of whole class *tree)*
The oak is a tree (member of the class)
The oak is not a spirit *(spirit* denied of that member)

Deduction is the perfect method of reasoning. Its conclusions are, when rightly drawn, *inevitable* in view of the premisses.

SUMMARY OF THE CHAPTER

In this Chapter we have learned what is meant by reasoning, and have marked a line of distinction between immediate inference and reasoning proper. We have noted the elements of the reasoning process as three ideas and three judgments, and have learned to name these elements accurately. We have defined reasoning, and have discussed its two methods.

CHAPTER II

REASONING EXPRESSED

Just as the idea is expressed in the term, and the judgment in the proposition, so the reasoning process is expressed in *argumentation*. Argumentation (or *argument)* may be defined as a process of speech in which one proposition is explicitly inferred from other propositions in which it is implicitly contained.

The most perfect form of argumentation is *the syllogism*. This Chapter deals with the syllogism.

The Chapter treats of the nature and classification of the syllogism, the laws by which it is governed, the *moods* and *figures* in which it may be constructed, and the imperfect, but valid, forms in which the syllogism may be found.

The Chapter is therefore divided into the following Articles:

Article I. The Syllogism and its Kinds
Article 2. Laws of the Syllogism
Article 3. Figures and Moods of the Syllogism
Article 4. Imperfect Syllogisms.

Article I. The Syllogism and its Kinds

a) The Syllogism b) Correctness and Truth of the Syllogism c) Kinds of Syllogisms

a) THE SYLLOGISM

The *syllogism* is an argument consisting of three propositions so related that when the first two

are posited the third necessarily follows. Example:

Every man is mortal
John Smith is a man
Therefore John Smith is mortal

The first two propositions of the syllogism are called *the premisses.* The third proposition (which is implied in the premisses) is *the conclusion* or *consequent.* The logical connection existing between the premisses and the conclusion is called *consequence;* and if a conclusion is not legitimately drawn from given premisses, the syllogism is said to lack consecpience.

The terms used in the simple syllogism are three in number. These are called *the major term, the middle term,* and *the minor term,* according as they express respectively the major, the middle, and the minor idea of the reasoning process. A practical rule for distinguishing the terms is the following: The major term is the predicate of the conclusion; the minor term is the subject of the conclusion; the middle term occurs in each premiss but not in the conclusion. This rule is not a scientific one for the Dialectician, for it presupposes a perfect syllogism to begin with; but it is a good handy rule in practice. The reason for it will appear upon recollection or review of what we have learned about the major, middle, and minor ideas of the reasoning process, and the place of these ideas and their function in

that process. In the syllogism given above, the major term is *mortal;* the minor term is *John Smith,* and the middle term is *man.* The major and minor terms are called *extremes* as contrasted with the *mean,* or middle term.

The premisses are called *the major premiss* and *the minor premiss.* This distinction of premisses was originally based upon the distinction of terms, so that the major premiss was that premiss which contained the major term, and the minor premiss was that which contained the minor term. But usage has brought a change, and now the distinction of premisses as major and minor amounts simply to *first* and *second* premiss respectively.

The three propositions and the three terms that enter into the construction of the syllogism constitute its matter or *material element.* The logical structure, which makes clear the connection of the premisses and the consequence of the syllogism, is the form or *formal element* of the syllogism.

b) CORRECTNESS AND TRUTH OF THE SYLLOGISM

The syllogism is *correct* when its material and formal elements are both present in integrity; in other words, it is correct when the conclusion follows necessarily from the premisses as given. The syllogism is *true* when its conclusion states a true fact, regardless of the truth of the premisses, and regardless of the *consequence,* that is, the necessary

inference of the conclusion from the premisses as given.

The following syllogism is correct but not true:

Every tree is a spirit
The oak is a tree
Therefore the oak is a spirit

The following syllogism is true but not correct:

Every spiritual being is immortal
The soul is immortal
Therefore the soul is a spiritual being

Notice in the latter example that the conclusion expresses a truth, *viz.*, "the soul is a spiritual being." But this conclusion is not legitimately drawn from the premisses; the syllogism lacks consequence; therefore the syllogism is incorrect.

Now Dialectics looks only to *correctness* in syllogisms. While it is evident that the syllogism can serve no worthy or valuable purpose unless it is both correct and true, we must learn first how to make it *correct.* The science of Dialectics has correctness of reasoning as its Formal Object, and in all that follows we look to correctness of syllogisms and not to their truth. Nevertheless, Dialectics finds a stable relation existing between truth and correct-

ness in syllogisms, and the following practical principles are discerned :

1. The correctness of the syllogism being supposed, it follows that if the premisses are true the conclusion will be true; but if the premisses are false, the conclusion may be false or true.

2. The correctness of the syllogism being supposed, it follows that if the conclusion is false, one or both of the premisses must be false; but if the conclusion is true, the premisses may be true or false.

To state the principles in a somewhat more direct form :

True premisses—true conclusion
True conclusion—false or true premisses
False premisses—false or true conclusion
False conclusion—false premisses (one or both)

c) KINDS OF SYLLOGISMS

Here we speak only of the *perfect syllogism,* that is, the syllogism which squares precisely with the definition of syllogism given above. Of *imperfect* syllogisms we shall speak in Article 4 of this Chapter.

The perfect syllogism is :

I. *Categorical* when all three of its propositions are categorical, that is absolute and unconditioned propositions. The categorical syllogism is *simple* or *compovmd,* according as its propositions are simple or compound propositions.

2. *Hypothetical* when the major (first') premiss is a hypothetical proposition. This syllogism is *connective (or* simply *conditional'), conjunctive,* or *disjunctive,* according as its major proposition is a connective, conjunctive, or disjunctive proposition.

Examples :

1. Simple categorical syllogism:
   Every man is mortal
   John Smith is a man
   Therefore, John Smith is mortal
2. Compound categorical syllogism :
   Whatever is infinitely perfect is necessarily eternal
   God is infinitely perfect
   Therefore, God is necessarily eternal
3. Conditional syllogism :
   If it rains, there will be no game
   It rains
   Therefore, there will be no game
4. Conjunctive syllogism :
   The milk cannot be at once sweet and sour
   It is sweet
   Therefore, it is not sour
5. Disjunctive syllogism :
   Either Smith won, or he was defeated
   He was defeated
   Therefore, he did not win.

SUMMARY OF THE ARTICLE

In this Article we have learned that the syllogism is the most perfect form of argumentation, which is the expression in speech of the reasoning process. We have also defined it, have studied its elements,

Terms," and the second group being the "Laws of Propositions."

Laws of Terms

Three terms there must be, neither more nor less,
No wider in Conclusion than in Premiss;
Conclusion never dares the Middle mention;
The Middle, once or twice, has full Extension.

Laws of Propositions

Affirmatives can never breed negation;
Two negatives end ever in frustration;
Conclusion follows e'er the weaker part;
Particulars no argument can start.

To explain these laws in detail:

i. Laws of Terms

first law of terms: *Three terms there must be, neither more nor less.* This law expresses a requirement of the very nature of the syllogism. For the syllogism is a process of reasoning to the agreement or disagreement of *two* terms through their relation to a *third* term. The syllogism exists for its conclusion; it is framed to reach the conclusion, to *reason* to the conclusion. Now the conclusion will express the relation (agreement or disagreement) of a subject and predicate. The predicate is the major term; the subject is the minor term. The third term, used only in reasoning to the conclusion, is compared

in the premisses with the major and the minor term, and is called the middle term. Every perfect categorical syllogism must have, in consequence, a major, a minor, and a middle term. It must not have more than these, else the relation of major and minor term will not be apparent; for these must be studied in their relation to a *common* third term (the middle term) so that their relation to each other may be discerned thereby. Notice that three *terms* are required, not merely three *names* or *words*. A name or word might be used in two senses, and hence, while remaining the same word, would be two terms. To introduce such ambiguity or equivocation into the syllogism would cause it to violate this First Law of Terms, for, in the case supposed, there would be *four* terms and not three. An example of such equivocation is the following:

A bank is a place in which money is deposited
This mound of earth is a bank
Therefore this mound of earth is a place in which money is deposited.

The term *bank* is one word, but is used in two utterly different "suppositions," and hence the argument contains four terms and is no true syllogism. Let the student test the following by the First Law of terms:

Every man is God's image
Judas was a man
Therefore, Judas was God's image.

A wait is a short stop
A short-stop is a ball-player
Therefore, a wait is a ball-player.

No effect is causeless
This is an effect
Therefore, this is not causeless.

second law of terms: *No wider in Conclusion than in Premiss.* That is to say: the terms must not have a larger Extension in the conclusion than they have in the premisses. If the terms should have a larger Extension in the conclusion than in the premisses, then the conclusion *says more* than the premisses warrant. Remember that the conclusion is only the explicit statement of what is implicitly contained in the premisses. How is one to judge of the Extension of the terms in the premisses? The subject of the premisses will always be universal or particular, and this will be indicated by qualifier or obvious sense; and the predicate of the premisses is judged by the two principles already learned, viz., I. The predicate of an affirmative proposition is undistributed (that is, is *particular),* and 2. The

predicate of a negative proposition is distributed (that is, is *universal* or *in full Extension).* To illustrate:

Every tiger is a living being
A man is not a tiger
Therefore a man is not a living being.

Notice the following facts: *living being* in the premiss is particular—predicate of an affirmative proposition. But the same term in the conclusion is general or universal (in full Extension)—predicate of a negative proposition. Thus the conclusion says more than the premisses warrant, and the syllogism is incorrect because it violates the Second Law of Terms.

Let the student criticize the following in the light of the First and Second Law of Terms.

War is hell
Hell is a place
Therefore, war is a place.

A game is a play
A dramatic performance is not a game
Therefore, a dramatic performance is not a play.

Brass is not precious metal
This ring is brass
Therefore, this ring is not precious metal

Gold is precious metal
This ring is not gold
Therefore, this ring is not precious metal.

third law of terms: *Conclusion never dares the Middle mention*. That is to say, the middle term, which occurs in both premisses, must never occur in the conclusion. The reason is obvious. The middle term is the *medium* used to reach the pronouncement which the mind seeks to make *about the major and the minor term*. The conclusion is the otie thing sought for; it is the sole reason for the existence of the syllogism; the mind knows its elements (subject and predicate—or, minor and major terms) from the start, and uses the middle term only to enable it to make pronouncement on the relation of these. Therefore, by the very nature of the syllogism, the middle term is the *means of reaching* the conclusion, but *has no place* in the conclusion. Should the middle term occur in the conclusion, the argument is vitiated and is no true syllogism. To illustrate:

John is lazy
John is a student
Therefore John is a lazy student.

This is merely the *compounding* of terms; it is not *reasoning*. The last statement merely combines the other two; it does not *draw out* a proposition latent in them. The last statement is only a more compact form of the other two statements. Let the student criticize the following in the light of the first three Laws of Terms:

Galahad was a knight
A night is dark
Therefore, Galahad was dark.

No cat has two tails
My dog is no cat
Therefore, my dog has two tails.

Bread is a staple food
Potatoes are a staple food
Therefore, bread and potatoes are staple foods.

Flattery is not good
Foolish praise is flattery
Therefore, foolish praise is not good.

fourth law of terms: *The Middle, once or twice, has ftdl Extension.* That is to say, the middle term, in at least one of the premisses, must be dis-

statements without logical sequence, implying no conclusion. The following example makes the matter clear:

Wine is an intoxicant
Whiskey is an intoxicant
Therefore, whiskey is wine.

The middle term, *an intoxicant,* is undistributed in both premisses (being in each instance the predicate of an affirmative proposition). The premisses are seen to be independent statements. Draw a circle to indicate the Extension of the term *intoxicant.* Within the circle make two smaller circles, marking one *wine* and the other *zvhiskey.* Thus you perceive that, while the two statements (premisses) assign both whiskey and wine to the class *intoxicant,* they say nothing about the full relation of whiskey *to* wine. Hence the conclusion set down is altogether unwarranted. The argument is no syllogism; it offends against the Fourth Law of Terms.

Let the student criticize the following in the light of the four Laws of Terms:

Some birds sing melodiously
All ducks are birds
Therefore, all ducks sing melodiously.

All wars bring misery

A revolution is a war
Therefore, a revolution brings misery.

Some preternatural events are deceptions
But this event is a preternatural event
Therefore, this event is a deception.

Diogenes sought an honest man
An honest man is John Jones
Therefore, Diogenes sought John Jones.

All Caucasians have inviolable rights
Negroes are not Caucasians
Therefore, negroes do not have inviolable rights.

No earthly benefit is lasting
Filial love is an earthly benefit
Therefore, filial love is not lasting.

All typhus is dangerous
This disease is not typhus
Therefore, this disease is not dangerous.

Sam sings songs
Sam sings sweetly
Therefore, songs are sweetly sung by Sam.

No news is good news
All history is no news
Therefore, all history is good news.

Some airplanes are biplanes
That big monoplane is *some* airplane
Therefore, that big monoplane is a biplane.

ii. Laws of Propositions

first law of propositions: *Affirmatives can never breed negation.* That is to say, two affirmative premisses can never lead to a negative conclusion. In other words, if both premisses are affirmative, the conclusion will necessarily be affirmative, The conclusion expresses explicitly only what is implied in the premisses. Now, two affirmative premisses imply no negation whatever. Therefore no negation can be expressed in the conclusion.

Let the student criticize the following:

Oranges are a tropical fruit
Tropical fruits are expensive
Therefore, oranges are not cheap.

second law of propositions: *Two negatives end ever in frustration.* That is to say, no conclusion can be drawn from two negative premisses. The syl-

logism by its nature requires the positive assertion of the relation of at least one of the *extreme* terms (that is, major and minor terms) to the *middle* term. If both premisses are negatives, they are independent denials, and nothing can be drawn from them about the relation of the major and minor term to each other. The following example makes this obvious:

Man is not a spirit
An angel is not a man
(no conclusion possible)

Nothing is said in these premisses to justify an inference concerning *angel* in relation to *spirit.* The result—for all the premisses tell us—might be what is illustrated in *either* of the following figures:

third law of propositions: *Conclusion follows e'er the weaker part.* This law requires a somewhat lengthy and involved justification. The student is

asked to master each step in the argument before proceeding to the next.

By the "weaker part" we mean *negation* (in quality) and *particularity* (in quantitj·) as opposed to the "stronger part," that is, *affirmation* and *universality*. The law means: "If one premiss is negative and the other affirmative, the conclusion will necessarily be negative; and if one premiss is particular and the other universal, the conclusion will necessarily be particular."

I. ***If** one premiss is negative and the other affirmative, the conclusion will be negative.* The affirmative premiss will assert the *agreement oi* one of the *extremes* (major and minor terms) with the *middle* term. The negative premiss will assert the *disagreement* of the other extreme with the middle term. Hence, the extremes will stand in disagreement with each other—and this means that the conclusion will be negative. To illustrate: Take A and B as the extreme terms, and C as the middle term. Let the affirmative premiss be "A is C." Let the negative premiss be "B is not C." There is no conclusion possible except "A is not B,"—a *negative* conclusion. Thus, "Conclusion follows e'er the weaker part."

2. ***If** one premiss is particular and the other universal, the conclusion will be particular.* Here the possibilities are as follows: i. both premisses may be affirmative; or ii. one premiss may be affirmative

and one negative. In either case the conclusion must be particular, as we see from the following:

i. If both premisses are affirmative, there will be only one universal term (that is, term taken in full Extension) in the premisses, viz., the subject of the universal premiss. Both being affirmative propositions, the two predicates will be undistributed, that is, particular; and the subject of the particular premiss will be particular: hence only the subject of the universal premiss can be universal. Now, this one universal term must be the *middle term* by the Fourth Law of Terms: "The Middle, once or twice, has full Extension." Nor can this middle term appear in the conclusion, by the Third Law of Terms: "Conclusion never dares the Middle mention." It follows, that there are no terms for the conclusion but particular terms. Hence the conclusion must be particular. Q.E.D.

ii. If one premiss is affirmative and the other negative, there will be only two universal terms in the premisses, viz., the subject of the universal premiss/ and the predicate of the negative premiss. But for the conclusion to be universal, there would have to be *three* universal terms in the premisses. For in the present hypothesis the conclusion must be negative (as we have proved in the first part of the explanation of this law), and if this conclusion were universal it would involve two universal terms—the

subject, because it would be the subject of a universal proposition; and the predicate, because it would be the predicate of a negative proposition. Now these terms could not be universal in the conclusion unless they were universal in the premisses, for the Second Law of Terms is: "No wider in Conclusion than in Premiss." Hence the premisses would have to contain two universal terms for the conclusion; and, in addition, the premisses would have to contain the middle term in full Extension (i. e., universal) at least once. Therefore the premisses would have to contain *three* universal terms if the conclusion were to be universal. But, as stated above, the premisses *do not* contain three universal terms, but only two. Therefore the conclusion cannot be a universal proposition. It remains that it must be a particular proposition. Q.E.D.

fourth law of propositions: *Particulars no argument can start.* That is to say, if both premisses are particular propositions, no conclusion is possible. Such premisses will necessarily be independent statements without strict logical connection. We may prove the law as follows:

I. If both premisses (particulars) are affirmative, they will contain no universal term whatever. Their subjects will both be particular terms, because they are subjects of particular propositions. And their predicates will both be particular terms, because they

are predicates of affirmative propositions. Now the premisses of every real syllogism must contain at least one universal term for, "The Middle, once or twice, has full Extension." Hence, from particular affirmative premisses we can conclude nothing, since there is no comparison of major or minor term with the middle term in full Extension.

2. If both premisses (particulars) are negative, no conclusion is possible by the Second Law of Propositions: "Two negatives end ever in frustration."

3. If one particular premiss is affirmative and the other particular premiss is negative, then the conclusion will be negative, for "Conclusion follows e'er the weaker part." This conclusion will require a universal term for its predicate, for "In a negative proposition, the predicate is distributed." Hence, this universal term must occur in the premisses; and the middle term must also occur in the premisses as a universal at least once. *Two* universal terms must therefore occur in the premisses. But, as a matter of fact, in such premisses as we consider here, two universal terms cannot occur. Both premisses being particular propositions, it follows that only the predicate of the negative premiss can be a universal term. It is obvious, therefore, that no conclusion can be drawn from such premisses.

note: For *compound* categorical syllogisms, the

general rule is as follows: Reduce the syllogism to the simple categorical syllogisms contained in it, and frame or criticize these according to the Eight Laws already explained. Ordinarily, however, the Eight Laws may be applied directly, without reduction if the student will be very careful to avoid the ever-present danger of saying more in the conclusion than the premisses warrant. Here, for example, is an unjustified inference which comes from ignoring this warning:

An infinitely perfect Being is eternal
God alone is an infinitely perfect Being
Therefore, God alone is eternal.

In the second *(or minor) premiss, the force* of the exclusive particle *alone* centers upon *infinitely perfect Being*. In the conclusion *alone* centers upon the term *eternal*. Thus the conclusion is unwarranted. In other words, the premisses say that God is the only infinitely perfect Being, but they do not say that *only an infinitely perfect Being* is eternal: yet the conclusion indicates that the premisses *do* say this, and hence the conclusion is unwarranted. This fact is shown in the following restatement of the syllogism:

An infinitely perfect Being is eternal (Maybe other beings are too)
God alone is an infinitely perfect Being (No

other Being is infinitely perfect, but maybe other beings are eternal)
Therefore, God is eternal (It must not be stated, in view of the premisses, that no other beings are eternal).

It appears then that the term *alone* in the second (or minor) premiss merely adds a bit of information which is alien to the general progress of the argument in hand. Leaving aside this alien matter, we have the syllogism as follows:

An infinitely perfect Being is eternal
God is an infinitely perfect Being
Therefore, God is eternal.

"God is eternal" is the only conclusion that can be justified.

Let the student grapple with the difficulties presented in the following syllogisms:

All diligent students will receive a prize
All but John are diligent students
Therefore, all but John will receive a prize.

Brute animals are not what men are
Men are rational
Therefore, brute animals are not rational.

We are not what brutes are
Brutes are animals
Therefore, we are not animals.

Everyone who says that Peter is baptized, says the truth
Everyone who says that Peter is a Christian, says Peter is baptized
Therefore, everyone who says that Peter is a Christian, says the truth.

(Suggestion : There is such a thing as non-Christian baptism—that of St. John the Baptist, for instance.)

The king awards honors to all who serve the state
John Johnson does not serve the state
Therefore the king does not award honors to John Johnson.

b) LAWS FOR THE HYPOTHETICAL SYLLOGISM

As we have seen, there are three types of hypothetical syllogisms, *the conditional, the conjunctive,* and *the distinctive*. We deal with each of these singly.

i. The Conditional Syllogism. Law: From the truth of the antecedent follows the truth of the consequent, but not vice versa; and from the falsity

of the consequent follows the falsity of the antecedent, but not vice versa. In other words :

if antecedent is true—consequent is true;
if antecedent is false—consequent is true or false ;
if consequent is true—antecedent is true or false ;
if consequent is false—antecedent is false.

From these four facts we deduce two "put and take" methods for forming the minor premiss of the conditional syllogism :

i. The "put"-method *affirms* the truth of the antecedent. Example :

If God is just, the soul will survive death
God is just
Therefore, the soul will survive death.

ii. The "take"-method *denies* the truth of the consequent. Example :

If the soul does not survive death, God is cruel
God is not cruel
Therefore, the soul survives death.

Notice here that we should violate the law of conditional syllogisms if we made the minor of the first syllogism, "The soul will survive death," and

then conclude, "God is just." This would be concluding to the truth of the antecedent from the truth of the consequent, which is an unwarranted procedure. Nor, in the second example, could we put as minor premiss, "The soul survives death," and conclude, "Therefore, God is not cruel." This would be concluding to the falsity of the consequent from the falsity of the antecedent—an unjustified procedure.

2. The Conjunctive Syllogism. Law: From the truth of one component follows the falsity of the other, but from the falsity of one component it does not follow that the other is true. In other words:

if one component is true—the other is false;
if one component is false—the other may be true or false.

From these two facts we deduce the one method of reaching a conclusion in the conjunctive syllogism. It is the "put-take," that is, one member of the conjunctive premiss is affirmed ("put") in the minor premiss, and the other is denied ("take") in the conclusion. Example:

Peter does not sit and stand at the same time
Peter stands ("put")
Therefore Peter does not sit ("take")

We could not use the "take-put" method and reach a conclusion, for the members of the conjunctive

premiss (the major premiss) do not exhaust the possibilities, and hence to deny one is not to affirm the other. Thus the following syllogism is incorrect, and its conclusion unwarranted :

Peter does not sit and stand at the same time
But he is not sitting
Therefore he stands (He may be lying down!)

3. The Disjunctive Syllogism. Law : From the truth of one member follows the falsity of all the others, and from the falsity of one member follows the truth of one of the others. In other words :

if one member of the disjunction is true—other or others are false;
if one member of the disjunction is false—one of the others is true.

From these two facts we deduce two methods of reaching a conclusion in the disjunctive syllogism. These are the "take-put" and the "put-take" methods. Examples :

Either it is day or it is night
It is not day ("take")
Therefore, it is night ("put")

Either it is day or it is night
It is night ("put")
Therefore, it is not day ("take")

The student must be sure that the major premiss is a complete disjunction, else he may (and probably will) reach an unjustified conclusion. The following example shows such a conclusion:

It is spring, summer, or autumn
It is not autumn
Therefore, it is spring or summer (It may be winter!)

Let the student criticize the following syllogisms in the light of the Laws for Hypothetical Syllogisms:

If it rains the game will be postponed
The game will be postponed
Therefore, it rains

If you are a fool, you will not study
You will not study
Therefore, you are a fool

If you are not a fool, you will study
You will study
Therefore, you are not a fool

If the ring is solid gold, I want it
The ring is not solid gold
Therefore, I do not want it

We do not have rain and fair weather simultaneously

We have not fair weather to-day
Therefore, we have rain to-day

John cannot be at once studious and lazy
He is not lazy
Therefore, he is studious

You do not weep and rejoice at the same time
You are not rejoicing
Therefore, you are weeping

Either it rains or it does not rain
It does not rain
Therefore, it rains

Either he is a silly fellow or he is shrewd
He is not a silly fellow
Therefore, he is shrewd

The color of the cloth is either black or brown
It is black
Therefore, it is not brown

Either Betsy or I killed the bear
I did not kill it
Therefore, Betsy killed it

If John is at home, I shall visit him
He is not at home
Therefore, I shall not visit him

SUMMARY OF THE ARTICLE

In this lengthy Article we have learned the. laws for constructing and criticizing syllogisms. These laws are of supreme importance; they are "Laws of Thought." We have studied the reasons for each law, and, if we have been diligent, we have accepted no single law on faith, but have mastered the hows and whys of each, and have discovered clearly just why it must be so. The study of the Laws for Syllogisms and their reasons is splendid mental training, and, in addition, it gives the student the practical equipment for analyzing and evaluating argument. The student will practice the art of reducing argument to *syllogistic form** before attempting to judge its validity.

Article 3. Figures and Moods of the Syllogism

a) Figures of the Syllogism b) Moods of the Syllogism

a) FIGURES OF THE SYLLOGISM

The position of the middle term in the premisses determines what is called the *figure oi* the syllogism. The middle term can occupy the following positions:

subject of both premisses;
predicate of both premisses;
subject of first, predicate of second premiss;
predicate of first, subject of second premiss.

Thus there are Four Figures of the Syllogism. Arranging these according to their perfection (that is, the clarity with which they show the consequence of the argument), we determine the figures according to the position of the middle term in the premisses, as follows:

First Figure: middle term is subject of first premiss, predicate of second;
Second Figure: middle term is predicate of both premisses;
Third Figure: middle term is subject of both premisses;
Fourth Figure: middle term is predicate of first premiss, subject of second.

Taking S for the subject of the conclusion (minor term), and P for the predicate of the conclusion, (major term), and M for the middle term, we may illustrate the Four Figures as follows:

Fig. I	Fig. II	Fig. III	Fig. IV
M - P	P - M	M - P	P - M
S - M	S - M	M - S	M - S
S - P	S - P	S - P	S - P

A good way of fixing the Figures in memory is to liken them to the four lines that make up the letter "M" drawing the lines as indicated here:

The meaning of this mnemonic "*M*" is made clear in the following schema:

Fig. III ***Fig. I*** ***Fig. IV*** ***Fig. II***

The most perfect Figure is the First. The Second and Third are of value; the Fourth is negligible, being an inversion of the First.

The Laws for the Four Figures are derived from the eight general laws of the categorical syllogism which we studied in the last Article. Without pausing to explain the derivation we state the following particular laws for the three valuable Figures:

Figure I: The major premiss must be universal; the minor must be affirmative.

Figure II: The major premiss must be universal; one premiss must be negative.

Figure III: The minor premiss must be affirmative; the conclusion will be particular.

Let the student determine the Figure of the following syllogisms, and test them by the laws just given and by the Eight General Laws:

All men are rational
All men are animals
Therefore, some animals are rational.

Tedious tales tire Tommy
"Tom Thumb" is a tedious tale
Therefore, "Tom Thumb" tires Tommy.

All metals are heavier than water
Ivory is not heavier than water
Therefore, ivory is not a metal.

Some judges are unjust men
All judges have authority
Therefore, some unjust men have authority.

No creature is infinite
God is infinite
Therefore, God is not a creature.

b) **MOODS OF THE SYLLOGISM**

rangement of its propositions with respect to their quantity and quality is called its *mood*. Thus, for example, a syllogism may have three universal affirmative propositions, or. as we have learned to call them, "A-propositions," like the following:

All animals are sentient
All men are animals
Therefore, *all men* are sentient;

and since all the propositions are A-propositions, the mood of this syllogism is indicated thus: *"AAA."* Take another example:

Some soldiers are cowards
All cowards are despicable
Therefore, some soldiers are despicable.

It will be obvious to the student that this is an IAI *syllogism in mood*. Take a final example:

Some animals are rational
No animals are spirits
Therefore, some rational beings are not spirits.

Again, it is obvious that the mood of this syllogism is IEO.

Now there are, absolutely speaking, as many moods of the syllogism as there are arrangements of

three propositions with respect to their quantity (extension of subject) and quality (affirmation or denial in the copula). In other words, there are four types of propositions (A, E, I, O) to be arranged in groups of three; and by the laws of mathematics we see that the possible arrangements total to four in the third power, that is, sixty-four. But fifty-two of these arrangements will be found to conflict with the laws of the syllogism, for they involve conclusion from negative premisses, general conclusion when unwarranted, conclusion from particular premisses, or negative conclusion from affirmative premisses. Casting out the fifty-two invalid moods, we have the following twelve:

AAA, AAI, AEE, (AEO), All, AOO,
EAE, EAO, EIO,
IAI, IEO,
OAO.

Since AEO is contained in AEE (for O is subalternate of E) it may be omitted.

The Eleven Moods cannot all be used validly in all Four Figures, for the propositions of the syllogism must conform to the special laws of figures. The absolute number of valid moods would seem to be eleven times four, or forty-four, but the special laws of figures eliminate twenty-five of these, and there remain nineteen valid moods, of which

four are in the First Figure (AAA, EAE, All, EIO)
four are in the Second Figure (EAE, AEE, EIO, AOO)
six are in the Third Figure. (AAI, IAI, All, EAO, OAO, EIO)
five are in the Fourth Figure (AAI, AEE, IAI, EAO, EIO)

The First Figure, as we have said before, is the most perfect figure, for it shows most clearly the *connection or* consequence of the premisses and conclusion. For this *reason* Dialecticians have formulated an elaborate system of rules for *the reduction of syllogisms to the First Figure. To "reduce"* a syllogism to the First Figure, is to restate it in the shape of the First Figure. The reduction of syllogisms is an intricate process. Doubtless it is of great value as mental training for students that can master its complexities and spare time for the exercise. But, as Keinstadler says, its practical value is inconsiderable, and, *to* quote no less an authority than Lepidi, *"if* this matter (reduction of syllogisms) is found *difficult for* beginners, let it be *omitted; their* loss will not be great." This manual of *Dialectics offers* here no more on the subject of reduction of syllogisms than a passing description of what it means. The subject is, however, discussed with some completeness in the Appendix.

SUMMARY OF THE ARTICLE

In this Article we have learned what is meant by the Figures and the Moods of the Syllogism. We have studied the special laws—derivations from the Eight General Laws for Categorical Syllogisms—by which each Figure is regulated, and have seen these laws applied in several examples. We have sifted out the valid Moods of the syllogism from the number of possible arrangements of the premisses of the syllogism with respect to quality and quantity, and have assigned to each Figure the Moods that may occur in it validly. We have studied what is meant by "reduction" of syllogisms.

Article 4. Imperfect Syllogisms

An imperfect syllogism is a shortened or lengthened syllogism. It usually has less or more than three propositions, or has an explanatory clause attached to one or both premisses. Important types of imperfect syllogisms are the following:

I. *The Enthymeme.* This is an abbreviated syllogism, one of the premisses being unexpressed but clearly understood. Example:

God is holy; therefore, He hates sin.

As a syllogism fully expressed, this argument would be :

hie who is holy, hates sin
God is holy
Therefore God hates sin.

Other examples of the Enthymeme :

It rains ; therefore, my friend will not come.
John is a good son ; therefore, he will take care of his aged parents.
Prudent men praise this method of business; therefore, it is a sound one.

Law for the Enthymeme: Supply the missing premiss, and judge by the Laws of Syllogisms.

It is important that this law be carefully observed. Precipitation often leads to false conclusions through failure to observe the law. A faulty Enthymeme is usually the result of error in the unexpressed member. Therefore, always *supply the missing premiss* before evaluating this form of argument. Criticize the following:

I don't understand this ; therefore, it isn't true.
This method of doing business is praised ; therefore, it is a good one.
I saw it in the paper ; hence it must be true.

2. *The Epichirema.* This is a syllogism which adds an explanation or justification to one or both of the premisses. Example :

Man has a spiritual soul, for he can reason ;
A spiritual soul is immortal, since what is spiritual cannot corrupt ;
Therefore, man has an immortal soul.

We see at once that there are Enthymemes involved in the premisses of the Epichirema. In the illustration we find the following :

Man can reason; therefore he has a spiritual soul.
(Full syllogism : If man can reason, he has a spiritual soul;
Man can reason ;
Therefore, he has a spiritual soul.)
A spiritual being cannot corrupt ; therefore, it is immortal.
(Full syllogism : Whatever is spiritual cannot corrupt;
Man's soul is spiritual ;
Therefore, man's soul cannot corrupt.)

The Epichirema may be made into a simple syllogism by lopping off the explanatory clauses from the premisses. Thus the example here given, minus its explanations or justifications, is the following:

Man has a spiritual soul
A spiritual soul is immortal
Therefore, man has an immortal soul.

This simple syllogism, plus the syllogisms developed from the Enthymeme-premisses, must all meet with the requirements of the Laws of Syllogisms to insure correctness in the Epichirema. Therefore we state the following law:

Law for the Epichirema: Reduce the Epichirema to the simple syllogisms involved in it and criticize these by the Laws of Syllogisms.

3. *The Polysyllogism.* This is a series of syllogisms so connected as to form an unbroken chain of argument. The conclusion of one syllogism becomes the major premiss of the next. Example:

He who is prudent is temperate
He who is temperate is constant
Therefore, he who is prudent is constant;
He who is constant is imperturbable
Therefore, he who is prudent is imperturbable;
He who is imperturbable is without sadness
Therefore, he who is prudent is without sadness;
He who is without sadness is happy
Therefore, he who is prudent is happy.

Law for the Polysyllogism: Reduce the Polysyllogism to syllogisms fully expressed, and judge by the laws of Syllogisms.

4. *The Sorites.* This is a shortened form of Polysyllogism. It consists of a number of propositions so connected that the predicate of one becomes the subject of the next, and so on to the last premiss inclusive; then the conclusion connects the predicate of the last premiss with the subject of the first. Example:

He who is prudent is temperate
He who is temperate is constant
He who is constant is imperturbable
He who is imperturbable is without sadness
He who is without sadness is happy
Therefore, he who is prudent is happy.

Law for the Sorites: No premiss may be particular but the first, and no premiss may be negative but the last. In other words:

The first premiss may be an A- or I-proposition;
The last premiss may be an O- or an E-proposition;
All other premisses must be A-propositions.

The reason for this rule is found in the Laws of Syllogisms, for two negatives or two particulars in the premisses would make conclusion impossible. Examples for criticism :

A ton of hay is a weight
A wait is a short stop
A short-stop is a ball-player
Therefore, a ton of hay is a ball-player.

A good man has a good conscience
Lie who has a good conscience enjoys peace
He who enjoys peace is happy
Therefore, a good man is happy

Three dogs are more than two dogs
Two dogs are more than one dog
One dog is more than no dog
No dog is more than seven dogs
Therefore, three dogs are more than seven *dogs.*

5. *The Dilemma.* This is a form of argument consisting of a disjunctive proposition and two conditional propositions (connective type), each of which leads to the same practical conclusion. It is sometimes called "the horned syllogism," and the two conditionals are the "horns" designed to gore an adversary. Yet the Dilemma must be constructed

in the most accurately correct manner, else it may easily be retorted upon the person who uses it. Examples:

The skeptical doctrine that we can have no certainty of anything is either true or false;
If it is true, we cannot accept the skeptical doctrine itself as certain;
If it is false, then we cannot accept it;
Therefore, in no case can we accept the skeptical doctrine.

The Catholic Religion was propagated either with the aid of miracles, or without miracles;
If propagated with the aid of miracles, it is true; for miracles are a certain evidence of truth in that which they are performed to support;
If propagated without miracles, then its rapid spread in the face of superhuman difficulties and furious opposition is the greatest miracle;
Therefore, in any case, the Catholic Religion is true.

Law for the Dilemma: Let the major premiss be a *complete* disjunction, and let the consequents of the conditional premisses be strictly drawn.

Examples for criticism:

Eualthus studied law under Protagoras, agreeing to pay for the teaching when he should win his first case. After finishing his studies, b.ualthus took up a business other than law, and so defended no cases. Protagoras brought suit to recover his fees. Then came the following exchange of Dilemmas:

Protagoras: 'Judges, you will presently decide this case. Eualthus will be told that he has won or lost it. If he loses it, he must pay me by your order; and if he wins it, he must pay me by the terms of our agreement. Therefore, in any case, he must pay me."

Eualthus: "Judges, if I win the case, I am absolved from obligation to pay by your order; if I lose, I am absolved by the terms of our agreement. Therefore, in no case must I pay Protagoras."

The judges dismissed the case. How' would you decide it? Why?

An Athenian was dissuaded from seeking office by the following argument: "Do not seek for this office. If you achieve it and rule well, you will displease the bad citizens; and if you rule ill, you will displease the good citizens. Therefore, in any case, your rule will occasion displeasure, and you should not seek the place." Let the student construct this argument in strict Dilemma-form. Then let him criticize it by the Law for the Dilemma, and construct its "retort."

The Calif Omar justified the burning of the Library of Alexandria in the following manner: "Either these books agree with our Koran or they are in opposition to it. If they agree, they are useless; if they are in opposition to it, they are dangerous. Therefore, in any case, they should be destroyed." Let the student criticize this dilemma, and "retort" it.

If there is such a thing as a *cause,* it cannot be known as such. For a cause would have to occur at one of three possible points of time, viz., before its effect, after its effect, or simultaneously with its effect. But if it occur before its effect, it is a cause before it is a cause! If it occur after its effect, it is no cause at all, since that which it supposedly produced existed before the so-called cause. If it occur simultaneously with its effect, it is impossible to know which of the concurring events is cause, and which is effect. Therefore, in no case can a cause be known as such.

The last example should be called a "Trilemma," since its disjunctive premiss involves three possibilities. One with four possibilities should be called a "Quadrilemma," and so on. But the term "Dilemma" is generally used to indicate any argument of this character.

Here, at the end of our study of Imperfect Syl-

logisms, it may be well to add a note concerning two *forms of* Argument which the .Dialectician must *notice, viz., Argument from Analogy,* and *Argument from Hypothesis.*

1. Argument from Analogy. An .Argument from *Analogy is* one in which a fact is deduced from another because of resemblance *that exists or* appears to exist between *them. Pathology, for* example, employs analogy in *tracing the* causes of various diseases, concluding *from the like* character of certain diseases to *their* common nature. The principle of *analogy is: "Whatever* prevails in one member of a class of similar things *probably* prevails in the other *members also."*

Analogy often opens the way for valid induction, but in *itself it* affords mere probability, not certainty, in its conclusions.

Arguments from analogy are called *similitude, example, and parable. To illustrate:*

i. Similitude: "When a man builds a temple, he clears away the loose surface soil *and* lays his foundation upon the *solid rock beneath. Now every Christian* must make his soul the temple of God. Hence he must clear away the *loose soil of the* passions, the mere emotions, and base the structure *solidly upon* faith and love."

ii. *Example: "Be* patient, brave, and *hopeful,* as the great Father of his *Country was." Example is* regularly historical, never a *fiction.*

iii. *Parable* is a fiction constructed to point a moral, or illustrate a truth.

2. *Argument from Plypothesis.* Hypothesis is the assuming of an *unproved* proposition as the provisional explanation of facts investigated. It affords the investigator a starting-point and a working-basis. Suppose an investigator wishes to know whether steam has motive-power. He assumes that it has such power; and this is his *hypothesis.* Then he tries to upset his own hypothesis, not to find justification for it. It is his starting-point, his working-basis, and if it cannot stand assault, it is to be abandoned. Suppose the hypothesis that steam has motive-power stands up under all the tests and experiments. It looks more and more like the right explanation of observed facts. It is now a *theory.* If the theory stands the careful and sufficient tests to which it is then subjected, if it be found to explain *all* the facts that the investigator assumes it to explain, then it becomes a scientific fact, a *scientific law.* The hypothesis of the motive-power of steam may be subjected to this process, and it emerges a scientific fact and law.

Suppose evolution is assumed as a hypothesis for explaining the data of geology and biology. It looks like a probable explanation of the gradation observed in the life-forms on earth, in the earth's strata, and in the fact that certain species of plant and animal life are now extinct, and that other

species now exist which did not exist formerly. Thus it is *a hypothesis*. It is subjected to test. If it tries to explain development of the earth and life as gradual and continuous, it faces the fact that there is not a trace of true *intermediate* forms, of stages of passage from one species of life-form to another; it has not one Missing Link to find, but ten million. This fact prevents the hypothesis from developing into a theory. But if evolution is content to explain development by "jumps," sudden changes, it need not look for intermediate forms; still, this explanation seems contrary to the ordinary development of individuals and of classes of life-forms as we know them. Analogy at least is against this assumption. Therefore, the evolution hypothesis remains a hypothesis. In our day, many teachers and writers assert it as a theory, and some even assert it as scientific fact. The honest scientist, however, never makes unsupported claims—and such a claim as we have mentioned is absolutely without support. Still, it is a hypothesis. As regards man, the Catholic finds it in conflict with truth which he *knouts* by Divine Science, and he is right to reject it. But in the lower life-forms, it *may* be found true; and so it is still the working-basis, the *hypothesis* of many scientists.

For a hypothesis to be worthy of its name it should have probability to begin with; it should *look like the explanation* of data investigated. In the

second place, it must be found to explain *all* the data, else it is to be rejected as inadequate, and useless scientifically.

SUMMARY OF THE ARTICLE

In this Article we have learned how to construct and to criticize the arguments known as the Enthymeme, the Epichirema, the Polysyllogism, the Sorites, and the Dilemma. We have studied the matter of argument from analogy and from hypothesis.

CHAPTER III

FALLACIES TO AVOID

When a fact has been proved by clear-cut and justified reasoning, deductive or inductive, it is said to be *demonstrated.* When one (or more) of the premisses of an argument is not certainly true, but only probably so, the conclusion reached is not demonstrated but *shown to be probable.* When one (or more) of the premisses is certainly false, although it bears the attractive *appearance* of truth; or when the conclusion is not justified in view of the premisses, although it *seems,* at first sight, to be so; then the argument is called a *sophistry* or a *fallacy.* The conclusion of a fallacy may express a truth, and then the conclusion is called *illogical;* or it may express a falsehood, and then it is called *erroneous,* or simply *an error.*

This Chapter discusses some of the more commonly used fallacies. Its purpose is to equip the student for the ready recognition of unjustified reasoning and ordinary logical error, and to relieve him of the necessity of making a laborious analysis of every seemingly valid argument that he may be called upon to criticize.

The Chapter is not divided into Articles. It lists and discusses the following fallacies:

1. Equivocation
2. Composition and Division
3. Evading the Point
4. Begging the Question
5. **False Cause**

1. *Equivocation.* This fallacy employs *equivocal* or *vague* terms that cause the argument, when reduced to the form of a syllogism, to offend against the First Law: "Three terms there must be, neither more nor less."

Example:

A box is a wooden case
A blow on the ear is a box
Therefore, a blow on the ear is a wooden case.

This absurd example is a very obvious fallacy; but itis of profit to notice that it contains four terms, not three, and that the syllogism is therefore unjustified. More intriguing is the equivocation which comes from the use of *vague* words and ambiguous terms like: democracy, brotherhood, humanitarianism, materialism, optimism, pessimism, prosperity, progress, education, dogmatism, higher planes, contacts, values, higher life, broader vision, etc. The use of such terms as these is very common in our day, and many people employ them constantly who could not, under direst penalties, frame an adequate definition of any one of them. From this fact the student should take two points for practical guidance: 1) Never use vague terminology; use terms in a clear and precise sense, and define them when necessary; 2) Never allow an opponent to "get away" with a vague argument: make him define his terms.

An example of equivocation through the use of vague terms:

Prosperity promotes progress
Active commerce is prosperity
Therefore, active commerce promotes progress.

What *is* meant by *progress? Does it* mean the increase of *wealth and power in the* hands of those already wealthy and powerful? Does *it mean the intellectual illumination of mankind? Does it* mean the *triumph of those who war against* human justice *and the dignity of the citizen* as a man and the image *of God? IVhat does it* mean? *To one thousand men the term* progress conveys a thousand shades of *meaning,----nay more: it* conveys to nine hundred of *the thousand men* a *meaning somewhat constant, but variously shaded; and to the other hundred* it conveys a *meaning that is opposed to the more general and constant* interpretation of the term. The same may be said of the term *prosperity. Therefore, the syllogism* here given is valueless unless its terms be accurately explained; as it stands it is a *fallacy. And how many minds, even educated minds, are content with such* fallacies! *Content to* accept *them as evidences of truth, content to assimilate them as the embodiment of wisdom, content to make them the practical* norms and principles of *conduct, and even of life!*

2. *Composition and Division.* This fallacy attributes a predicate to a qualified subject when that predicate is applicable to the subject only when unqualified; or it attributes a predicate to an unqualified subject when that predicate is applicable to *the* subject only when qualified. In other words, this fallacy *compounds* subject and qualifier in one, and then attributes a predicate which belongs to the subject alone without the qualifier (Fallacy of Composition); or it *divides* a subject from its qualifier, and then attributes a predicate which belongs to that subject only when compounded with its qualifier (Fallacy of Division).

Example:

Sinners cannot get to heaven
St. Augustine was a sinner
Therefore, St. Augustine could not get to heaven.

Here we have the Fallacy of Division. The subject to which the predicate "those who cannot get to heaven" really applies is "unconverted sinners." The fallacy divides the subject "sinners" from its qualifier "unconverted," and then applies a predicate only applicable when the subject is undivided. Supplying the lacking qualifier, we have:

Unconverted sinners cannot get to heaven
St. Augustine was a (converted) sinner

.Therefore— *(four terms in frémisses; no conclusion· possible).*

A further example:

To make blind men see is to do a contradictory thing
Our Lord made blind men see
Therefore, Our Lord did a contradictory thing.

This is the Fallacy of Composition. The term *blind men is* properly kept in compounded sense in the major premiss, which means "blind men as such cannot see, and to say that they can remain blind and yet see is a contradiction." But in the minor premiss, the term ought to be understood in divided sense, as "those whom the Lord caused to *cease to be blind* and to see." Our fallacy, however, holds it compounded or composed. To controvert this fallacy, we point out the fact that *blind men* in the major premiss is compounded or composed, and the same term in the minor premiss *is* or *ought to be* divided; hence we see that *the syllogism involves equivocation, presents* four terms, and baulks the drawing of any conclusion.

The example given here is made obviously false so that the student may go whole-heartedly into the task of finding out where its point of fallacy lies. But there are thousands of intriguing arguments,—

not obviously false but which involve the Fallacy of Composition or that of Division,—seen in books and heard in lecture-halls and university class-rooms every day and every hour. The student will do well to be on guard against this very deceiving fallacy. Let him find the point of fallacy in the following:

The Mosaic Law is abrogated
The Ten Commandments are part of the Mosaic Law
Therefore, the Ten Commandments are abrogated.

I will not join a Church whose members are rascals
Many members of the Catholic Church are rascals
Therefore, I will not join the Catholic Church.

3. *Evading the Point.* This is a fallacy which offers argument or proof for something other than the point at issue. An example of this fallacy is found in the arguments of those zealots who set out to prove that Catholics are idolatrous, and spend their entire effort in proving that *images are not to be adored,*—a matter in which every Catholic will thoroughly agree. Another example is found in the usual type of argument offered in defense of the hypothesis of evolution. When the evolutionist is

asked: "How did human life come into being from lower life-forms?" he is very likely to reply: "'Well, you see, it took ages and ages, æons and æons, for the process of development to unfold to that stage which we behold in human life. Lower life-forms gradually developed variations, these became fixed, and were transmitted, and after the lapse of millions of years there emerged new *species* of a higher type than the originals. And so the process has gradually worked up to human life." This is the fallacy of Evading the Point. It amounts to this:

> Inquirer: "How did you get here?"
> Traveller: "It took me a long time to arrive."

Another example of this fallacy is found in the natural philosophy of those who explain the bodily universe by declaring it made up of atoms; and who, if pressed, explain the atoms by saying that they are made up of nucleus and electrons, and so on. This is Evading the Point at issue. One does not explain a body as such by saying that it is made up of smaller bodies. This may be true, but it is not the point at issue; the point is clearly raised in the question, "*What* is a body?" It is not answered by saying, "It is a thing made up of smaller bodies." The small body presents the same problem as the large body of which it is a tiny part. All this is evident in the following dialogue:

> Inquirer: "What is a board"
> Pseudo-Scientist: "It is a thing made up of many grains of sawdust."
> Inquirer: "But what is a grain of sawdust?"
> Pseudo-Scientist: "It is a small body composed of numerous tiny particles."
> Inquirer: "But, hang it man! *what* are those particles?"
> Pseudo-Scientist: "Ah, you have no respect for science!"

The dialogue must be offered, of course, with an apology to true scientists. But true scientists are rarities; and pseudo-scientists are multitudinous, and they preach at us, and write at us, and shout at us from rostrum and stage and pressroom and even pulpit! The fallacy of Evading the Point is one of the most common, and one of the most deceiving sophistries of modern times. Many educated minds accept this fallacy as valid argument. The student must be on his guard against it, and, for his guidance, he should keep two principles ever in mind: 1) Be perfectly clear about the exact point at issue; 2) Hold the adversary strictly to that point; do not permit him to wander off and prove something else,—and then claim victory.

4. *Begging the Question*. This fallacy assumes as proved the very point at issue, and draws from it arguments to establish its own truth. Of course, the

assumption is usually covert—otherwise, the fallacy would *be open* error. In its most evident form this *fallacy is "the vicious circle," a good* name, for it involves reasoning in a ring·, proving *A* by B, and *13 by A*. Thus Descartes proved the existence of God by the testimony *of our* reason ; and then he proved reason valid by the perfection of God, Who could not give us deceiving faculties!

Let the student consider the *following* and see if he can find in it the *fallacy of Begging the Question* :

> ". . . we must assume natural *selection to be the principle* of the metamorphoses, because all other apparent principles of *explanation fail us, and it is inconceivable that there should be another* capable of explaining the adaptation of organisms *without assuming the help of a principle of design."*

As a suggestion to the student, *let it be said that the question here is the* existence or non-existence of a designer of *the universe,* and *particularly of life in. its varied* forms. We *offer* no apologies to the *scientist* here, for the quotation is from a controversial article by *August* Weismann, German *biologist and zoologist of note, who died in* 1914. (Cf. *The Contemporary Review, Sept.* 1893.)

5. *False Cause.* This fallacy presents as *the cause* of a fact what has merely preceded it or accompanied it Thus the fall of the Roman Empire was attributed by the pagans (and by Gibbon!) to the rise of Christianity. This fallacy is often called, "Post hoc, ergo propter hoc," that is, *"After* this, therefore *because* of this."

Other fallacies, the names of which are self-explanatory, are : False Analogy, Defective Induction, Incomplete Enumeration, False Assumption.

SUMMARY OF THE CHAPTER

This Chapter has taught us to be on our guard against the more common forms of logical error. This lesson has a twofold value : it makes us careful in constructing our own arguments and reasonings, and it enables us to brand illogicality in the arguments of others. The Chapter contains valuable principles for the guidance of the student, notably in the paragraphs which deal with Equivocation and Evading the Point—two of the most common and, at the same time, most powerful enemies of correct thinking.

'APPENDIX

On the *Reduction of the Syllogism*

To "reduce" a syllogism means to restate it in the shape of the First Figure. Hence only syllogisms of the Second, Third, and Fourth Figure are reducible. The First Figure has the following four moods:

AAA EAE AII EIO

Examples :

I. (AAA)
All men are mortal
John is a man
Therefore, John is mortal.

2. (EAE)
No man is a spirit
John is a man
Therefore, John is not a spirit.

3- (AH)
All men are mortal
Some rational beings are men
Therefore some *rational beings are* mortal.

4. (EIO)
No man is a spirit
Some rational beings are men
Therefore, some rational beings are not *spirits.*

(note: It will be recalled from the Chapter on the classification of propositions that the *singular* proposition is equivalated to the *universal* proposition since the definition of the universal proposition is that it takes its subject in full Extension; and the singular proposition meets this requirement. This note is added, lest the student be surprised to find such a proposition as "John is a man" listed as an A-proposition.)

Now, the AAA mood of the First Figure is indicated by a proper name which contains all these vowels. It is called "Barbara."

The EAE mood of the First Figure is called, for like reason, "Celarent."
The All mood of the First Figure is called "Darii."
The EIO mood of the First Figure is called "Ferio."

In like manner all the moods of the other Figures (Second, Third, Fourth) are given proper names, and the whole is set forth in a Latin mnemonic stanza. Many of the consonants in the names have meanings which we shall presently explain. The mnemonic is:

Barbara, Celarent, Darii, Ferio, *sunt prioris;* (I Figure)
Cesare, Camestres, Festino, Baroco, *secundæ;* (II Figure)
Tertia: Darapti, Disamis, Datisi, Felapton,
Bocardo, Ferison, *habet;* (III Figure). *Quarta insuper addit:*
Bramantip, Camenes, Dimaris, Fesapo, Fresison. (IV Figure.)

Now all the moods of the Second, Third, and Fourth Figures cannot be indiscriminately reduced to any desired mood of the First; but in each case the mood of the First Figure to which reduction is to be made, will be determined

by the mood and figure of the syllogism to be reduced. Therefore, in taking up any syllogism with the purpose of reducing it, the first thing to flcterminc is the figure and the mood of this syllogism as it stands.

To identify the figure of a, syllogism look to the position of the middle term in the premisses, ff middle term is

1. subject of major premiss, predicate of minor—syllogism is in the First Figure;
2. predicate of both premisses—syllogism is in the Second Figure;
3. subject of both premisses—syllogism is in the Third Figure;
4. predicate of major premiss, subject of minor—syllogism is in the Fourth Figure.

To identify the mood look for the valid moods in the mnemonic line which indicates the figure already identified. Find the word (proper name) which has *in order* the vowels which stand for the propositions of the syllogism to be reduced.

Suppose we have this syllogism to reduce;

All men are mortal beings (A-proposition)
Some men are wise beings (I-proposition)
Therefore some wise beings are mortal beings (I-proposition)

First, we find that the middle term *men* is subject of both premisses. Thus we know that the syllogism is in the Third Figure.

Next, we take up the mnemonic line for the Third Figure:

Tertia: Darapti, Disamis, Datisi, Felapton,
Bocardo, Ferison,

and we look for the word which has the vowels (A11) which stand for the propositions of the syllogism to be

reduced. These vowels must tbe found in order, i. e., A-I-1. The word "Datisi" contains these vowels in order. Thus we discover that our syllogism is *in the Third Figure in Datisi.* Now, to reduce it :

I. The syllogism is in Datisi, a name with the initial D. This means that it can be reduced only to that mood of the First Figure which begins in D, that is, to Darii.

2. Next we look for the consonants in the name Datisi. For in the mnemonic names certain consonants have value :

s means that the premiss designated by the vowel preceding is to be converted simply;
p means that the premiss designated by the vowel preceding is to be converted *per accidens,* or accidentally ;
m means that the major and minor premisses are to change places ;
c means that conversion is to be indirect.

Now, in Datisi we find the letter "*s*" following the vowel which indicates the minor premiss. This premiss then is to be converted simply. No other change is indicated. We make the reduction as follows :

All men are mortal beings
Some wise beings are men
Therefore, some wise beings are mortal beings.

Take another example :

(A) All men are mortal beings
(A) All mortal beings are bodily beings
(I) Therefore, some bodily beings are men.

To reduce:

I. The figure is the Fourth, for the middle term is the predicate of the major premiss and the subject of the minor.

2. *The* mood is Bramantip, for this is the word in the mnemonic iine for the Fourth Figure, which contains in order the vowels which designate the propositions of the syllogism (AA1). We conclude that reduction must be made to Barbara since Bramantip begins with H.

3. We find the significant, consonants "m" and "p" in Bramantip, 'Die consonant "m" tells us to transpose the premisses, making them "change places." "p" since it refers to conclusion and not to a premiss may be ignored.

4. Making the reduction we have :

(A) All mortal beings are bodily beings
(A) All men are mortal beings
(A) Therefore, all men are bodily beings.

The student is to note that syllogisms of the Second Figure in Baroco, and those in the Third Figure in Bocardo, cannot be reduced directly, since they contain O-propositions and, as we have learned, these are not directly convertible.

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