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EASY LESSONS

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REASONING.

BY

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ARCHBISHOP OF DUBLIN.

THIRD AMERICAN

FROM

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PREFACE.

THE subject treated of in the following pages is one which has not usually been introduced into the course of elementary studies for young persons of all classes.

It is supposed by some that the difference between a better and a worse reasoner depends either wholly on *natural ability*, or on that combined with *practice*, or on each man's greater or less proficiency in the *subjects* he is treating of.

And others again consider a systematic study of the principles of Reasoning as suitable only to a few persons, of rare endowments, and of a peculiar turn of mind; and to those, only in an advanced stage of their education.

That this branch of study is requisite for all, and is attainable by all, and presents not, necessarily, any greater difficulties than the rudiments of Arithmetic, Geometry, and Grammar,—all this cannot be so well evinced in any other way as by *experiment*. If the perusal of these Lessons, or of the half of them, fail to satisfy on this point any tolerably attentive reader, it is not likely he would be convinced by any distinct argument to the same effect that could be offered.

The work has very little claim to novelty, except as to the simplicity and familiarity of its form. But without making any *discovery*, strictly so called, of any thing previously altogether unknown, it is possible — since 'discovery' is a *relative* word — to be, practically a discoverer, by bringing within the reach of thousands some important branch of knowledge of which they would otherwise have remained destitute all their lives.

And in regard to the present subject, a familiar introduction to the study is precisely what has hitherto been wanting. The existing treatises upon it may be compared to ships, well freighted, but which can only unlade at a few wharves, carefully constructed, in

advantageous situations. The want is, of small boats drawing very little water, which can carry ashore small parcels of the cargo on every part of the coast, and run up into every little creek.

Should the attempt to supply this deficiency prove as successful as there is reason, from the trial that has been already made in the (*Saturday Magazine*,) to hope, an addition by no means unimportant will have been made to the ordinary course of elementary education.

To frame, indeed, a system of rules that should equalize persons of all varieties of capacity, would be a project no less chimerical in this than in any other department of learning. But it would certainly be a great point gained, if all persons were taught to exercise the reasoning faculty as well as the natural capacity of each would permit; for there is good reason to suspect that, in this point, men fail quite as often from want of attention, and of systematic cultivation of their powers, as from natural deficiency. And it is at least worth trying the experiment whether *all* may not be, in some degree, trained in the right exercise of a faculty which all, in some degree, possess, and which all *must*, more or less, exercise, whether they exercise it well or ill.

It was at one time contemplated to subjoin an *Index* of the technical terms, with brief definitions of them, and references to the Lessons and Sections. But, on second thoughts, it has been judged best to omit this, and to recommend each student to draw up such an index for himself. It is for *students*, strictly so called, — that is, persons employed in acquiring an elementary knowledge of the subject — that the work is chiefly designed: and for these, no exercise could be devised more calculated to facilitate their study than that of carefully compiling an Index, and also expanding the Table of Contents, so as to give a brief summary of the matter of each Lesson. And this being the case, it would not be any real saving of labor to the learner to place before him such an Index and Table of Contents already drawn up.

It may be worth while to suggest to the Teacher to put before his pupils, *previously* to their reading each Lesson, some *questions* pertaining to the matter of it; requiring of them answers, oral or written, the best they can think of *without* consulting the book. Next, let them read the Lesson, having other questions, such as

may lead to any needful explanations, put before them as they proceed. And afterwards let them be examined, (introducing numerous *examples* framed by themselves, and by the teacher,) as to the portion they have learned, in order to judge how far they remember it.

Of these three kinds of questions, — which may be called, i. *Preliminary* questions; ii. questions of *instruction*; and iii. questions of *examination*, — the last alone are, by a considerable portion of Instructors, commonly employed. And the elementary books commonly known as ‘catechisms,’ or ‘books in question and answer,’ consist in reality of questions of this description.

But the second kind, — what is properly to be called instructive questioning, — is employed by all who deserve to be reckoned good teachers.

The third kind, — the preliminary questioning — is employed, (systematically and constantly) but by few. And at first sight it might be supposed by those who have not had experience of it, that it would be likely to increase the learner’s difficulties. But if any well-qualified Instructor will but carefully and judiciously try the experiment, (in teaching any kind of science,) he will be surprised to find to how great a degree this exercise of the student’s mind on the subject will contribute to his advancement. He will find that what has been taught in the mode above suggested will have been learnt in a shorter time, will have been far the more thoroughly understood, and will be fixed incomparably the better in the memory.

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INTRODUCTION

TO THE AMERICAN EDITION.

THE author of this little work has not, so far as we know, avowed himself. From internal evidence, one would infer very decidedly that the work was prepared by Dr. Whately. It is marked on every page by that same strong good sense and solid learning which have rendered his works on Logic and Rhetoric so eminently valuable as text-books for students.

Many persons of high reputation for their attainments in those branches of learning to which they may have been devoted, have failed disgracefully, in the attempt to furnish a suitable text-book for the young student. Hence it is, that, although most departments of science and literature have been cultivated with constantly increasing success, still the number of really good text-books is exceedingly small.

The vanity of authorship has contributed much to this result. The writers of text-books for colleges and schools, have been too often tormented with the sorry ambition of saying something original, or something fine. They have been prone to forget that originality, as such, is not to be sought for in a work for learners. They have been impatient of the careful thought, and literary self-denial, requisite to enable a man to say just what is necessary, and no more. Often, too, mistaking prolixity for clearness, they have burdened and perplexed the minds of the unlearned, with a multitude of vague terms, suggesting many ideas partially, but without giving distinct and sharply-defined views of any.

The highest merits of a text-book are brevity, strict method in the arrangement, clearness and pertinency in the statement and illustration of what are the admitted principles of the subject treated upon. It is bare justice to say, that the elementary treatises of Dr. Whately are free from most of the defects, and comprise

most of the excellences above named. Whether he is the author of this work or not, it shows all the peculiar skill in arrangement, power of definite statement, and graphic illustration, which so strongly characterize his avowed works. To say the least, the freest use has been made of Whately's thoughts and language.

The work contains the main principles of the Logic of Whately, somewhat divested of their technical form, but not of their scientific accuracy. There are also a few pages showing the application of Logic to the purpose of conviction, which would more strictly come under the head of Rhetoric. Although the author evidently intended the work for the younger classes of learners, it contains the distinct outlines of a system of Logic, and whoever thoroughly masters this little work, and becomes able to apply its principles to the analysis of arguments, will be no contemptible logician. It is thought that this book will be admirably adapted to the wants of the advanced classes in our High Schools and Academies, as well as to the wants of those who wish for some acquaintance with the theory of reasoning, and have not the time or the resolution to go through any larger treatise on the subject. As a text-book for students in college, it is, doubtless, a more thorough work than that of Hedge, which holds its place in the list of text-books in some of our colleges.

However well adapted this work may be to the young and uninstructed, as a digest of the science and art of reasoning, it may become still more valuable to them, as a discipline for the mind. It cannot have escaped the notice of attentive observers, that the vast number of 'simplified' books, which have been prepared for the young, proposing to conduct them to learning by a royal road, have had an injurious influence. The practice of imparting knowledge in infinitesimal doses, diluted by leading questions and useless explanations, till it becomes tasteless, is very well, if the only object desired is to relieve the student from the labor of thinking. Though this object be attained, the process will have the effect to weaken the power of attention, to destroy the robustness and vigor of the mind, and to pall that eager curiosity which nature intended to sustain us under the protracted effort necessary to accomplish a difficult task. It cannot but have a salutary influence upon a young or undisciplined mind, to be

brought in contact with the clear and vigorous thinking of such a man as the author of this little work. The comparative abstruseness of the subject of the book, thus becomes one of its best recommendations. *Strong studies* only can make *strong men*. Besides, the really efficient teacher will always find that the more difficult the subject, (provided it be fairly within the grasp of the pupil,) the greater will be the interest manifested. There is a pleasure in the act itself of overcoming difficulty, which excites the generous mind, and throws a lively interest around the investigation of the abstrusest subject.

There may be those who object to Logic as entirely barren and useless. To such we would recommend a careful perusal of the larger work of Whately. The common objections to Logic, which have been echoed by hosts of writers, from Locke and the Scotch Metaphysicians, and have been rendered respectable by the authority of those great names, have been disposed of by Whately in such a way, that no scholar will again attempt to revive them. In the minds of those, however, who readily admit the value of Logic as a part of a course of college study, objections may arise to its introduction as a constituent element of popular education.

Still it is believed that the objections that may be urged against the use of such a work as this, in schools and academies, will lie with equal propriety against almost all the scientific instruction ordinarily given in such institutions. The elements of Mathematics, of Natural Philosophy, of Chemistry, and Natural History, have by general consent taken their place among the branches taught in schools, and for good reason. These sciences relate to the subjects with which, and upon which, we are constantly engaged in the active duties of life. Aside from prudential considerations, it is a gratification of the highest kind to the practical man, to be able, in a partial manner even, to refer the phenomena of nature around him to the general laws by which they are governed. Although the knowledge of such men must, of necessity, be superficial, compared with that of the man of science, still, it is gratifying to reflect that from this slight acquaintance with natural laws, the noblest practical inventions have often sprung. Not to limit that much abused term *practical*, to a narrow sense — how expansive and elevating are such truths to the mind of the learner, however

imperfectly conceived! No teacher can have failed to perceive the effect often produced by the first introduction into the mind of the great principles of the laws of physics. The theory of reasoning has, however, a more extended bearing upon man, — his enjoyments and his capabilities, — than either, or all of these. If the science and art of reasoning be applicable at all, it is applicable to every thing. If it is of practical value to any, it is to all, and it has the most important and intimate connection with every art and science, and with the conduct of affairs in every possible situation in life. The process of reasoning, as such, being the same in all cases, Logic has to do with every possible exercise of the reasoning faculty. The more accurate the definitions, and the more obvious the data, of any science, the more easily can its deductions be subjected to Logical Analysis. Consequently, Mathematical reasonings, depending as they do upon postulates and definitions, (which, referring to quantity and space, are capable of distinct and unambiguous statement,) fall with the utmost readiness into logical formulas. The constant business, then, of a reasonable being, is to draw conclusions from things admitted. On the soundness of arguments, as well as upon the truth of facts, we are constantly accustomed to stake the most vitally important interests. Not only do our most valued interests constantly depend on the soundness of our own conclusions, but often on the reasonings of others. We are, under God, dependent for our national existence and national blessings, on the soundness of the conclusions which are arrived at by the millions of voters in our land. No attempt, however inadequate and feeble it may be, to infuse intellectual health into this great mass of reasoning power, can be unworthy of our regard. Is it a small matter that the rank and file of our voters should be able to analyze and determine the soundness or unsoundness of those arguments on Politics, or Public Economy, by which they are urged to support, or destroy, systems of public policy? How often, within a few months, when listening to political haranguers, — discoursing with a logic worthy of the grave-diggers in Hamlet, — have we wished to be able to put into the possession of the listening throng around, a power of analysis, which, like the spear of Ithuriel, might show in its genuine form the grossness of the imposition practised upon them.

It may be said that Logic will not remedy the evil, for it will not teach the ignorant political economy or history. True; but it will enable them, at least, to detect unsound reasoning, when drawn from simple principles and familiar facts. Besides, the great majority of those who are dupes of others, or who deceive themselves by specious fallacies, suffer not so much from ignorance of facts and principles as from vague ideas of the relations which these facts and principles, bear to each other, and to the conclusions drawn from them. Unpractised in abstraction, such persons are unable to fix the mind steadily upon the point at issue in an argument, to the exclusion of what is irrelevant. It is a wise remark of Dr. Barrow, that 'confusion is the mother of iniquity.' To no case does this maxim apply with more force than to that confusion of thought, and indistinctness of mental vision, which disqualify a man for ascertaining the justness or fallacy of an argument, in reference to those subjects that vitally affect the peace and welfare of society. The constant resort of sophistical advocates, and politicians, and, indeed of errorists of every class, is the false issue, or in logical language, the irrelevant conclusion. Something is proved, triumphantly it may be, but not *the* thing requisite, and the conclusion thus obtained is adroitly shifted, under the cover of a cloud of words, and is affirmed with the utmost seriousness, of an entirely different subject. So long as the community at large will be misled by fallacious reasoning, bad men will make use of it for their own advancement.

Let students in our High Schools and Academies be as well taught in the analysis of arguments, as they are in the elements of other branches of learning, and it will not be unreasonable to hope that a salutary effect may be produced upon those who assume to instruct the people in Politics and Religion. Public men understand their own interests too well to deal in counterfeits, when there is much danger of detection. There is much said of the deplorably low standard of attainment to which professional men are contented to arrive. The surest way to secure honesty and intellectual ability, in the professions, is to create a demand for those qualities, by instructing those from whom the substantial rewards of professional merit must come. Let the study of a book like this become general, and something, at least, will have been done

towards staying the floods of solemn nonsense, that, by the aid of the franking privilege, are yearly spread over our land.

It is to be hoped that this little work will receive the attention from teachers and those interested in education, which its intrinsic excellence and the importance of the subject demand.

June, 1845.

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EASY LESSONS ON REASONING.

PART I.

ANALYTICAL INTRODUCTION.

LESSON I.

N. B. In these Lessons, whenever two equivalent words or phrases are employed, one of them is enclosed in angular [brackets,] instead of the common mark of a (parenthesis.)

§ 1. EVERY one is accustomed, more or less, to employ Reasoning. There is no one that does not occasionally attempt, well or ill, to give a Reason for any opinion he entertains;—to draw Conclusions from what he sees around him,—to support those conclusions by some kind of Arguments, good or bad,—and to answer the arguments brought against him.

Now all these expressions,—‘giving a reason’—‘drawing a conclusion’—‘bringing forward an argument’—relate to one and the same process in the mind, that which is properly called ‘Reasoning.’ And the same may be said of several other expressions also; such as ‘inferring’ or ‘drawing an inference,’—‘proving a point,’—‘establishing a conclusion,’—‘refuting an argument,’—&c. All these expressions, and some others besides, have reference, as we have said, to the process of Reasoning.

§ 2. And this process, it is important to observe, is, in *itself*, universally, the *same*; however different the subject-matter of our reasoning may be, on different occasions.

The same is the case with Arithmetic. We may have to add, or subtract, multiply, or divide, certain numbers, either of Pounds-sterling, or of men, or of bushels of corn, &c.; but though these are very different things, the *arithmetical-process itself*, in each of the operations, respectively, is always the same. For instance, to 'multiply' always means to take one number a certain number of times; whether it be men, or miles, or days, that we are numbering.

So it is also with Grammar. The Nouns, and Verbs, and other Parts of Speech that Grammar treats of, may relate to very different subjects, and may be found in various kinds of Compositions; such as works of Science, History, Poetry, &c., but the rules of Grammar are the same in all.

So also the art of Writing (and the same may be said of Printing) is in itself the same, however different may be the kinds of subject-matter it is employed on.

Now the same is the case (as has been above said) with Reasoning. We may be employed in reasoning on human affairs, or on Mathematics, or on Natural-history, or Chemistry, or other subjects widely different from each other. But in every case the Reasoning-process is, in itself, the same.

§ 3. Any Debate, [or Disputation] when you are endeavoring to bring others over to your opinion, is *one* of the occasions on which Reasoning is employed; and the word 'arguing' is by some persons understood as having reference *only* to cases where there is a *dispute* between those who are maintaining opposite opinions. But this is a mistake. At least, it is a mistake to suppose that the use of 'Arguments' — if we understand by that, the use of Reasoning — is confined to the case of *disputes*; or even that this is the *principal*

employment of it. There is no set of men less engaged in dispute and controversy than Mathematicians; who are the most constantly occupied in Reasoning. They establish all their propositions by the most exact proofs; so complete as not even to admit of any dispute.

And in all other subjects, likewise, a sensible man, when he wishes to make up his mind on any question, will always seek for some sufficient 'Reason' [or 'Argument'] on which to found his conclusion.

Thus, a Judge, before whom any Cause is tried, is occupied in weighing the Arguments on both sides, that are brought forward by the respective Advocates. He (no less than they) is engaged in Reasoning; though the Advocates are *disputing*, and the Judge is not.

A Physician, again, reasons from what he has read, and heard, and seen, in order to draw his conclusions on medical questions; — a Statesman, in political questions; — a Merchant, in mercantile matters; and so, of the rest.

§ 4. But when any dispute does take place, between persons of opposed opinions, it may be observed that the worst educated, — those who are the most unskilful in reasoning, or in clearly expressing their reasons, — are almost always the most apt to grow angry, and to revile each other, and quarrel.

And even when they do not give way to anger, they usually, after a long discussion, part, without distinctly understanding what the difference between them really consists in; neither of them having clearly expressed his own meaning, or fully understood the other's.

Indeed, it often happens that two persons who are disputing, do, in reality, disagree much less in their opinions than they themselves imagine; or, perhaps, not at all. And hence it is that the word 'misunderstanding' has come to signify, a *quarrel*; because quarrels so often arise from men's not clearly understanding each other's meaning.

Again, it often happens that a person, not without good sense, will give such weak and absurd reasons for his opinion, — even when it is a right one, — that, instead of convincing others, he will even produce an opposite effect.

§ 5. In order to avoid such inconveniences, and to conduct the process of Reasoning as clearly, as correctly, and as easily, as is possible, it is a great advantage to lay down accurate explanations of the *principles* on which Reasoning proceeds, and to employ, for the purpose, a technical *language*; that is, a regularly-formed set of expressions, distinctly defined, and agreed on; and to establish certain plain, simple *rules*, founded on, and expressed in, this technical language.

Even in the common mechanical arts, something of a technical language is found needful for those who are learning or exercising them. It would be a very great inconvenience, even to a common carpenter, not to have a precise, well-understood *name* for each of the several operations he performs, such as chiseling, sawing, planing, &c., and for the several tools [or instruments] he works with. And if we had not such words as Addition, Subtraction, Multiplication, Division, &c., employed in an exactly defined sense, and also fixed rules for conducting these and other arithmetical processes, it would be a tedious and uncertain work, to go through even such simple calculations as a child very soon learns to perform with perfect ease. And after all, there would be a fresh difficulty in making other persons understand clearly the correctness of the calculations made.

You are to observe, however, that technical language and rules, if you would make them really useful, must be not only *distinctly understood*, but also learnt, and *remembered*, as familiarly as the Alphabet; and employed *constantly*, and with scrupulous *exactness*. Otherwise technical language will prove an incumbrance instead of an advantage; just as a

suit of clothes would be, if, instead of putting them on, and *wearing* them, you were to carry them about in your hand.

§ 6. It has been, accordingly, found advantageous, in what relates to the Reasoning-process, (as well as in the case of mechanical operations, and of calculations,) to lay down explanations, and rules, and technical terms; answering to those of Arithmetic, Grammar, and other branches of study.

And the technical terms and rules, of Grammar, are not at all shorter, or easier to be understood and remembered than those pertaining to the present subject.

You may, perhaps, meet with treatises professing much more than what we here propose; — with works pretending to teach ‘the right use of Reason;’ (not Reasoning, or ‘Argumentation’ merely, but the whole of the *Human Intellect*) and giving rules for forming a judgment on every question that can arise, and for arriving at all truths in any subject whatever. But such pretensions, however high-sounding and attractive, are fanciful and empty. One might as well profess to teach the ‘right use of the bodily-organs,’ and to lay down a system of rules that should instruct a man in all manual arts and bodily exercises at once.

If you do but teach a person to ride, or to draw, or to spin, &c., something is gained: but if you should profess to lay down a system of rules to teach *all these at once*, and also the business of a shipwright, and a musician, and a watchmaker, and everything else that is done by means of the bodily-organs, you would teach, in reality, nothing all.

And so it is in all subjects. It is better to undertake even a little, that it is possible to accomplish, than to make splendid professions, which can only lead to disappointment.

After all, indeed, it cannot be expected that, in Reasoning, any more than in other mental exercises, men of very unequal degrees of intelligence should be brought to the same level. Nor is it to be expected that men will always be

brought to an agreement in their conclusions. Different men will have received different information respecting facts; or will be variously biassed, more or less, by their early prejudices, their interests, or their feelings.

But still, there is something gained, if they are taught, in respect of the Reasoning-process itself, how to proceed rightly, and to express themselves clearly; and if, when they do not agree, they can be brought at least to understand wherein they differ, and to state distinctly what is 'the point at issue,' (as it is called) between them; that is, what is the real question to be decided.

And it is just so, in the case of Arithmetic also. Two persons may differ in their statements of an Account, from their setting out with some difference in the *numbers* each puts down;—in the *Items* (as it is called) of the Account. And no rules of Arithmetic can prevent such a difference as this. But it is something gained if they are guarded (as arithmetical rules do guard us) against differences arising out of errors in the *calculation* itself.

LESSON II.

§ 1. WE have said that in all subjects, and on all occasions, the Reasoning-process is, in itself, the same. Whether you are occupied in *refuting* an opponent, or in conveying *instruction*, or in satisfying your own mind on any point,—and again, whatever kind of subject-matter it is that you are engaged on,—in all cases, as far as you are (in the strict sense of the word) *reasoning*,—that is, employing Argument— it is one and the same process (as far as it is *correctly* conducted) that is going on in your own mind.

And what this process is, must be the next point to be inquired into.

Although (as has been said) all men do occasionally reason, they are often, at the time, as *unconscious* of it, as of the circulation of their blood, and the various other processes that may be going on within the body. And even when they do, knowingly and designedly, use arguments, or are listening to those of another, they will often be as much at a loss to explain *why* one argument appears to them strong, and another less strong, and another, utterly worthless, as if the whole were merely a matter of *taste*; like their preference of one prospect, or one piece of music, to another.

In order, then, to obtain correct rules for forming a judgment on this subject, and clear expressions for explaining such judgment to others, it is necessary to *analyze*, — as it is called, — (that is, take to pieces) the Reasoning-process. And for that purpose, we should begin by examining the most plain, short, and simple arguments, and inquiring on what it is that their *validity* [or *conclusiveness*] depends. examining also some of those apparent-arguments which are *not* valid, and therefore are not, in reality, arguments at all, though they are often passed off for them, as counterfeit coin is, for genuine.

§ 2. You will perceive, on examination, that what is called a 'Conclusion,' — that is, a Proposition proved by Argument, — is drawn, in reality, from *two* other Propositions. And these are called its 'Premises;' from their being (in natural order) '*premised*,' or put before it.

At first sight, indeed, some might suppose that a Conclusion may follow from one Premise alone. For it happens oftener than not, that only one is *expressed*. But in this case there is always another Premise *understood*, and which is suppressed from its being supposed to be fully admitted.

That this is the case, may easily be made evident, by sup-

posing that suppressed Premise to be *denied*; which will at once destroy the force of the argument. For instance, if any one, from perceiving that 'the World exhibits marks of design,' infers [or concludes] that 'it had an intelligent Maker,' he will easily perceive, on reflection, that he must have had in his mind another Premise also; namely, that 'whatever exhibits marks of design, had an intelligent Maker:' since if this last proposition were *denied*, the other would prove nothing. It is true, that, in some cases, one proposition implies another, by the very signification of the words, to every one who understands those words; as, 'negroes are men; therefore they are rational-beings:' now 'rational-being' is *implied* in the very name 'man.' And such examples as this, have led some people into the idea that we reason,—or that we may reason,—from a single premise. But take such a case as this; some fossil-animal is discovered, which Naturalists conclude to have been a 'ruminant,' from its 'having horns on the skull.' Now, the laborers who dug up the skeleton could not draw this inference, supposing they were ignorant of the general law, 'that all horned animals are ruminant:'—and they *might* be thus ignorant, though using the name 'horned-animal' in the same sense as the Naturalist: for the *name* itself does not *imply* 'ruminant,' as a part of its signification: and again, a Naturalist, at a distance, who *knew* the general law, but who had heard only an imperfect account of the skeleton, and did not know whether it was horned or not, would be equally unable to draw the inference.

In all cases of what is properly called 'Argument,' there must be *two* premises assumed, whether they are both *expressed* or not.

§ 3. Such an argument as the above, when all the three propositions are stated at full length, and in their natural order, is called a 'Syllogism.' And this is the form in which all correct reasoning, on whatever subject, may be exhibited.

When one of the Premises is suppressed, — [or, *understood*] which, for brevity's sake is usually the case, — the argument is called, in technical language, an 'Enthymeme:' a name derived from the Greek, and denoting that there is something left out, which is to be *supposed* [or understood] as being well-known.

It is to be observed, that, when an argument, stated in this last form, is met by opponents, their objection will sometimes lie against the *assertion itself*, that is made; sometimes, against its *force* as an argument. They will say either 'I deny what you *assume*,' or 'I admit, indeed, what you say, but I deny that it *proves* your conclusion.' For instance, in the example above, an atheist may be conceived either denying* that that the World does exhibit marks of design, or again, denying † that it *follows* from thence that it must have had an intelligent Maker.

Now, you are to observe, that these are not, in reality, objections of different kinds. The only difference is, that, in the one case, the *expressed* Premise is denied; in the other, the *suppressed* Premise. For the *force* as an argument, of either Premise, depends on the other Premise. If either be denied, the other proves nothing. If both be admitted, the Conclusion regularly drawn from them, must be admitted.

§ 4. It makes no difference in respect of the sense of an argument, whether the Conclusion be placed last or first; provided you do but clearly mark out what *is* the Conclusion.

When it is placed last, (which is accounted the natural order) it is designated by one of those conjunctions called '*illative*,' such as 'therefore,' — 'thence,' — 'consequently.'

When the Conclusion is put first, the Premise is usually called the 'Reason;' and this is designated (whether it comes

* As many of the ancient atheists did.

† As most of the modern atheists do.

last or first) by one of the conjunctions called *causal*, such as 'since,' — 'because,' &c.

And here it is to be observed that each of these sets of conjunctions have also another sense; being used to denote, respectively, sometimes 'Premise and Conclusion,' — sometimes 'Cause and Effect.' And much error and perplexity have often been occasioned by not attending to this distinction.

When I say 'this ground is rich; because the trees on it are flourishing;' or again, when I express the same sense in a different form, saying, 'the trees on this ground are flourishing; and therefore it must be rich,' it is plain that I am employing these conjunctions to denote merely the *connection of Premise and Conclusion*; or, (in other words) I am implying that the one may be *inferred* from the other. For it is evident that the flourishing of the trees is not the *cause* of the ground's fertility, but only the cause of *my believing* it. The richness of the soil *follows as an inference*, from the luxuriance of the trees; which luxuriance *follows as an effect* [or, *natural* consequence] from the richness of the soil.

But if, again, I say, 'the trees flourish, because the ground is rich,' or (which is the same in sense) 'the ground is rich, and consequently [or therefore] the trees flourish,' I am using the very same conjunctions in a different sense; namely, to denote the *connection of Cause and Effect*. For in this case, the luxuriance of the trees, being a thing evident to the eye, would not need to be *proved*; and every one would understand that I was only *accounting for it*.

§ 5. But again, there are many cases also in which the *Cause* is employed as an *Argument*, to prove the existence of its *Effect*. So that the *Conclusion* which *follows*, as an *Inference*, from the *Premise*, is also an *Effect* which *follows naturally* from that same *Premise* as its *Cause*.

This is the kind of argument which is chiefly employed

when we are reasoning about the *future*: as, for instance, when, from favorable or unfavorable weather, any one infers that the crops are likely to be abundant, or to be scanty.

In such cases, the *Cause*, and the *Reason* [or Proof] coincide; the favorable weather being at once the Cause of the good harvest, and the Cause of our expecting it.

And this circumstance contributes to men's often confounding together 'Cause' and — what is strictly called — 'Reason;' and to their overlooking the different senses of such words as 'therefore,' 'thence,' 'consequently,' &c., and again, of such words as 'because,' 'inasmuch as,' &c., and also, of the words 'follow,' 'consequence,' and several others; which have all of them that double meaning which has been just explained.

LESSON III.

§ 1. IN such an argument as that in the example above given, (in § 2, Lesson ii.) it is clearly impossible for any one who admits both Premises, to avoid admitting the Conclusion. If you admit that, 'Whatever exhibits marks of design, had an intelligent Maker,' and also, that 'the world exhibits marks of design,' you cannot escape the Conclusion, that 'the world had an intelligent Maker.'

Or again, if I say, 'All animals with horns on the head are ruminant; the Elk has horns on the head; therefore it is ruminant;' it is impossible to conceive any one's doubting the truth of the Conclusion, supposing he does but allow the truth of each Premise.

A man may, perhaps, deny, or doubt, and require proof, that all animals thus horned do ruminate. Nay, it is con-

ceivable that he may even not clearly understand what 'ruminant' means; or he may have never heard of an 'Elk;' but still it will be not the less clear to him, that, *supposing* these Premises granted, the Conclusion must be admitted.

And even if you suppose a case where one or both of the Premises shall be manifestly false and absurd, this will not alter the *conclusiveness* of the Reasoning; though the *conclusion* itself may, perhaps, be absurd also. For instance, 'All the Ape-tribe are originally descended from Reptiles or Insects: Mankind are of the Ape-tribe; therefore Mankind are originally descended from Reptiles or Insects:' here, every one* would perceive the falsity of all three of these propositions. But it is not the less true that the conclusion *follows* from those premises, and that *if* they were true, it would be true also.

§ 2. But it often happens that there will be a *seeming* connexion of certain premises with a conclusion which does not really follow from them; although, to the inattentive, or unskilful, the argument will appear to be valid. And this is most especially likely to occur when such a seeming-argument [or Fallacy] is dressed up in a great quantity of fine-sounding words, and is accompanied with much vehemence of assertion, and perhaps with expressions of contempt for any one who presumes to entertain a doubt on the matter. In a long declamatory speech, especially, it will often happen that almost *any* proposition at all will be passed off, as a proof of any other that does but contain *some of the same words*, by means of strenuous assurances that the proof is complete.

Sometimes, again, sound arguments will be distrusted as fallacious; especially if they are not clearly expressed; and the more, if the conclusions are such as men are not willing to admit.

* Except certain French Naturalists.

And frequently, also, when there really is no sound argument, the reader or hearer, though he believes, or suspects, that there is some fallacy, does not know how to detect and explain it.

§ 3. Suppose, for instance, such seeming arguments as the following to be proposed:—(1.) ‘Every criminal is deserving of punishment; this man is not a criminal; therefore he is not deserving of punishment:’ or, again, (2.) ‘All wise rulers endeavor to civilize the People; Alfred endeavored to civilize the People; therefore he was a wise ruler.’ There are, perhaps, some few persons who would not perceive any fallacy in such arguments, even when thus briefly and distinctly stated. And there are, probably, many who would fail to perceive such a fallacy, if the arguments were enveloped in a cloud of words, and conveyed at great length in a style of vague, indistinct declamation; especially if the conclusions were such as they were disposed to admit. And others, again, might perceive, indeed, that there is a fallacy, but might be at a loss to explain and expose it.

Now, the above examples exactly correspond, respectively, with the following; in which the absurdity is manifest:—(1.) ‘Every tree is a vegetable; grass is not a tree; therefore it is not a vegetable;’ and (2.) ‘All vegetables grow; an animal grows; therefore it is a vegetable.’ These last examples, I say, correspond exactly (considered in respect of the *reasoning*) with the former ones; the conclusions of which, however *true*, no more *follow* from the premises than those of the last.

This way of exposing a fallacy, by bringing forward a similar one, where a manifestly absurd conclusion professes to be drawn from premises that are true, is one which we may often find it needful to employ when addressing persons who have no knowledge of technical rules; and to whom, consequently, we could not speak so as to be understood, concerning the principles of Reasoning.

But it is evidently the most convenient, the shortest, and the safest course, to ascertain those principles, and on them to found rules which may be employed as a test in every case that comes before us.

And for this purpose it is necessary (as has been above said) to analyse the Reasoning-process, as exhibited in some valid argument, expressed in its plainest and simplest form.

§ 4. Let us then examine and analyse such an example as one of those first given: for instance, ‘Every animal that has horns on the head is ruminant; the Elk has horns on the head; therefore the Elk is ruminant.’ It will easily be seen that the validity [or ‘conclusiveness,’ or ‘soundness’] of the Argument does not at all depend on our conviction of the truth of either of the Premises; or even on our understanding the meaning of them. For if we substitute some unmeaning Symbol, (such as a letter of the alphabet,) which may stand for anything that may be agreed on—for one of the things we are speaking about, the Reasoning remains the same.

For instance, suppose we say, (instead of ‘animal that has horns on the head,’) ‘Every X is ruminant; the Elk is X; therefore the Elk is ruminant;’ the argument is equally valid.

And again, instead of the word ‘ruminant,’ let us put the letter ‘Y:’ then the argument ‘Every X is Y; the Elk is X; therefore the Elk is Y;’ would be a valid argument as before.

And the same would be the case if you were to put ‘Z’ for ‘the Elk:’ for the syllogism ‘Every X is Y; Z is X; therefore Z is Y,’ is completely valid, whatever you suppose the Symbols X, Y, and Z to stand for.

Any one may try the experiment, by substituting for X, Y, and Z, respectively, any words he pleases; and he will find that if he does but preserve the same *form* of expression,

it will be impossible to admit the truth of the Premises, without admitting also the truth of the Conclusion.

§ 5. And it is worth observing here, that nothing is so likely to lead to that — very common, though seemingly strange — error, of supposing ourselves to understand distinctly what in reality we understand but very imperfectly, or not at all, as the want of attention to what has been just explained.

A man reads — or even writes — many pages perhaps, of of an argumentative work, in which one or more of the terms employed convey nothing distinct to his mind: and yet he is liable to overlook this circumstance, from finding that he clearly understands the *Arguments*.

He may be said, in one sense, to *understand what he is reading*; because he can perfectly follow the *train of Reasoning*, itself. But *this*, perhaps, he might equally well do, if he were to substitute for one of the words employed, X, or Z, or any other such unknown Symbol; as in the examples above.

But a man will often confound together, the *understanding of the Arguments*, in themselves, and the *understanding of the words employed*, and of the nature of the things those words denote.

It appears, then, that valid Reasoning, when regularly expressed, has its validity [or conclusiveness] made evident from the mere *form of the expression* itself, independently of any regard to the sense of the words.

§ 6. In examining this form, in such an example as that just given, you will observe that in the first Premise ('X is Y,') it is assumed universally of the *Class* of things (whatever it may be) which 'X' denotes, that 'Y' may be affirmed of them: and in the other Premise, ('Z is X') that 'Z' (whatever it may stand for) is *referred* to that Class, as *comprehended* in it. Now it is evident that whatever is said of the *whole* of a Class may be said of anything that is compre-

hended [or 'included,' or 'contained,'] in that Class; so that we are thus authorized to say (in the conclusion) that 'Z' is 'Y.'

Thus also in the example first given, having assumed universally, of the Class of 'Things which exhibit marks of design,' that they 'had an intelligent maker,' and then, in the other Premise, having referred 'The world' to that Class, we conclude that it may be asserted of 'The world' that 'it had an intelligent maker.'

And the process is the same when anything is *denied* of a whole class. We are equally authorized to deny the same, of whatever is comprehended under that Class. For instance if I say, 'No liar is deserving of trust: this man is a liar; therefore he is not deserving of trust:' I here deny 'deserving of trust,' of the whole Class denoted by the word 'liar;' and then I refer 'this man' to that Class; whence it follows that 'deserving of trust' may be denied of him.

§ 7. This argument also will be as manifestly valid, if (as in the former case) you substitute for the words which have a known meaning, any undetermined Symbols, such as letters of the alphabet. 'No X is Y; Z is X; therefore Z is not Y,' is as perfect a syllogism as the other, with the affirmative conclusion.

To such a form all valid arguments whatever may be reduced: and accordingly the principle according to which they are constructed, is to be regarded as the UNIVERSAL PRINCIPLE OF REASONING.

It may be stated, as a general Maxim, thus: 'Whatever is said, whether affirmatively, or negatively,' [or 'whatever is affirmed or denied'] 'of a whole Class, may be said in like manner,' [that is 'affirmed in the one case, and denied in the other,'] 'of everything comprehended under that Class.'

Simple as this Principle is, the whole process of Reasoning is embraced in it. Whenever we establish any Conclusion,

— that is, show that one thing may allowably be affirmed, or be denied, of another — this is always in reality done by referring that other to some Class of which such affirmation or denial can be made. www.libtool.com.cn

The longest series of arguments, when fully unfolded, step by step, will be found to consist of nothing but a repetition of the same simple operation here described. But this circumstance is apt to be overlooked, on account of the *brevity* with which we usually express ourselves. A Syllogism, such as those in the examples above, is seldom given at full length; but is usually abridged into an ‘*Enthymeme*.’* (See Less. II. § 3.) And moreover what is called ‘*an argument*,’ is very often not *one* argument, but *several* compressed together; sometimes into a single sentence. As when one says, ‘The adaptation of the instinct of suction in young animals to the supply of milk in the parent, and to the properties of the Atmosphere, as well as other like marks of design, show that the world must have had an intelligent Maker.’ For most men are excessively impatient of the tedious formality of stating at full length anything that they are already aware of, and could easily understand by a slight hint.

LESSON IV.

§ 1. WE have seen that when an Argument is stated in the regular form, (as in the foregoing examples,) which is what is properly called a ‘Syllogism,’ the validity [or conclusiveness] of the reasoning is manifest from the mere form of the expression itself, without regard to the sense of the words; so that if letters, or other such arbitrary unmeaning Symbols,

* That is an argument with one of the Premises understood.

be substituted, the force of the argument will be not the less evident. Whenever this is not the case, the supposed argument is either sophistical and unreal, or else, may be reduced (without any alteration of its meaning) into the above form; in which form, the general Maxim that has been laid down will apply to it.

What is called an unsound [or fallacious] argument (that is, an *apparent*-argument which is in reality *none*) cannot, of course, be reduced into such a form. But when it is stated in the form most nearly approaching to this that is possible, and especially when unmeaning Symbols (such as letters) are substituted for words that have a meaning, its fallaciousness becomes evident from its want of conformity to the above Maxim.

§ 2. Let us take the example formerly given: Every criminal is deserving of punishment; this man is not a criminal; therefore he is not deserving of punishment: this, if stated in letters, would be 'every X is Y; Z is not X; therefore Z is not Y.' Here, the term ('Y') 'deserving of punishment' is affirmed universally of the Class (X) 'criminal;' and it might therefore, according to the Maxim, be affirmed of anything comprehended under that Class; but in the instance before us, *nothing* is mentioned as comprehended under that Class: only 'this man' ('Z') is *excluded* from that Class. And although what is affirmed of a whole Class may be *affirmed* of anything which that Class does contain, we are not authorized to *deny* it of whatever is *not* so contained. For it is evident that what is truly affirmed of a Class, may be applicable *not only* to that Class, but also to *other things* besides.

For instance, to say that 'every tree is a vegetable' does not imply that 'nothing else is a vegetable.' And so also, to say that 'every criminal is deserving of punishment,' does not imply that 'no others are deserving of punishment:' for how-

ever *true* this is, it *has not been asserted* in the proposition before us. And in analysing an argument we are to dismiss all consideration of what *might* have been asserted with truth, and to look only to what *actually* is laid down in the Premises.

It is evident therefore that such an apparent-argument as the above does not comply with the Rule [or Maxim] laid down; nor can it be so stated as to comply with it; and it is consequently invalid.

§ 3. Again, let us take another of the examples formerly given; 'All wise rulers endeavor to civilize the People; Alfred endeavored to civilize the People; therefore he was a wise ruler.' The parallel example to this, was, 'All vegetables grow; an animal grows: therefore it is a vegetable.' And each of these, if stated in Symbols, would stand thus: every 'Y is X,' [or the thing denoted by Y is comprehended under the Class for which X stands] 'Z is X; therefore Z is Y.'

Now in such an example, the quality of 'growing' [X] is, in one Premise, affirmed universally of 'vegetable,' ['Y,'] and it *might* therefore have been affirmed of anything that can be referred to the Class of 'vegetable' as comprehended therein: but then, there is *nothing* referred to that Class, in the other Premise; only, the same thing which had been affirmed of the Class 'vegetable,' is again affirmed of another Class, 'animals' (Z); whence nothing can be inferred.

Again, take such an instance as this; 'food is necessary to life; corn is food; therefore corn is necessary to life.' Here, 'necessary to life' is affirmed of 'food,' but not *universally*; for every one would understand you to be speaking not of '*all* food,' but of '*some* food,' as being 'necessary to life.' So that, expressed in Symbols, the apparent-argument would stand thus: 'Some X is Y; Z is X; therefore Z is Y;' in which you may see that the rule has not been complied with; since

that which has been affirmed not of the *whole* of a certain Class, [or, not *universally*] but only of *part* of it, cannot on that ground be affirmed of whatever is contained under that Class.

§ 4. There is an argument against miracles by the well-known Mr. Hume, which has perplexed many persons, and which exactly corresponds to the above. It may be stated thus; 'Testimony is a kind of evidence more likely to be false than a miracle to be true;' (or, as it may be expressed in other words, we have more reason to expect that a witness should lie, than that a miracle should occur) 'the evidence on which the Christian miracles are believed, is testimony; therefore the evidence on which the Christian miracles are believed is more likely to be false than a miracle to be true.'

Here it is evident that what is spoken of in the first of these Premises, is, '*some* testimony;' not 'all testimony,' [or *any whatever*,] and by 'a witness' we understand, '*some* witness,' not, '*every* witness;' so that this apparent-argument has exactly the same fault as the one above. And you are to observe that it makes no difference (as to the point now before us) whether the word '*some*' be employed, or a different word, such as '*most*' or '*many*,' if it be in any way said or implied that you are *not* speaking of '*all*.' For instance, '*most* birds can fly; and an ostrich is a bird,' proves nothing.

§ 5. In order to understand the more clearly, and to describe the more accurately, the fallaciousness of such seeming-arguments as those of which we have just given examples, and also, the conclusiveness of the sound arguments, it will be necessary to explain some technical words and phrases which are usually employed for that purpose. This is no less needful (as was remarked in Lesson I.) than for an Artisan to have certain fixed and suitable names for the several instruments he works with, and the operations he performs.

The word '*Proposition*,' (which we have already had occa-

sion to use) signifies ‘a Sentence in which something is *saiæ* — [or predicated] — that is, *affirmed or denied* — of another.’ That which is spoken of, is called the ‘*Subject*’ of the proposition; and that which is said of it is called the ‘*Predicate* ;’ and these two are called the ‘*Terms*’ of the Proposition; from their being (in natural order) the *extremes* [or boundaries] of it.

You are to observe that it matters not whether each of these Terms consist of *one word*, or of several. For whether a Proposition be short or long, there must always be in it, *one* — and but one — thing of which you are speaking; which is called (as has been just said) the Subject of it: and there must be (in any *one* Proposition) one thing, — and only one — that is affirmed or denied of that Subject: and this which we thus affirm or deny of the other, is called — whether it be one word or more — the Predicate.

§ 6. You are to observe also that though, (in our language) the Subject is usually placed *first*; this order is not at all essential. For instance, ‘it is wholesome to rise early,’ or ‘to rise early is wholesome,’ or ‘rising early is wholesome,’ are only three ways of expressing the same Proposition. In each of these expressions, ‘rising early,’ (or ‘to rise early,’ for these are only two forms of the Infinitive) is what you are speaking of; and ‘wholesome’ is what you say [or *predicate*] of it.

When we state a proposition in *arbitrary Symbols*, as ‘X is Y,’ it is understood that the first term (‘X’) stands for the Subject, and the last (‘Y’) for the Predicate. But when we use the terms that are *significant*, [or, have a meaning] we must judge by the *sense* of the words *which* it is that is the Subject, and which the Predicate; that is, we must ask ourselves the question ‘What am I speaking of? and what am I saying of it?’

For instance, ‘Great is Diana of the Ephesians;’ here

‘great’ is evidently the Predicate. Again, ‘Thou art the man;’ and ‘Thou hast given occasion to the enemies of the Lord to blaspheme;’ by asking yourself the above question, you will perceive, that in the former of these examples, ‘Thou’ is the Predicate, and in the latter, the Subject.

§ 7. That which expresses the affirmation or denial, is called the ‘*Copula*.’ For instance, if I say, ‘X is Y,’ or ‘X is not Y,’ in each of these examples, ‘X’ is the Subject, and ‘Y’ the Predicate; and the Copula is the word ‘*is*’ in the one, and ‘*is not,*’ in the other.

And so it is, in sense, though not always in expression, in every Proposition. For either the Affirmative-copula, ‘*is*’ or the Negative-copula, ‘*is not,*’ must be always, in every Proposition, either expressed in those words, or implied in some other expression.

Any Sentence which does not do this — in short, which does not *affirm or deny* — is not a *Proposition*. For instance, of these sentences, ‘are your brothers gone to school?’ ‘they are not gone;’ ‘let them go,’ the second alone is a Proposition; [or ‘*Assertion*’] the first being a *Question*, and the last a *Command*, or request.

LESSON V.

§ 1. WE have seen that in every Proposition there is something that is spoken of; which is called the Subject; and something that you affirm or deny of it; which is called the Predicate. And it is evidently of great importance to understand and express clearly, in each Proposition, whether the Predicate is said of the *whole* of the Subject, or only of *part*

of it:— in other words, whether it is *predicated* ‘*universally*,’ or ‘*particularly*.’ [‘*partially*.’]

If, for instance, I say, or am understood to imply, that ‘*all* testimony is unworthy of credit,’ this is a very different assertion from saying or implying, merely that ‘*some* testimony is unworthy of credit.’ The former of these is called a ‘*Universal*’ Proposition; the Subject of it being *taken universally*, as standing for *anything and everything* that the Term is capable of being applied to in the same sense. And a Term so taken is said (in technical language) to be ‘*distributed*.’ The latter of the two is called a ‘*Particular Proposition* ;’ the Subject being *taken particularly*, as standing only for *part* of the things signified by it: and the Term is then said to be ‘*undistributed*.’

The technical word ‘*distributed*’ (meaning what some writers express by the phrase ‘*taken universally*’) is used, as you perceive in a sense far removed from what it bears in ordinary language. But,— for that very reason,— it is the less likely to lead to mistakes and confusion. And when once its technical sense is explained, it is easily remembered. When I say, ‘*birds come from eggs*,’ and again, ‘*birds sing*,’ I mean, in the former proposition, ‘*all birds* ;’ [or ‘*every bird*’] in the latter proposition, I mean, not, ‘*all*,’ but ‘*some*’ birds. In the former case the term ‘*birds*’ is said to be ‘*distributed* ;’ in the latter ‘*undistributed*.’ You must be careful also to keep in mind the technical sense (already explained) of the word ‘*particular*.’ In ordinary discourse, we often speak of ‘*this particular person*’ or thing; meaning ‘*this individual*.’ But the technical sense is different. If I say ‘*this city is large*,’ the Proposition is not ‘*Particular*,’ but is equivalent to a *Universal*; since I am speaking of the *whole* of the Subject, which is, ‘*this single city*.’ But ‘*some city is large*,’ or, ‘*some cities are large*,’ is a particular proposition; because the Subject, ‘*city*,’ is taken not *universally*, but *partially*.

The distinction between a 'Universal' proposition, and a 'Particular,' is (as I have said) very important in Reasoning; because, as has been already remarked, although what is said of the *whole* of a Class may be said of anything contained in that Class, the Rule does not apply when something is said merely of *part* of a Class. (See the example 'X is Y' in § 3 of the preceding Lesson.)

§ 2. You will have seen that in some of the foregoing examples, the words 'all,' 'every,' or 'any,' which are used to denote the distribution of a Subject, and again, 'some,' which denotes its non-distribution, are not *expressed*. They are often *understood*, and left to be supplied in the reader's or hearer's mind. Thus, in the last example, 'birds sing,' evidently means 'some birds;' and, 'man is mortal,' would be understood to mean 'every man.'

A Proposition thus expressed, is called '*Indefinite*;' it being left *undetermined* ['undefined'] by the form of expression, whether it is to be considered as Universal or as Particular. And mistakes as to this point will often give a plausible air to fallacies; such as that in the last Lesson (§ 4.) respecting 'Testimony.'

But it is plain that every Proposition must in reality *be* either Universal or Particular; [that is, must have its Subject intended to be understood as distributed, or, as not distributed] though we may not be told *which* of the two is meant.

And this is called, in technical language, the distinction of Propositions according to their 'Quantity;' namely, into Universal and Particular. 'Every X is Y' and 'some X is Y,' are propositions differing from each other in their 'quantity,' and in nothing else.

§ 3. But the *Predicate* of a proposition, you may observe, has no such sign as 'all' or 'some,' affixed to it, which denote, when affixed to the *Subject*, the distribution, or non-distribu-

tion of that term. And yet it is plain that each Term of a proposition, — whether Subject or Predicate — must always be meant to stand either for the whole, or for part, of what is signified by it; — in other words, — must really *be* either distributed or undistributed. But this depends, in the case of the Predicate, not on the ‘quantity’ of the proposition, but on what is called its ‘Quality;’ that is, its being *Affirmative* or *Negative*. And the invariable rule, (which will be explained presently) is, that the Predicate of a Negative-proposition is distributed, and the Predicate of an Affirmative, undistributed.

When I say ‘X is Y’ the term ‘Y’ is considered as standing for *part* of the things to which it is applicable; in other words, is undistributed. And it makes no difference as to this point whether I say ‘*all* X,’ or ‘*some* X is Y.’ The *Predicate* is equally undistributed in both cases; the only thing denoted by the signs ‘all’ or ‘some,’ being the distribution or non-distribution of the *Subject*.

If, on the other hand, I say ‘X is not Y,’ whether meaning that ‘*No* X is Y,’ or that ‘*some* X is not Y,’ in either case, ‘Y’ is distributed.

§ 4. The reason of this rule you will understand, by considering, that a Term which may with truth be affirmed of some other, may be such as would *also* apply equally well, and in the same sense, to *something else besides* that other. Thus, it is true that ‘all iron is a metal,’ although the term ‘metal’ is equally applicable to gold, copper, &c., so that you could not say with truth that ‘all metal is iron,’ or that ‘iron, *and that only*, is a metal.’ For the term ‘iron’ is of narrower extent than the term ‘metal,’ which is affirmed of it.

So that, in the above proposition, what we have been comparing, are, the *whole* of the term ‘iron,’ and *part* of the term ‘metal;’ which latter term, consequently, is undistributed.

And this application applies to every affirmative proposi-

tion. For though it *may so happen* that the Subject and the Predicate may be of equal extent [or ‘*equivalent* ;’ or as some express it, ‘*convertible*,’] so that the Predicate which is affirmed of that Subject could *not* have been affirmed of *anything else*, this is not *implied in the expression* of the proposition itself.

In the assertions, for instance, that ‘every equilateral triangle is equiangular,’ and that ‘any two triangles which have all the sides of one equal to all the sides of the other, each to each, are of equal areas,’ it is not implied that ‘every equiangular triangle is equilateral,’ or that ‘any two triangles of equal areas have their respective sides equal.’ This latter indeed is not *true*: the one preceding it *is* true; that is, it is true that ‘every equiangular triangle is equilateral,’ as well as that ‘every equilateral triangle is equiangular:’ but these are *two* distinct propositions, and are separately proved in treatises of Geometry.

If it happen to be my object to assert that the Predicate as well as the subject of a certain affirmative proposition is to be understood as distributed — and if I say, for instance, ‘all equilateral triangles, *and no others*, are equiangular,’ — I am asserting, in reality, not *one* proposition, merely, but *two*. And this is the case whenever the proposition I state is understood (whether from the meaning of the words employed, or from the general drift of the discourse) to imply that the whole of the Predicate is meant to be affirmed of the Subject.

Thus, if I say of one number — suppose 100 — that it is the Square of another, as 10, then, this is understood by every one, from his *knowledge of the nature of numbers*, to imply, what are, in reality, the *two* propositions, that ‘100 is the Square of 10,’ and also that ‘the Square of 10 is 100.’

Terms thus related to each other are called in technical language, ‘*convertible*’ [or ‘*equivalent*’] terms. But then,

you are to observe that when you not only affirm one term of another, but also affirm (or imply) that these *are* 'convertible' terms, you are making not merely *one* assertion, but *two*.

§ 5. It appears, then, that in affirming that 'X is Y,' I assert merely that 'Y' — *either the whole* of it, or *part*, (*it is not declared, which*) is applicable to 'X;' [or 'comprehends,' or 'contains' X.] Consequently, if *any part* of a certain Predicate be applicable to the Subject, it must be affirmed, — and of course *cannot be denied* — of that Subject. To *deny* therefore the Predicate of the subject, must imply that *no part* of the Predicate is applicable to that Subject; in short that the *whole* Predicate is denied of that Subject.

You may thus perceive that to assert that 'X is *not* Y' is to say that *no part* of the term 'Y' is applicable to 'X:' (for if *any part were* applicable, 'Y' could be *affirmed*, and not denied, of 'X') in other words, that the *whole* of 'Y' is denied of 'X;' and that consequently 'Y' is 'distributed.' When I say, for instance, 'All the men found on that island are sailors of the ship that was wrecked there,' this might be equally true whether the whole crew or only some of them, were saved on the island. To say therefore that 'the men found on that island are *not* sailors of the ship, &c.' would be to *deny that any part* of that crew are there; in short, it would be to say that the whole of that Predicate is *inapplicable* to that subject.

§ 6. And this holds good equally whether the negative proposition be 'universal' or 'particular.' For to say that 'some X is not Y' (or — which is the same in sense — that 'all X is not Y') is to imply that there is *no part* of the term 'Y' [no part of the class which 'Y' stands *for*] that is applicable to the *whole without exception*, of the term 'X;' in short, that there is *some part* of the term 'X' to which 'Y' is wholly inapplicable.

Thus, if I say, 'some of the men found on that island are

not sailors of the ship that was wrecked there,' or, in other words, 'the men found on that island are *not, all of them,* sailors of the ship, &c.' I imply that the term 'sailors, &c.' is *wholly* inapplicable to *some* of the 'men on the island;' though it might perhaps be applicable to others of them.

Again if I say 'some coin is made of silver,' and 'some coin is not made of silver' (or in other words, that 'all coin is not made of silver') in the former of these propositions I imply, that in *some portion* (at least) of the Class of 'things made of silver,' is found [or comprehended] 'some coin:' in the latter proposition I imply that there is 'some coin' which is contained in *no* portion of the Class of 'things made of silver;' or (in other words) which is *excluded* from the *whole* of that Class. So that the term 'made of silver' is distributed in this latter proposition, and not, in the former.

Hence may be understood the rule above given, that in all Affirmative-propositions the Predicate is undistributed, and in all Negative-propositions, is distributed.

The 'Subject' is, as we have seen above, distributed, in a Universal-proposition, (whether affirmative or negative,) and not in a Particular. So that the distribution or non-distribution of the *Subject* depends on the '*Quantity*' of the proposition, and that of the *Predicate* on the '*Quality*.'

LESSON VI.

§ 1. THE next thing to be learnt and remembered, is the names of the three Terms that occur in a Syllogism. For you will have perceived from the foregoing examples, that there are always *three* terms; which we have designated by

the Symbols X, Y, and Z. Each Syllogism indeed has, in all, three Propositions; and every Proposition has two Terms; but in a Syllogism each term occurs twice; as, 'X is Y, Z is X; therefore Z is Y.' www.libtool.com.cn

Of these three terms, then, that which is taken as the *Subject of the Conclusion* ('Z') is called the '*Minor-term*;' the Predicate of the Conclusion ['Y'] is called the '*Major-term*;' (from its being usually of more *extensive* signification than the '*Minor*,' of which it is predicated) and the Term ['X'] which is used for establishing the connexion between those two, is thence called the '*Middle-term*,' [or '*medium of proof*.']

Of the two Premises, that which contains the Major-term, ('X is Y,') is called the '*Major-premise*;' (and it is, properly, and usually, placed *first*; though this order is not essential) and that which contains the Minor-term (Z is X) is called the '*Minor-premise*.' And in these two Premises, respectively, the Major-term and Minor-term are, each, compared with the Middle-term, in order that, in the Conclusion, they may be compared with each other; that is, one of them affirmed or denied of the other.

§ 2. Now it is requisite, as you will see by looking back to the examples formerly given, that, in one or other of the Premises, the Middle-term should be *distributed*. For if each of the Terms of the Conclusion had been compared only with *part* of the Middle-term, they would not have been both compared with the *same*; and nothing could thence be inferred.

Thus, in one of the above examples, when we say 'food' (namely, '*some food*,') 'is necessary to life,' the term 'food' is undistributed, as being the Subject of a Particular-proposition: in other words, we have affirmed the term 'necessary to life,' of *part* only, not the *whole*, of the Class denoted by the term 'food:' and again, when we say 'corn is food,' the term 'food' is again undistributed, (according to the Rule given in the last Lesson) as being the Predicate of an Affirmative:—

in other words, though we have asserted that the term 'food' is applicable to 'corn,' we have not said (nor, as it happens, is it true) that it is *not applicable* to anything else; so that we have not been taking this term 'food' universally, in either Premise, but, each time, 'particularly.' And accordingly nothing follows from those premises.

So also, when it is said, 'a wise ruler endeavors to civilize the People; and Alfred endeavored to civilize the People;' [or 'Y is X, and Z is X,'] the Middle-term is here twice made the Predicate of an Affirmative-proposition, and consequently is left undistributed, as in the former instance; and, as before, nothing follows. For, (as was formerly observed) we are not authorized to affirm one term of another, merely on the ground that there is something which has been affirmed of each of them: as the term 'growing' (in the example formerly given) is affirmed of 'vegetables' and also of 'animals.'

In each of these cases, then, such an apparent-argument is condemned on the ground that it '*has the middle-term undistributed.*'

§ 3. The other kind of apparent Syllogism formerly given as an example, is faulty (as was then shown) from a different cause, and is condemned under a different title. 'Every tree is a vegetable; grass is not a tree, therefore it is not a vegetable:' or, 'every X is Y; Z is not X; therefore Z is not Y.'

Here, the middle-term 'X' is distributed; and that, not only in one Premise, but in both; being made, first, the subject of a Universal-proposition, and again, the Predicate of a Negative. But then, the Major-term, 'Y' which has not been *distributed in the Premise*, is yet distributed in the Conclusion; being, in the *Premise*, the Predicate of an *Affirmative*, and in the *Conclusion*, of a *Negative*. We have therefore merely compared *part* of the term ['Y'] 'vegetable' with the Middle-term 'Tree;' ['X'] and this does not authorize

our comparing, in the Conclusion, the *whole* of that same term with [Z] 'grass;' which, as was explained above, we must do, if we *deny* the term 'grass' of a 'vegetable.'

Nothing therefore follows from the Premises: for it is plain that they would not warrant an *affirmative* Conclusion. To affirm that 'grass is a vegetable,' (or, as one might equally well, that, 'a house is a vegetable,' because it 'is not a tree,' would not have even any appearance of Reasoning. No one would pretend to *affirm* one term of another (as, Y, of Z) on the ground that it had been affirmed of something ('X') which had been denied of that other.

Such a fallacy as the one we have been above considering, is condemned as having what is called in technical language, an '*illicit process*;' that is, an *unauthorized proceeding*, from a term, *undistributed* in the *Premise*, to the same term, *distributed*, in the Conclusion: or, in other words, taking a term *more extensively* in the Conclusion than it had been taken in the Premise; which is, in fact, introducing an additional term.

§ 4. The examples that have been all along given, both of correct-reasoning and of Fallacy, have been, designedly, the *simplest* and *easiest* that could be framed. And hence, a thoughtless reader, observing that the rules given, and the technical language employed, though not difficult to learn, are yet *less* easy than the examples themselves to which these are applied, may be apt to fancy that his labor has been wasted; and, to say, 'why, common-sense would show any one the soundness of the reasoning, or the unsoundness, in such examples as these, with less trouble than it costs to learn the rules, and the technical terms.'

And a beginner in Arithmetic might say the same. For, the examples usually set before a learner, are, purposely, such easy questions as he could answer 'in his head' (as we say) with less trouble than the arithmetical rules cost him. But

then, by learning those rules, *through the means of* such simple examples, he is enabled afterwards to answer, with little difficulty, such arithmetical questions as would be perplexing and laborious, even to a person of superior natural powers, but untaught.

It is the same, in the learning of a foreign Language. The beginner has to bestow more pains on the translating of a few simple sentences, than the matter of those sentences is worth. But in the end he comes to be able to read valuable books in the Language, and to converse with intelligent foreigners, which he could not otherwise have done.

And so also, in the present case, it will be found that, simple as are the examples given, not only all valid Reasoning, on whatever subjects, may be exhibited, and its validity shewn, in the form that was first put before you, but also, most of the Sophistical-arguments, [Fallacies] by which men are every day misled, on the most important subjects, may be reduced into the same forms as those of the examples lately given.

Hume's argument against Miracles, as believed on *Testimony*, which was explained in a former Lesson, is an instance of this. And numberless others might be given.

§ 5. For example, there is an erroneous notion commonly to be met with, which is founded on a fallacy that may be thus exhibited as a case of undistributed middle-term: 'A man who is indifferent about all religion, is one who does not seek to force his religion on others;' (for though this is far from being universally *true*, it is commonly *believed*) 'this man does not seek to force his religion on others; therefore he is indifferent to all religion.'

Again, as an example of the other kind of fallacy above-mentioned, the 'illicit process' of the Major-term, we may exhibit in that form the sort of Reasoning by which one may suppose the Priest and Levite, in the Parable of the good Samaritan, to have satisfied themselves that the poor wounded

stranger had no claim on them as a *neighbor*;— a kind of procedure of which one may find instances in real life in all times :

‘A kinsman or intimate acquaintance has a claim to our neighborly good-offices: this man, however, is not a kinsman, &c., therefore he has no claim, &c.’ Again ‘A Nation which freely admits our goods, ought to be allowed freely to supply us with theirs: but the French do not freely admit our goods: therefore, &c.’ Again, ‘Nations that have the use of money, and have property in land, are subject to the evils of avarice, of dishonesty, and of abject poverty; but savage nations have not the use of money, &c. &c.’

And again, ‘A kind and bountiful landlord ought to be exempt from lawless outrage; but this man is *not* a kind and bountiful landlord; therefore, &c.’

It will be found a very useful exercise to select for yourself a number of other arguments, good or bad, such as are commonly to be met with in books or conversation, and to reduce them to the most regular form they will admit of, in order to try their validity by the foregoing rules.

You must keep in mind, however, (what was said in the first Lesson) that technical terms and rules will be rather an incumbrance than a help, unless you take care not only to understand them thoroughly, but also to learn them so perfectly that they may be as readily and as correctly employed as the names of the most familiar objects around you.

But if you take the trouble to do this *once for all*, you will find that in the end much trouble will have been saved. For, the explanations given of such technical-terms and general rules, when thoroughly learnt, once, will save you the necessity of going through nearly the *same* explanation *over and over again* on each separate occasion.

In short, the advantage of technical terms is just like what

we derive from the use of *any other* Common-terms.* When, for instance, we have once accurately learnt the definition of a 'Circle,' or have had fully described to us what sort of a creature an 'Elephant' is, to say 'I drew a Circle,' or 'I saw an Elephant,' would be sufficiently intelligible, without any need of giving the description or definition at full length, over and over again, on every separate occasion.

LESSON VII.

§ 1. WE have seen that all sound Reasoning consists in referring that of which we would (in the conclusion) affirm or deny something, to a *Class*, of which that affirmation or denial may be made. Now, 'the referring of anything to a Class,' means (as you will perceive on looking back to the examples that have been given) to *affirm of it a Term denoting a Class*; which Term, you will have observed, is the Middle-term of the Syllogism.

We are next led, therefore, to inquire what terms may be affirmatively predicated of what others.

It is plain that a *proper-name*, or any other term that stands for a *single individual*, cannot be affirmed of anything except that very individual. For instance, 'Romulus' — the 'Thames' — 'England' — 'the founder of Rome' — 'this river,' &c., denoting, each, a *single* object, are thence called '*Singular-terms*:' and each of them can be affirmed of that single object only, and may, of course, be denied of anything else.

When we say 'Romulus was the founder of Rome,' we

* This will be more fully explained in the subsequent Lessons.

mean that the two terms stand for the same individual. And such is our meaning also when we affirm that 'this river is the Thames.'

On the other hand, those terms which are called '*Common*' (as opposed to '*Singular*') from their being capable of standing for any, or for every, individual of a Class,—such as 'man,' 'river,' 'country'—may of course be affirmed of whatever belongs to that Class: as, 'the Thames is a river;' 'the Rhine and the Ganges are rivers.'

And observe, that throughout these Lessons we mean by a 'Class' not merely a Head or general-description to which several things are *actually* referred, but one to which an indefinite number of things *might, conceivably*, be referred; namely, as many as (in the colloquial phrase) may 'answer to the *description*.' For instance, we may conceive that when the first-created man existed alone, some beings of a Superior Order may have contemplated him, not merely as a single individual bearing the *proper-name* 'Adam,' but also (by Abstraction, which we shall treat of presently) as possessing those attributes which we call, collectively, '*human-nature*'; and they may have applied to him a name—such as 'Man'—implying those attributes [that '*description*,'] and nothing else; and which would consequently suit equally well any of his descendants.

When therefore anything is said to be 'referred to such and such a Class,' we mean either what *is*, or what *might* be a Class, comprehending any objects that are 'of a certain description;' which description (and nothing else) is implied by the 'Common term,' which is a name of any, or all, of those objects.

§ 2. A Common-term is thence called (in relation to the 'Subjects' to which it is applicable) a '*Predicable*;' that is, *affirmatively*-predicable; from its capability of being affirmed of another Term.

A Singular-term, on the contrary, may be the *Subject* of a proposition, but not the *Predicate*: unless of a *Negative*-proposition; (as 'the first-born of Isaac was not Jacob') or unless the Subject and Predicate be merely two expressions for the same individual; as in some of the examples above.

You are to remember, however, that a Common-term must be one that can be affirmed of an indefinite number of other terms, *in the same sense*, as applied to each of them; as 'vegetable,' to 'grass,' and to an 'oak.' For, different as these are, they are both 'vegetables' in the same sense; that is, the word 'vegetable' denotes the same thing in respect to both of them: [or, 'denotes something *common* to the two.']

But there are several proper-names which are borne, each, by many individuals; such as 'John,' 'William,' &c., and which are said to be, (in ordinary discourse) very *common* names; that is, very *frequent*. But none of these is what we mean by a '*Common-term*;' because, though applied to several persons, it is not in the same sense, but always, as denoting in each case, *one distinct individual*.

If I say 'King Henry was the conqueror at Agincourt,' and, 'the conqueror of Richard the Third was King Henry,' it is not in sense *one* term, that occurs in both those propositions. But if I say, of each of these two individuals, that he was a 'King,' the term 'King' is applied to each of them in the same sense.

§ 3. A Common-term, such as 'King,' is said to have several '*Significates*;' that is, things to which it may be applied: but if it be applied to every one of these *in the same sense*, [or denotes in each of them the same thing] it has but *one* '*signification*.' And a Common-term, thus applied, is said to be employed '*univocally*.'

If a term be used in several senses, it is, in meaning, not *one* term only, but *several*. Thus, when 'Henry' (or any other such name) is applied to two individuals to denote, in

each case, *that one distinct person*, it is used not as *one* term, but as *two*; and it is said to be applied to those two, '*equivocally*.'

The like often occurs in respect of Common-terms also; that is, it often happens that one word or phrase, will be not merely *one* but *several* Common-terms.

Take, for example, the word 'Case,' used to signify a kind of '*covering*;' and again (in Grammar) an inflection of a noun; (as 'him' is the accusative [or objective] *case* of 'he') and again, a '*case*' such as is laid before a lawyer. This word is, in sense, three; and, in each of the three senses may be applied '*univocally*' to several things which are, in that sense, signified by it. But when applied to a *box* and to a *grammatical case*, it is used '*equivocally*.'

§ 4. That process in the mind by which we are enabled to employ Common-terms, is what is called '*Generalization*;' Common-terms being often called also '*General-terms*'

When, in contemplating several objects that *agree* in some point, we '*abstract*' [or *draw off*] and consider separately, that point of agreement, disregarding everything wherein they differ, we can then designate them by a *Common-term*, applicable to them, only in respect of that which is '*common*' to them all, and which expresses nothing of the differences between them. And we obtain in this way either a term denoting the *individuals themselves* thus agreeing *considered in respect of* that agreement, (which is called a *concrete-common-term*) or again, a term denoting that *circumstance itself wherein* they agree; which is called an *abstract-common-term*.

Thus we may contemplate in the mind several different '*kings*;' putting out of our thoughts the name and individual character, of each, and the times and places of their reigns, and considering only the *regal Office* which belongs to all and each of them. And we are thus enabled to designate any or every one of them by the '*common*' [or *general*] term,

‘king,’ or again, by the term ‘royalty’ we can express the circumstance itself which is common to them. And so in the case of any other common-term.

The ‘*Abstraction*’ which here takes place, is so called from a Latin-word originally signifying to ‘draw off;’ because we separate, and as it were, draw off, in each of the objects before us, that point, — apart from every other, — in which they are alike.

It is by doing this, that ‘Generalization’ is effected. But the two words have not the same meaning. For though we cannot ‘*generalize*’ without ‘*abstracting*,’ we may perform Abstraction without Generalization.

§ 5. If, for instance, any one is thinking of ‘the Sun,’ without having any notion that there is more than *one* such body in the Universe, he may consider it without any reference to its *place* in the sky, whether rising, or setting, or in any other situation; (though it must *be* always actually to *some* situation) or again he may be considering its *heat* alone, without thinking of its *light*; or of its light alone; or of its apparent *magnitude*, without any reference either to its light or heat. Now in each of these cases there would be *Abstraction*; though there would be no *Generalization*, as long as he was contemplating only a *single* individual; that which we call the ‘Sun.’

But if he came to the belief (which is that of most Astronomers) that each of the *fixed Stars* is a body affording light and heat of itself, as our Sun does, he might then, by *abstracting* this *common* circumstance, apply to all and each of these (the Sun of our System, and the Stars) one common-term denoting that circumstance; calling them all, ‘Suns.’ And this would be, to ‘*generalize*.’

In the same manner, a man might, in contemplating a single mountain, (suppose, Snowdon) make its *height* alone, independently of everything else, the subject of his thoughts; or

its *total bulk*; disregarding its *shape*, and the *substances* it is composed of; or again, its shape alone; and yet while thus abstracting, he might be contemplating but the single individual. But if he abstracted the circumstance *common* to Snowdon, Etna, Lebanon, &c., and denoted it by the common-term 'Mountain,' he would then be said to generalize. He would then be considering each, not, as to its *actual existence as a single individual*, but as to its general character, as being of *such a description* as would apply equally to some other single objects.

§ 6. Any one of these Common-terms then serves as a 'Sign' [or Representative] of a Class; and may be applied to, — that is, affirmed of — all, or any, of the things, it is thus taken to stand for.

And you will have perceived from the above explanations, that what is expressed by a Common-term is merely an *inadequate — incomplete notion* [or 'view' taken] of *an individual*. For if, in thinking of some individual object, you *retain* in your mind all the circumstances (of character, time, place, &c.,) which *distinguish* it (or which might distinguish it) from others, — including the circumstance of *unity* [or singleness] — then any name by which you might denote it, when thus viewed, would be a *Singular-term*; but if you *lay aside* and disregard all these circumstances, and abstract [consider separately] merely the points which are *common* — or which conceivably *might* be common — to it with other individuals, you may then, by taking this incomplete view [or 'apprehension'] of it, apply to it a name expressing nothing that is *peculiar* to it; and which consequently will equally well apply to each of those others; in short, a Common-term; such as those in the above examples.

§ 7. You are to remember, then, that there is not, in the case of these 'general' [or common] Terms, (as there is in the case of *Singular-terms*) some real *thing* corresponding to

each Term, existing independently of the Term, and of which that term is merely the *name*; in the same manner as 'Lebanon' is the name of an actually-existing single individual.

At first sight, indeed, you might imagine that as any 'individual man' of your acquaintance, or 'Great Britain,' or 'the Sun,' &c., has an existence in Nature quite independent of the *name* you call it by, so, in like manner, there must be some *one real thing* existing in Nature, of which the Common-term 'Man' or the term 'Island' is merely the *name*.

And some writers will tell you that this *thing*, which is the subject of your thoughts when you are employing a general-term, is, the '*abstract idea*' of Man, of Island, of Mountain, &c. But you will find no one able to explain what sort of a thing any such '*abstract-idea*' can be: which is *one* thing, and yet *not* an *individual*, and which may exist at one and the same time in the minds of *several* different persons.*

All the obscure and seemingly-profound disquisitions that you may perhaps meet with, respecting these supposed '*abstract ideas*' will but perplex and bewilder you.

Whether the writers of these disquisitions have themselves understood their own meaning, we need not here inquire. But the simple explanation that has been above given of the origin and use of Common-terms, you will be able, with moderate attention, clearly to understand. And you will find it quite sufficient for our present purpose.

§ 8. You will perceive from it that the subject of our thoughts when we are employing a Common-term, is, the *Term itself*; regarded as a '*Sign*;' namely, a Sign denoting a

* The question here briefly alluded to, and which could not properly be treated of at large in a short elementary work, is that which was at one time fiercely contested, throughout nearly all Europe, between the two rival sects of Philosophers, the *Realists* and the *Nominalists*.

There are several well known works in which the student may find it fully discussed. — See Whately's *Elements of Logic*, B. iv. ch. 5.

certain *inadequate* notion formed [or, view taken] of an individual which in some point *agrees with* [or 'resembles'] some other individuals: the notion being, as has been said, 'inadequate' or 'incomplete,' inasmuch as it omits all *peculiarity* that *distinguishes* the one individual from the others; so that the same single 'Sign' may stand equally well for any of them.

And when several persons are all employing and understanding the same Common-term in the same sense, and are thence said (as some Writers express it) to have 'one and the same Idea' at once in the mind of each, this means merely that they are (thus far) all *thinking alike*; just as several persons are said to be all 'in one and the *same posture*,' when they have all of them their limbs *placed alike*; and to be of one and the *same* complexion when their skins are colored alike.

LESSON VIII.

§ 1. It has been shown, how, by taking an inadequate view of an individual, disregarding every point wherein it differs from certain other individuals, and abstracting that wherein it agrees with them, we can then employ a Common-term, as a sign to express all or any of them: and that this process is called 'generalization.'

It is plain that the same process may be further and further extended, by continuing to abstract from each of the Classes [or Common-terms] thus formed, the circumstance wherein it agrees with some others, leaving out and disregarding the points of difference; and thus forming a still *more* general and comprehensive term.

From an individual 'Cedar,' for instance, you may arrive in this manner, at the notion expressed by the Common-term 'Cedar,' and thence again proceed to the more general term 'Tree,' and thence again, to 'Vegetable,' &c.

And so, also, you may advance from any 'ten' objects before you, (for instance, the fingers; from which doubtless arose the custom of reckoning by tens) to the general-term,—the number 'ten;' and thence again, to the more general-term, 'number;' and ultimately to the term 'quantity.'

§ 2. The faculty of Abstraction, — at least the ready exercise of it in the employment of Signs, [Common-terms] seems to be the chief distinction of the Human Intellect from that of Brutes. These, as is well-known, often display much intelligence of another kind, in cases where *Instinct* can have no place: especially in the things which have been *taught* to the more docile among domesticated animals. But the Faculty of *Language*, such as can serve for an *Instrument of Reasoning*, — that is, considered as consisting of arbitrary *general Signs*, — seems to be wanting in Brutes.

They do possess, in a certain degree, the use of Language considered as a *mode of communication*: for it is well known that horses, and dogs, and many other animals, understand something of what is said to them: and some brutes can learn to utter sounds indicating certain feelings or perceptions. But they cannot, — from their total want, or at least great deficiency, of the power of Abstraction — be taught to use language as an Instrument of Reasoning.

Accordingly, even the most intelligent Brutes seem incapable of forming any distinct notion of *number*: to do which evidently depends on Abstraction. For, in order to *count* any objects, you must withdraw your thoughts from all *differences* between them, and regard them simply as *units*. And accordingly, the Savage Tribes (who are less removed than we are from the Brutes) are remarked for a great defi-

ciency in their notions of *number*. Few of them can count beyond ten, or twenty: and some of the rudest Savages have no words to express any numbers beyond five.

And universally, it is in all matters where the exercise of *Abstraction* is concerned, that the inferiority of Savages to Civilized men is the most remarkable.

§. 3. That we do, necessarily, employ *Abstraction* in order to *reason*, you will perceive from the foregoing explanations and examples. For you will have observed that there can be no *Syllogism* without a *Common-term*.

And accordingly, a *Deaf-mute*, before he has been taught a language, — either the *Finger-language*, or *Reading*, — cannot carry on a train of *Reasoning*, any more than a *Brute*. He differs indeed from a *Brute* in possessing the mental *capability* of employing *Language*; but he can no more *make use* of that capability, till he is in possession of some *System of arbitrary general-signs*, than a person born blind from *Cataract* can make use of his capacity of *Seeing*, till the *Cataract* is removed.

You will find, accordingly, if you question a *Deaf-mute* who has been taught *Language* after having grown up, that no such thing as a train of *Reasoning* had ever passed through his mind before he was taught.

If indeed we did reason by means of those ‘*Abstract-ideas*’ which some persons talk of, and if the language we used served *merely* to *communicate* with other men, then, a person would be able to reason, who had no knowledge of any *arbitrary Signs*. But there are no grounds for believing that this is possible; nor, consequently, that ‘*Abstract-ideas*’ (in that sense of the word) have any existence at all.

You will have observed also, from what has been said, that the *Signs* [*Common-terms*] we are speaking of as necessary for the *Reasoning-process*, need not be addressed to the *ear*. The signs of the numbers, — the figures 1, 2, 3, 4, &c., have

no necessary connexion with *sound*; but are equally understood by the English, French, Dutch, &c., whose *spoken* languages are quite different,

And the *whole* of the *written-language* of the Chinese is of this kind. In the different Provinces of China, they *speak* different Dialects: but all *read* the same Characters; each of which (like the figures 1, 2, 3, &c.) has a sense quite independent of the sound.

And to the Deaf-mutes, it must be so with *all* kinds of Language understood by them; whether Common Writing, or the Finger-language.*

* There have been some very interesting accounts published, by travellers in America, and by persons residing there, of a girl named Laura Bridgman, who has been, from birth, not only deaf and dumb, but also blind. She has, however, been taught the finger-language, and even to read what is printed in raised characters, and also to write.

The remarkable circumstance in reference to the present subject, is, that when she is alone, her *fingers are generally observed to be moving*, though the signs are so slight and imperfect that others cannot make out what she is thinking of. But if they inquire of her, she will tell them.

It seems that, having once learnt the use of *Signs*, she finds the necessity of them as an *Instrument of thought*, when thinking of anything beyond mere individual objects of sense.

And doubtless every one else does the same; though in our *case*, no one can (as in the case of Laura Bridgeman) *see* the operation; nor, in general, can it be *heard*; though some few persons have a habit of occasionally audibly talking to themselves; or, as it is called, 'thinking aloud.' But the Signs we commonly use in silent reflection are merely mental *conceptions* of uttered words: and these, doubtless, are such, as could be hardly at all understood by another, even if uttered audibly. For we usually think in a kind of *short-hand*, (if one may use the expression) like the notes one sometimes takes down on paper to help the memory, which consist of a word or two—or even a letter—to suggest a whole sentence; so that such notes would be unintelligible to any one else.

It has been observed, also, that this girl when asleep, and doubtless dreaming, has her fingers frequently in motion: being, in fact, talking in her sleep.

§ 4. By the exercise of Abstraction, (it is to be further remarked) we not only can separate, and consider apart from the rest, some circumstance belonging to every one of several individuals before the mind, so as to denote them by a general ['common'] term, — and can also, by repeating the process, advance to *more and more general* terms; — but we are also able to fix, arbitrarily, on whatever circumstance we choose to abstract, according to the particular purpose we may have in view.

Suppose, for instance, it is some individual 'Building' that we are considering: in respect of its *materials* we may refer it to the class (suppose) of 'Stone-buildings,' or of 'wooden,' &c., in respect of its *use*, it may be (suppose) a 'house,' as distinguished from a Chapel, a Barn, &c., in respect of Orders of *Architecture*, it may be a 'Gothic-building,' or a 'Grecian,' &c., in respect of *size*, it may be a 'large,' or a 'small building,' in respect of *color*, it may be 'white,' 'red,' 'brown,' &c.

And so, with respect to anything else that may be the subject of our reasoning, on each occasion that occurs. We arbitrarily fix on, and abstract, out of all the things actually existing in the subject, that one which is important to the purpose in hand. So that the same thing is referred to one Class, or to another, (of all those to which it really *is* referable) according to the occasion.

For instance, in the example above, you might refer the 'building' you were speaking of, to the Class [or Predicable] of 'white-buildings,' — or even of 'white-objects,' — if your purpose were to shew that it might be used as a *land-mark*; if you were reasoning concerning its danger from *fire*, you might class it (supposing it were of *wood*) not only with such *buildings*, but also with hay-stacks and other combustibles: if the building were about to be *sold*, along with, perhaps, not only other buildings, but likewise cattle, land, farming implements, &c., that were for sale at the same time, the point you

would then abstract would be, its being *an article of value*. And so, in other cases.

§ 5. You thus perceive clearly that we are not to consider each object as *really* and properly *belonging to* and forming a portion of, some *one Class* only, rather than any other that may with truth be affirmed of it: and that it depends on the *particular train of thought* we happen to be engaged in, *what* it is that is important and proper to be noticed, and what, again, is an insignificant circumstance, and foreign from the question.

But some persons, who have been always engaged in some one pursuit or occupation, without attending to any other, are apt to acquire a narrow-minded habit of regarding almost everything in one particular point of view: that is, considering each object in reference only to their own pursuit.

For instance, a mere Botanist might think it something strange and improper, if he heard an Agriculturalist classing together, under the title of 'artificial *grasses*,' such plants as Clover, Tares, and Ryegrass: which, botanically, are widely different. And the mere Farmer might no less think it strange to hear the troublesome 'weed' (as he has been used to call it) that is known by the name of 'Couch-grass,' ranked by the Botanist as a species of 'wheat,' the '*Triticum repens*,' the farmer having been accustomed to rank it along with 'nettles and thistles,' with which it has no *botanical* connexion.

Yet neither of these classifications [or 'generalizations'] would be, in itself, erroneous and improper: though it would be improper, in a Work on *Natural-History* to class plants according to their *agricultural uses*; or, in an Agricultural Treatise, to consider principally (as the Botanist does) the structure of their *flowers*.

So also, it would be quite impertinent to take into consideration a man's learning or ability, if the question were as to the

allowance of food requisite for his support; or his stature, if you were inquiring into his qualifications as a statesman; or the amount of his property, if you were inquiring into his state of health; or his muscular strength, if the question were as to his moral character: though each of these might be important in reference to a different inquiry.

The great importance of attending to these points, you will easily perceive by referring to the analysis of Reasoning which has been above given. For as the proving of any Conclusion consists in *referring* that of which something is to be affirmed or denied, to a Class [or Predicable] of which that affirmation or denial can be made, our ability in Reasoning must depend on our power of *abstracting* correctly, clearly, and promptly from the subject in question, that which may furnish a 'middle-term' suitable to the occasion.

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PART II.

COMPENDIUM.

LESSON IX.

§ 1. WE have now gone through, in the way of a slight sketch, the *Analysis* of Reasoning. To analyse (as has been already explained) means to 'take to pieces,' so as to resolve anything into its *elements*, [or component-parts.] Thus a Chemist is said to 'analyse' any compound substance that is before him, when he exhibits separately the simpler substances it is composed of, and resolves these again into their elements. And when, again, he *combines* these elements into their compounds, and those, again, into further compounds — thus reversing the former process (which is called the 'analytical') he is said to be proceeding *synthetically*: the word 'Synthesis' — which signifies 'putting together,' — being the opposite of 'Analysis.'

Accordingly, it has been shown in the foregoing Lessons that every train of Argument being capable of being exhibited in a Series of Syllogisms, a Syllogism contains three Propositions, and a Proposition, two Terms. And it has been shewn how 'Common-terms' (which are indispensable for Reasoning, are obtained by means of Abstraction from Individual objects.

This analytical method is the best suited for the *first introduction* of any study to a learner; because he there sees, from the very beginning, the practical application of whatever is taught. But the opposite method — the *synthetical* — is the

more convenient for *storing up* in the mind all that is to be remembered.

We shall therefore now go over great part of the same ground in a reversed order; merely *referring* to such things as have been already taught, and adding such further rules, and explanations of additional technical-terms, as may be needed.

§ 2. The act of the mind in taking in the meaning of a Term, is called, in technical language, the act [or 'operation'] of 'Simple-apprehension;' that is 'mere-apprehension,' [or 'apprehension-only.']. When a Proposition is stated — which consists, as we have seen, of two terms, one of which is affirmed or denied of the other, — the 'operation' [or 'act'] of the mind is technically called 'Judgment.' And the two Terms are described in technical language, as 'compared' together, and as 'agreeing' or as 'disagreeing,' according as you *affirm*, or *deny*, the one, of the other.

When from certain Judgments you proceed to another Judgment resulting from them, — that is, when you *infer* [or deduce] a Proposition from certain other Propositions — this 'operation' is called 'Reasoning,' or 'Argumentation,' or (in the language of some writers) 'Discourse.'

And these are all the mental operations that we are at present concerned with.

Each of these operations is liable to a corresponding defect: namely 'Simple-apprehension' to *indistinctness*, 'Judgment,' to *falsity*, and 'Reasoning' to *inconclusiveness*; [or fallaciousness.] And it is desirable to avail ourselves of any rules and cautions as to the employment of language, that may serve to guard against these defects, to the utmost degree that is possible: in other words, to guard, by the best rules we can frame, against *Terms* not conveying a distinct meaning; — against *false Propositions* mistaken for true, — and against *apparent-arguments* [or 'Fallacies;' or 'Sophisms'] which

are in reality *inconclusive*, though likely to be mistaken for real [valid] arguments.

And such a System of Rules*, based on a scientific view of the Reasoning-process, and of every thing connected with it, is what the ancient Greeks, among whom it originated, called the 'Dialectic-art;' from a word signifying to 'discourse on,' or 'discuss' a subject.

§ 3. You are to observe, however, two important distinctions in reference to the above-mentioned defects: 1st, you are to remember that which *is, really*, a Term, may be *indistinctly* apprehended by the person employing it, or by his hearer; and so also, a Proposition which is *false*, is not the less a *real Proposition*: but, on the other hand, any expression or statement which does not really *prove* anything, is *not, really*, an Argument at all, though it may be brought forward and passed off as such.

2dly. It is to be remembered that (as it is evident from what has been just said) no rules can be devised that will *equally* guard against *all three* of the above-mentioned defects.

To arrive at a distinct apprehension of everything that may be expressed by any Term whatever, and again, to ascertain the truth or falsity of every conceivable Proposition, is manifestly beyond the reach of any system of rules. But, on the other hand, it *is* possible to exhibit any pretended Argument whatever in such a form as to be able to *pronounce decisively* on its validity or its fallaciousness.

So that the *last* of the three defects alluded to (though not the two former) may be *directly* and *completely* obviated by the application of suitable rules. But the other two defects can be guarded against (as will presently be shown) only *indirectly*, and to a certain degree.

* You are to observe that a Science, properly, consists of *general truths* that are to be known: an Art, of *practical rules* for something that is to be *done*.

In other words, rules may be framed that will enable us to decide, what is, or is not, *really* a 'Term,' — really, a 'Proposition,' — or really an 'Argument:' and to do this, is to guard *completely* against the defect of *inconclusiveness*; since nothing that is inconclusive, is, really, an 'Argument;' though that may be *really* a 'Term' of which you do not *distinctly* apprehend the meaning; and that which is *really* a 'Proposition,' may be a *false* Proposition.

§ 4. When two Terms are brought together (or 'compared,' as some express it) as Subject and Predicate of a Proposition, they are (as was above remarked) described in technical language, as 'agreeing' or 'disagreeing,' according as the one is *affirmed* or *denied*, of the other.

This 'agreement,' however, does not (you are to observe) mean *coincidence*; [or that the two terms are 'equivalent'] for when I say 'Every X is Y,' or 'Every Sheep is a ruminant-animal,' this does not mean 'X is *equivalent* to Y;' [or 'X' and 'Y' are terms of *equal extent*] indeed we know that 'ruminant-animal' is in fact a term of greater extent than 'sheep;' including several other species besides. We only mean to assert that it is a Class [or Predicable] *comprehending under it*, at least, the term 'Sheep;' but whether it does or does not comprehend anything else besides, the proposition before us *does not declare*.

Hence it is that (as was formerly explained) the Predicate of an *Affirmative*-proposition is considered as *undistributed*: the Subject being compared with *part at least* of the Predicate, and asserted to 'agree' with it; but whether there be, or be not, any other part of the Predicate which does *not* agree with that Subject, is not *declared* in the proposition itself.

There are, it is to be observed, two *apparent* exceptions to this rule: 1st, the case of a Proposition which gives a *Definition* of anything; as when I say 'a triangle is a three-sided

figure;’ which would not be a correct *definition*, unless it were also true that ‘every three-sided figure is a triangle;’ and 2dly by the case of an affirmative-Proposition, where both terms are *singular*, and denote of course one and the same Individual; as ‘Ishmael was the first-born of Abraham.’

In both these cases the Subject and Predicate are, in each proposition, what are called ‘convertible’ [or ‘equivalent’] terms. But then, to assert or imply both that a certain affirmative-proposition is *true*, and *also* that its terms are *equivalent*, is to make (as was formerly remarked) not merely *one*, but *two* assertions.

Now if I am understood to mean not only that it is true that ‘a triangle is a three-sided figure,’ but also that *this is the definition* of a ‘triangle,’ then, I am understood as making two assertions; that not only ‘every triangle is a three-sided figure,’ but also that ‘every three-sided figure is a triangle.’ But this is understood not from the *Proposition* itself, looking to the *form of expression alone*, but from what we know, or think, respecting the *sense of the Terms* themselves, or from what we suppose the speaker to have intended by those Terms. For, all that is implied in the *mere form* of an affirmative-proposition, — as ‘X is Y’ — is simply that *some part at least* of the term ‘Y’ (whatever that Symbol may stand for,) is pronounced to agree with the term ‘X.’

§ 5. And a like explanation will apply in the other case also. If I understand from the *sense of the terms* in some affirmative-proposition, that the Subject and the Predicate are each a Singular-term, (denoting, of course, one and the same individual) — as ‘Ishmael was the first-born of Abraham,’ then I understand, as implied by the *meaning of the words* (though not by the *form* of the *Proposition*) another proposition also; namely, that ‘the first-born of Abraham was Ishmael.’ In short, it is from my knowledge of the sense of the terms themselves that I understand them to be ‘convert-

ible' [or equivalent] terms. For you may observe that a Singular-term must, from its own nature, correspond to a *Common term taken universally*, [or, 'distributed'] inasmuch as it *cannot but* stand for the *whole* (not merely some part) of that which it denotes.

In such cases as the above, then, that which is *expressed as one* proposition, is so understood from the meaning of the words as in reality to *imply two*. And there is, therefore, no real exception to the rule, that an Affirmative-proposition does not, *by the form of the expression*, distribute its Predicate.

§ 6. That which pronounces the *agreement* or *disagreement* of the two Terms of a Proposition [or which make it *affirmative* or *negative*] is called, as has been above said, the 'Copula.' And this is always, in sense, either 'is' or 'is not.' For every *Verb*, except what is called the 'Substantive-verb' to 'be,' contains something more than a bare assertion of the agreement or disagreement of two terms. It always contains in it the Predicate (or part of the Predicate) also.

Thus, the proposition 'it rains' (which in Latin would be expressed by the single word 'pluit') is resolved into 'Rain — is — falling;' or in some such way. 'John owes William a pound,' is resolved into 'John — is — owing [or indebted to] William, a pound.' And so in all such cases.

Sometimes, indeed, even the Substantive-verb itself is both Copula and Predicate; namely, where *existence* alone is affirmed or denied; as 'God is;' 'one of Jacob's sons is not *;' in which cases 'existing' is the Predicate.

You are to observe that the Copula has in itself no relation to *time*. If, therefore, any other *tense* besides the *Present*,

* Gen. 42. xiii.

of the Substantive-verb, is used, it is to be understood as the same in sense with the *Present*, as far as the *assertion* is concerned; the difference of tense being regarded (as well as the *person* and *number*) merely as a matter of grammatical propriety: unless it be where the circumstance of *time* really does affect the sense of the proposition. And then, this circumstance is to be regarded as part of one of the *Terms*; as, 'this man *was* honest;' that is, 'he is one *formerly-honest*.' In such a case, an emphasis, with a peculiar tone, is laid on the word '*was*.'

An *Infinitive*, you are to observe, is not a Verb, (since it can contain no affirmation or denial) but a verbal-noun-substantive. And a *Participle* again, is a verbal-adjective.

A Participle, or any other Adjective, may be made a *Predicate*, but not (by itself) a Subject of a proposition; as 'this grass is green,' 'that grass is mown.'

An Infinitive, though generally placed (in English) at the *end* of a sentence, is almost always (when it is by itself a Term) the *Subject*; as 'I like to ride;' that is, '^{Sub.} To ride' [or 'riding'] is — a thing I like.^{Pred.}

And observe that there is, in English, an Infinitive in '*ing*,' the same in sound with the Participle, but different in sense. When I say, 'Riding' [or 'to ride'] 'is pleasant,' and again 'that man is riding,' in the former sentence the word 'riding' is a Substantive, and is the Subject; in the latter it is an Adjective [Participle] and is the Predicate.

One Infinitive, however, is sometimes predicated of *another* Infinitive; as, 'seeing is believing;' 'not to advance is to fall back;' 'to be born is not to be perfected.'

§ 7. A Term may consist (as was formerly explained) of one word, or of several. And care must be taken, when you are examining a proposition, not to mistake for one of its Terms a word which, though it *might* have been used as a

Term, is, in *that proposition*, only a part of a Term. Thus, in one of the above examples, the word 'pound' is not one of the Terms, but only a part of the Term 'owing a pound to William.' A *description* of some object will sometimes occupy a page or two, and yet be only the Predicate of a single Proposition.

You are to observe also that one single sentence will often imply what may be regarded as several distinct Propositions; each indeed implying the *truth* of the others, but having their Terms different, according as we understand the *drift* (as it is called) or design of what is uttered: that is according to what we understand the person to be *speaking* of, (which is the Subject) and what it is that he says [predicates] of it.

Thus 'He — did not — design — your — death;' may be regarded as any one of at least four different propositions. If (No 1) the word 'He' be marked by emphasis in speaking, or by Italics, it will be understood as the Predicate; and the drift of the sentence will be that 'whoever else may have designed your death, it was not *he*:' if the emphasis fall on No. 2, the Predicate will be 'designing,' [or 'by design'] and the drift of the sentence will be that, 'though he may have endangered your life, it was not by *design*:' and so with the rest.

You should endeavor, therefore, so to express yourself as to make it clearly understood not only what is the meaning of *each word* you employ, but also what is the general *drift of the whole* sentence; in short, what is the Subject of your Proposition, and what it is that you say of it. And, as far as you can, you should make this clear by the *structure* of each sentence, without resorting to the expedient of *italics* or under-scoring oftener than is unavoidable.

There is frequently a great advantage, towards such clearness, gained, by the English word 'IT' in that sense in which

it stands (not as the *neuter* pronoun, answering to 'He' and 'She,' but) as the *representative of the Subject* of a Proposition, of whatever Gender or Number; so as to allow the Subject itself to be placed last: as —

Subj. Cop. Pred. Subj.
 'It — is not — he — that had this design:'

or again —

Subj. Cop. Pred. Subj.
 'It — is not — by design — that he did this,' &c.

LESSON X.

§ 1. A PROPOSITION is, as has been said, an act of judgment expressed in words; and is defined to be a 'Sentence which *asserts*;' or, in the language of some writers, an 'indicative Sentence:' '*indicative*,' [or 'asserting'] meaning 'that which *affirms or denies* something.' It is this that distinguishes a *Proposition* from a *Question*, or a *Command*, &c.

Propositions, considered merely as *Sentences*, are distinguished into 'Categorical' and 'Hypothetical.'

The Categorical asserts simply that the Predicate does, or does not, apply to the Subject: as 'the world had an intelligent maker:' 'Man is not capable of raising himself, unassisted, from the savage to the civilized state.' The Hypothetical [called by some writers 'Compound'] makes its assertion under a *Condition*, or with an *Alternative*; as 'If the world is not the work of chance, it must have had an intelligent maker:' 'Either mankind are capable of rising into

civilization unassisted, or the first beginning of civilization must have come from above.'

The former of these two last examples is of that kind called 'Conditional-propositions*,' the *condition* being denoted by 'if,' or some such word. The latter example is of the kind called 'Disjunctive;' the *alternative* being denoted by 'either' and 'or.'

The division of Propositions into Categorical and Hypothetical, is, as has been said, a division of them considered merely as *Sentences*: for a like distinction might be extended to other kinds of Sentences also. Thus, 'Are men capable of raising themselves to civilization?' 'Go and study books of travels,' are what might be called *categorical sentences*, though not *propositions*. 'If man is incapable of civilizing himself, whence came the first beginning of civilization?' might be considered as a *conditional question*; and 'Either admit the conclusion, or refute the argument,' is a *disjunctive command*.

At present we shall treat only of Categorical Propositions.

§ 2. It has been above explained that Propositions (of this class,—the Categorical) are divided according to their 'Quantity' into 'Universal' and 'Particular:'—that an 'Indefinite-proposition' is in reality either the one or the other; though the form of expression does not declare *which* is meant:—and also that a 'Singular-proposition' is equivalent to a 'Universal,' since its subject cannot but stand for the whole of what that Term denotes, when that whole is one single Individual.

You have also learnt that Propositions are divided, according to their 'Quality,' into 'affirmative' and 'negative.'

* Or 'hypothetical,' according to those writers who use the word 'compound' where we have used 'hypothetical.'

The division of them, again, into 'true' and 'false' is also called a division according to their 'quality;' namely, the 'quality of the *Matter*:' (as it has relation to the subject-matter one is treating of) while the other kind of quality (a proposition's being *affirmative* or *negative*) is 'the quality of the *expression*.'

The 'quality of the matter' is considered (in relation to our present inquiries) as *accidental*, and the 'quality of the expression' as *essential*. For though the truth or falsity of a proposition — for instance, in Natural-history, is the most essential point *in reference to Natural-history*, and of a *mathematical* proposition, in reference to *Mathematics*, and so in other cases, — this is merely accidental in reference to an inquiry (such as the present) only as to *forms of expression*. In reference to *that*, the essential difference is between affirmation and negation.

And here it should be remarked, by the way, that as, on the one hand, every *Proposition* must be either true or false, so, on the other hand, *nothing else* can be, strictly speaking, either true or false. In colloquial language, however, 'true' and 'false' are often more loosely applied; as when men speak of the '*true cause*' of anything; meaning, 'the *real cause*;' — the '*true heir*,' that is, the *rightful heir*; — a '*false prophet*,' — that is, a *pretended prophet*, or one who *utters falsehoods*;' — a 'true' or 'false' argument; meaning a *valid* [real] or an *apparent*-argument; — a man 'true,' or 'false' to his friend; *i. e.* *faithful* or *unfaithful* &c.

A Proposition, you are to observe, is Affirmative or Negative, according to its *Copula*; *i. e.* according as the Predicate is affirmed or denied of the Subject. Thus 'not to advance, is to fall back,' is *affirmative*: 'No miser is truly rich' [or 'a miser is not truly rich'] is a *negative*. 'A few of the sailors were saved,' is an affirmative; '*Few* of the sailors were

saved,' is properly a negative; for it would be understood that you were speaking of 'most of the sailors,' and *denying* that they were saved.

Since then every Proposition must be either Affirmative or Negative, and also, either Universal or Particular, Propositions are considered as divided (taking into account both Quantity *and* Quality) into four Classes; which, for brevity's sake, are usually denoted by the Symbols A, E, I, O; namely A. Universal-affirmative, E. Universal-negative, I. Particular-affirmative, and O. Particular-negative.

§ 3. Any two Propositions are, technically, said to be '*opposed*' to each other, when 'having the same Subject and Predicate, they differ either in Quantity, or in Quality, or in both.'

In ordinary language, however, (and in some technical treatises) propositions are not reckoned as '*opposed*' unless they differ in *Quality*.

It is evident that with any given Subject and Predicate, you may state four distinct Propositions, A, E, I and O: any two of which are said to be '*opposed*.' And hence there are (in the language of most technical writers) reckoned four kinds of '*Opposition*.' 1st, A and E, — the two Universals, Affirmative and Negative, (always supposing the *Terms* the same) are called '*Contraries*' to each other; 2nd. The two Particulars, I and O, '*Sub-contraries*.' 3rd. The two Affirmatives again, or the two Negatives, (A and I, or again, E and O) are called '*Subalterns*.' And 4th, those which differ both in Quantity and Quality — as A and O, or E and I, — are called '*Contradictories*.'

It is usual to exhibit in a Scheme (such as that in p. 72) these four kinds of '*Opposition*;' by placing at the corners of a Square the Symbols A, E, I, O, as representing, respectively, the abovementioned four classes of Propositions.

n. t.	A - - -	Contraries. - - -	E.	n. f.
i. f.	[Every X is Y.]		[No X is Y.]	i. t.
c. f.				c. f.



n. t.	I - -	Subcontraries. - - -	O	n. f.
i. f.	[Some X is Y.]	—	[Some X is not Y.]	i. t.
c. t.				c. t.

You may substitute for the unmeaning Symbols X, Y, (which stand for the Terms of the above Propositions) whatever significant Terms you will; and on their meaning, of course, will depend, the truth or falsity of each Proposition.

For instance, Naturalists have observed that 'animals having horns on the head are universally ruminant;' that, of 'carnivorous animals,' none are ruminant; and that, of 'animals with hoofs,' some are ruminant, and some not. Let us take then, instead of 'X,' 'animals with horns on the head,' and for 'Y,' 'ruminant:' here, the real connexion of the Terms in respect of their meaning — which connexion is called the '*matter*' of a proposition — is such that the Predicate may be affirmed universally of the Subject; and of course the *affirmatives* (whether Universal or Particular) will be true,

and the 'negatives' false. In this case the 'matter' is technically called 'necessary;' inasmuch as we *cannot avoid believing* the Predicate to be applicable to the Subject.

Again, let 'X' represent 'carnivorous animal,' and 'Y' 'ruminant:' this is a case of what is called 'impossible matter;' (*i. e.* where we *cannot possibly conceive* the Predicate to be applicable to the Subject) being just the reverse of the foregoing; and, of course, both the Affirmatives will here be false, and both Negatives true.

And, lastly, as an instance of what is called 'contingent matter,' — *i. e.* where the Predicate can neither be affirmed universally, nor denied universally, of the Subject, take 'hoofed animal' for 'X' and 'ruminant' for 'Y;' and of course the Universals will both be false, and the Particulars true: that is, it is equally true that 'some hoofed animals are ruminant,' and that 'some are not.'

§ 4. You will perceive, then, on examining such a Scheme, that 'Contrary' Propositions can never be both of them true, though they may (*viz.*: in 'contingent-matter'] be both false: that 'Subcontraries,' on the other hand, may be both true, but never both false: that 'Contradictories' [*diametrically-opposite* Propositions] must in every case be, one true, and the other false: and that 'Subalterns' (of which the Universal is called the 'Subalternant,' and the Particular the 'Subalternate') may be either both true, or both false, or the one true and the other false.

These last Propositions, however, though reckoned, as has been said above, by most dialectical writers, among those *opposed*, are not so accounted in ordinary discourse.

The four kinds of Propositions, A, E, I, O, have been, in the Scheme, marked, each, with the letters *t* for 'true' and *f* for 'false,' and also with the letters *n*, *i*, *c*, to denote the three kinds of matter, (necessary, impossible, contingent,) in

order to point out *which* propositions are true, and which, false, in each kind of matter.

The technical terms we have here explained, are needful to be learnt, as being, some of them, in frequent use, and as being convenient for the avoiding of circumlocution and of indistinctness.

‘Contradictory-opposition’ is the kind most frequently alluded to, because (as is evident from what has been just said) to *deny*, — or to *disbelieve*, — a proposition, is to *assert*, or to *believe*, its Contradictory; and of course, to *assent* to, or *maintain* a proposition, is to reject its Contradictory. Belief, therefore, and Disbelief, are not *two different* states of the mind, but the *same*, only considered in reference to two Contradictory propositions. And consequently, *Credulity* and *Incredulity* are not opposite habits, but the same; in reference to some class of propositions, and to their contradictories.

For instance, he who is the most *incredulous* respecting a certain person’s *guilt*, is, in other words, the most ready to believe him *not guilty*; he who is the most credulous* as to certain works being within the reach of Magic, is the most incredulous [or ‘slow of heart to believe’] that they are *not* within the reach of Magic; and so, in all cases.

The reverse of *believing this or that individual* proposition is, no doubt, to *disbelieve that same* proposition; but the reverse of *belief generally*, is (not belief; since that implies belief; but) *doubt*.

And there may even be cases in which *doubt* itself may amount to the most extravagant credulity. For instance, if any one should ‘doubt whether there is any such Country as Egypt,’ he would be in fact *believing* this most incredible proposition; that ‘it is *possible* for many thousands of persons, unconnected with each other, to have agreed, for successive

* As the Jews, in the time of Jesus, in respect of his works.

Ages, in bearing witness to the existence of a fictitious Country, without being detected, contradicted, or suspected.'

All this, though self-evident, is, in practice, frequently lost sight of.

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§ 5. A Proposition is said to be '*converted*,' when its 'Terms are transposed;' *i. e.*, when the Subject is made the Predicate, and the Predicate the Subject. And when no other change is made, this is called 'simple conversion.' When for instance I say 'no carnivorous animal is a ruminant,' the '*simple-converse*' of this would be, 'no ruminant is a carnivorous animal.'

The 'conversion' of such a proposition as this, 'No one [is happy who] is anxious for change,' would be effected by altering the arrangement of the words in brackets, into 'who is happy.'

The Conversion of a Proposition is said to be '*illative*,' when the truth of the '*Converse*' is 'implied' (looking merely to the *form of expression*) 'by the truth of the original proposition:' [or '*exposita*'] which is the case in the example above: it being evident that if the former of those Propositions (whatever may be the meaning of the Terms) be true, the *Converse* must be true also. For to say that 'No X is Y,' is to imply that 'no Y is X.'

You are to observe, however, that the *Converse* of a true Proposition may happen to be true also, without the Conversion's being '*illative*;' that is, when the truth of that *Converse* is not implied by the truth of the '*Exposita*' [the original proposition]. Thus, 'Every X is Y' does not imply that 'every Y is X,' though it may happen that both propositions may be true.

For instance, that 'Every tree is a vegetable,' does not imply that 'Every vegetable is a tree;' and this last happens in fact to be not true. But no more is it implied, when I say, 'every equilateral triangle is equiangular,' that 'every

equiangular triangle is equilateral;’ for though both these propositions *are* true, the one of them does not imply the other; and they are separately demonstrated as distinct propositions, in geometrical treatises.

In order to understand why the simple-conversion of ‘every X is Y,’ into ‘every Y is X,’ is not ‘illative,’ you have only to observe that, in the ‘Exposita,’ [original proposition] ‘Y’ is *undistributed*, as being the predicate of an Affirmative; while, in the ‘Converse,’ it is ‘distributed,’ by being made the *Subject of a Universal*. A *new Term* is therefore, in fact, introduced; since instead of *part* of the Term ‘Y’ we have employed the whole of it; and the agreement or disagreement of one Term with *some part* of another Term, does not imply its agreement or disagreement with *every part* of it; that is, with the *whole*. For though a part is implied by a whole, a whole is not implied by a part.

When, for instance, I say ‘every tree is a vegetable’ I am employing (as was formerly explained) the Term ‘vegetable’ to stand only for *part* of its ‘significates;’ and this does not authorize me to employ it (in the Converse) as standing for *all* its Significates; as in saying that ‘*every* vegetable is a tree.’

And strictly speaking, *that* is not a *real* ‘conversion,’ — but only an ‘*apparent* conversion,’ — which is not ‘illative.’ For, (as has been above said) there is not a *mere transposition* of the terms, but a *new term* introduced, when a term which was undistributed in the ‘exposita,’ is distributed [taken universally] in the Converse.

But as it is usual, in common discourse, to speak of ‘an *unsound* argument,’ — meaning, ‘an *apparent*-argument, which is in reality *not* an argument,’ so, in this case also, it is common to say, for instance, that ‘Euclid proves first that all equilateral triangles are equiangular, and afterwards he proves the *Converse*, that all equiangular triangles are equilateral;

or again, to say, 'It is true that all money is wealth; but I deny the *Converse*, (in reality, the *apparent-converse*) that all wealth is money.'

§ 6. Conversion, then, strictly so called,—that is, 'illative-conversion,'—can only take place when no term is distributed in the *Converse*, which was undistributed in the '*Exposita*.'

Hence, since E [a Universal-negative] distributes both terms, and I, [a Particular-affirmative] neither, these may both be simply-converted illatively. As in the example above, 'no carnivorous animal is ruminant,' implies by the very form of the expression, that 'no ruminant is a carnivorous animal.' And so also 'some things which are strange are believed,' implies that 'some things which are believed are strange.'

We may also illatively-convert A [a Universal-affirmative] by altering its '*Quantity*' from Universal to Particular. For 'Every X is Y' does imply that '*some Y*' (though not that '*every Y*') 'is X.' So in the example above we might allowably have stated (though not that 'all vegetables,' yet) that 'some vegetables are trees.'

This procedure is called 'conversion by *limitation*:' or according to some writers, 'conversion per accidens.' And it may be applied to E also; as, for instance, in the example above, you might have said '*Some* ruminant is not carnivorous;' though this would have been to come short of what you were warranted in stating.

But in O [particular-negative] the conversion will not be illative, on account of the rule that the Predicate of a Negative is always distributed. The proposition, therefore, 'Some X is not Y' does not imply that 'some Y is not X;' since X is distributed in the '*Converse*' and was not, in the '*Exposita*,' in which it was the Subject of a Particular. It is true

that 'some men are not negroes:' but this does not imply that 'some negroes are not men.'

A Particular negative [O] cannot be converted illatively, except by changing its *Quality* from negative to affirmative, (without altering the sense) by regarding the negation as attached to the PREDICATE instead of to the *Copula*. Thus

'Some X — ^{S.} is ^{Cop.} not — ^{Pr.} Y' may be taken as an affirmative, namely, 'Some X — ^{S.} is ^{Cop.} — ^{Pr.} not Y;' and this latter proposition [I] may of course be simply-converted illatively; as 'Some ^{S.} not Y — ^{Cop.} is — ^{P.} X.'

Thus, 'Some men are not-negroes' implies that 'Some who are not negroes are men;' or (as such a proposition is often expressed) 'One may be a man *without* being a negro.' So again 'Some who possess wealth are not happy,' implies that 'Some who are not-happy possess wealth.'

§ 7. This procedure is technically called 'Conversion-by-negation,' [or, by 'Contraposition.'] It is applicable also to [A] Universal-affirmatives. For, to *affirm* some Predicable of a Subject, or [to assert the *presence* of some attribute] is the same thing in sense as to *deny* its *absence*. Hence a Universal-affirmative may be stated as a Universal-negative; which (as we have seen) may be simply-converted.

Thus Every 'X is Y' is *equipollent* [or *equivalent in sense*] to 'No X is not Y;' which may be illatively converted into 'nothing that is not Y — is — X:' or 'whatever is not Y — is not — X.'

So the proposition, 'Every true poet is a man of genius,' may be stated as 'No true poet-is — not-a-man-of-genius;' which (being E) may be illatively converted into 'no one who is not a man of genius is a true poet:' (as such a proposition is very commonly expressed) '*None but* a man of genius can be a true poet;' or again, 'a man of genius *alone*

can be a true poet ;' or again, 'One cannot be a true poet *without* being a man of genius.'

And here it is worth remarking, by the way, that in such examples as the above, the words 'may,' 'can,' 'cannot,' &c. have no reference (as they sometimes have) to *power*, as exercised by an agent ; but merely to the *distribution* or *non-distribution* of *Terms* : or to the *confidence* or *doubtfulness* we feel respecting some supposition.

To say, for instance, that 'a man who has the plague *may* recover,' does not mean that 'it is in his *power* to recover if he chooses ;' but it is only a form of stating a *particular-proposition* : [I] namely, that 'Some who have the plague recover.' And again to say, 'there *may* be a bed of coal in this district,' means merely, 'The existence of a bed of coal in this district — is — a thing which I cannot confidently deny or affirm.'

§ 8. So also to say 'a virtuous man *cannot* betray his Country' [or 'it is *impossible* that a virtuous man should betray &c.'] does not mean that he lacks the *power*, (for there is no *virtue* in not doing what is out of one's power) but merely that 'not betraying one's country' forms an *essential part of the notion* conveyed by the *term* 'virtuous.' We mean, in short, that it is as much out of *our* power to *conceive* a virtuous man who should be a traitor, as to conceive 'a Square with *unequal sides* ;' that is, a square which is *not* a square. The expression, therefore, is merely a way of stating the Universal-proposition [E] 'No virtuous man betrays his Country.'

So again, to say, 'a weary traveller in the deserts of Arabia *must* eagerly drink when he comes to a Spring,' does not mean that *he* is *compelled* to drink, but that *I* cannot *avoid believing* that he will ; — that there is no *doubt* in my mind.

In these, and many other such instances, the words 'may,'

‘must,’ ‘can,’ ‘impossible,’ &c. have reference, not to *power* or *absence of power in an agent*, but only to *universality* or *absence of Universality in the expression*; or, to *doubt* or *absence of doubt* in our own mind, respecting what is asserted.

LESSON XI.

§ 1. AN ARGUMENT [or Act of Reasoning expressed in words] is defined ‘an Expression in which, from something laid down [assumed as true] something else is concluded to be true, as following necessarily [resulting] from the other.’ That which follows from the other, is called (as was formerly explained) the ‘*Conclusion* ;’ and that from which it follows, the ‘*Premises* ;’ or in the language of some writers, the ‘*Antecedent*.’

The above is the strict technical definition. But in ordinary language the word ‘Argument’ is often employed to denote the *Premises* alone; or, sometimes that one of the *Premises* which is *expressed*, when the other is *understood*: as when one speaks of proving so and so *by* this or that *argument*; meaning, by such and such a *Premise*.

And you may observe, by the way, that of the two *Premises*, the *Major* (formerly explained) is, in common discourse, often called the ‘*Principle*,’ and the *Minor-premise*, the ‘*Reason*.’

Frequently also in common discourse ‘an Argument’ is used to signify a ‘*Series of arguments*,’ leading ultimately to the *Conclusion* maintained.

An Argument, if stated in such a regular form that ‘its conclusiveness [its being really an Argument] is apparent

from the mere *form of expression alone*, (independently of the meaning of the words) is then called a 'Syllogism.' As, 'Every X is Y* ; Z is X, therefore Z is Y ;' in which, as was formerly explained, the truth of the Conclusion, — assuming the Premises to be true, — must be admitted, whatever Terms you may make X, Y, and Z, respectively, stand for.

You are to remember, therefore, that a Syllogism is not (as some have imagined) a *peculiar kind* of argument ; but only a certain *form* in which *every* Argument may be exhibited.

§ 2. One circumstance which has tended to mislead persons as to this point, is, that in a Syllogism we see the Conclusion following *certainly* [or *necessarily*] from the Premises ; and again, in any apparent-syllogism which on examination is found to be (as you have seen in some of the examples) not a *real* one [not 'valid'] the Conclusion *does not follow at all* ; and the whole is a mere deception. And yet we often hear of Arguments which have *some* weight, and yet are not quite *decisive* ; — of Conclusions which are rendered *probable*, but not absolutely *certain* &c. And hence some are apt to imagine that the *conclusiveness* of an argument admits of *degrees* ; and that sometimes a conclusion may, *probably and partially*, — though not *certainly and completely* — follow from its Premises.

This mistake arises from men's forgetting that the *Premises themselves* will very often be *doubtful* ; and then, the conclusion also will be doubtful.

As was shewn formerly, one or both of the Premises of a perfectly valid Syllogism may be utterly false and absurd : and then, the Conclusion, though inevitably following from them, may be either true or false, we cannot tell which. And if one or both of the Premises be merely probable, we

* See above. Lesson IX. § 4.

can infer from them only a *probable* conclusion; though the *conclusiveness*, — that is, the connexion between the Premises and the Conclusion — is perfectly certain.

For instance, assuming that 'every month has 30 days' (which is palpably false) then, from the minor-premise that 'April is a month,' it follows (which happens to be true) that 'April has 30 days:' and from the minor-premise that 'February is a month' it follows that 'February has 30 days;' which is false. In each case the conclusiveness of the Argument is the same; but in every case, when we have ascertained the falsity of one of the Premises, we know nothing (as far as *that argument* is concerned) of the truth or falsity of the Conclusion.

§ 3. When, however, we are satisfied of the falsity of some *Conclusion*, we may, of course, be sure that (at least) one of the Premises is false; since if they had both been true, the Conclusion would have been true.

And this — which is called the '*indirect*' mode of proof — is often employed (even in Mathematics) for establishing what we maintain: that is, we prove the *falsity* of some Proposition (in other words, the *truth* of its *contradictory*) by showing that if assumed, as a Premise, along with another Premise known to be true, it leads to a Conclusion manifestly false. For though, from a false assumption, either falsehood or truth may follow, from a true assumption, truth only can follow.

Let us now look to the case of a doubtful Premise. Suppose it admitted as *certain* that 'a murderer deserves death,' and as *probable* that 'this man is a murderer,' then, the Conclusion (that 'he deserves death') is probable in exactly the same degree.

But though when one Premise is certain, and the other, only probable, it is evident that the Conclusion will be exactly as probable as the *doubtful premise*, there is some liability to

mistake, in cases where *each* Premise is merely probable. For though almost every one would perceive that in this case the probability of the Conclusion must be *less* than that of either Premise, the *precise degree* in which its probability is diminished, is not always so readily apprehended.

And yet this is a matter of exact and easy arithmetical calculation. I mean, that, *given* the probability of each Premise, we can readily calculate, and with perfect exactness, the probability of the Conclusion.

As for the probability of the Premises themselves that are put before us, that, of course, must depend on our knowledge of the *subject-matter* to which they relate. But supposing it agreed what the amount of probability is, in each Premise, then, we have only to state that probability in the form of a *fraction*, and to *multiply* the two fractions together; the product of which will give the degree of probability of the Conclusion.*

§ 4. Let the probability, for instance of each Premise be supposed the same; and let it, in each, be $\frac{2}{3}$; [that is, let each Premise be supposed to have two to one in its favor; that is, to be twice as likely to be true as to be false] then the probability of the Conclusion will be *two thirds of two thirds*; that is $\frac{4}{9}$; — rather less than one half. For since twice two is four, and thrice three nine, the fraction expressing the probability of the Conclusion will be four ninths.

For example, suppose the Syllogism to be ‘A man who has the plague will die of it;’ (probably) ‘this man has the plague;’ (probably) therefore, (probably) ‘he will die of it.’ We are — suppose — not certain of either Premise; though

* Those who are at all familiar with Arithmetic will hardly need to be reminded that, — since a *fraction* is less than a unit, — what is called (not strictly, but figuratively) *multiplying* any thing by a fraction, means, taking it *less than once*; so that, for instance, $\frac{1}{2} + \frac{2}{3}$, that is a half multiplied (as it is called) by two-thirds, means two-thirds of a half; *i. e.* $\frac{2}{6}$ or $\frac{1}{3}$.

we think each to be probable: we have judged — suppose — that of 9 persons with the symptoms this man exhibits, two thirds, — that is, six — have the plague: and again, that *two thirds* of those who have the plague — that is, *four out of six* — die of it: then, of 9 persons who have these symptoms, 4 may be expected to die of the plague.

Again 'Every X is Y; $\frac{3}{4}$ Z is X $\frac{2}{3}$, therefore Z is Y' ($\frac{6}{12} = \frac{1}{2}$) let the fractions written after each Premise express the degree of its probability; and the result will be that which is given as the probability of the Conclusion.

For instance, 'A Planet without any atmosphere is uninhabited: the moon is a planet without any atmosphere; therefore, the moon is uninhabited:' supposing these Propositions to be those represented in the former example (of X, Y, and Z) then the probability that 'the moon is uninhabited,' will be two thirds of three fourths; or one half; since $\frac{2}{3}$ multiplied by three fourths gives $\frac{6}{12} = \frac{1}{2}$.*

In the examples just given, you will observe that the probability of each Premise has been supposed *more than* $\frac{1}{2}$; that is, each has been assumed to be *more likely* to be true than not; and yet there is, for one of these Conclusions, only

* Some persons profess contempt for all such calculations, on the ground that we cannot be *quite sure* of the exact *degree* of probability of each premise. And it is true that we are, in most cases, exposed to this unavoidable source of uncertainty; but this is no reason why we should not endeavor to guard against an *additional* uncertainty, which *can* be avoided. It is some advantage to have no *more* doubt as to the degree of probability of the Conclusion, than we have in respect of the Premises.

And in fact there are offices, kept by persons whose business it is, in which calculations of this nature are made, in the purchase of *contingent-reversions*, depending, sometimes, on a great variety of risks which can only be conjecturally estimated, and in effecting Insurances, not only against ordinary risks (the calculations of which are to be drawn from statistical-tables) but also against every variety and degree of *extra-ordinary* risks; the *exact* amount of which no one can confidently pronounce upon. But the calculations are based on the best estimate that can be formed.

an even chance ; and for the other less. The supposed patient is supposed to be rather *less* likely to die of the plague than not.

And of course when there is a *long train* of reasoning, — the Conclusion of each argument being made one of the Premises of a succeeding one, — then, if a number of merely-probable Premises are introduced, the degree of probability diminishes at each successive stage.

And hence it may happen, in the case of a very long train of reasoning, that there may be but a slight probability for the ultimate Conclusion, even though the Premises successively introduced, should be, some of them, quite certain, and the rest, more probable than not.

And hence, we often have to employ several distinct trains of arguments, each tending separately to establish some degree of probability in the Conclusion.

§ 5. When you have two (or more) distinct arguments, each, separately, establishing as probable, the same conclusion, the mode of proceeding to compute the total probability, is the *reverse* of that mentioned just above. For, there, — in the case of two probable premises, — we consider what is the probability of their being *both* true ; which is requisite in order that the conclusion may be established by them. But in the case of a conclusion *twice* (or oftener) proved probable, by separate arguments, if these distinct indications of truth do not *all* of them *fail*, the conclusion is established. You consider, therefore, what is the probability of *both* these indications of truth being *combined* in favor of any conclusion that is *not* true.

Hence the mode of computation is, to state (as a fraction) the chances *against* the conclusion as proved by *each* argument ; and to multiply these fractions together, to ascertain the chances against the conclusion as resting on *both* the arguments combined ; and this fraction being subtracted from

unity, the remainder will be the probability *for* the conclusion.

For instance, let the probability of a conclusion as established by a certain argument be $\frac{4}{5}$: (suppose, that this man is the perpetrator of a certain murder, from stains of blood being found on his clothes) and again, of the same conclusion as established by another argument, $\frac{2}{5}$: (suppose, from the testimony of some witness of somewhat doubtful character) then, the chances *against* the conclusion in each case, respectively, will be $\frac{1}{5}$ and $\frac{3}{5}$; which multiplied together give $\frac{1}{5} \times \frac{3}{5}$ or $\frac{3}{25}$ *against* the conclusion. The probability, therefore, *for* the conclusion as depending on these *two* arguments jointly (*i. e.* that he is guilty of the murder) will be $\frac{22}{25}$, or two to one.*

As for the degree of probability of each Premise, *that*, as we have said, must depend on the subject-matter before us; and it would be manifestly impossible to lay down any fixed rules for judging of this. But it would be absurd to complain of the want of rules determining a point for which it is plain no precise rules can be given; or to disparage, for that reason, such rules as *can* be given for the determining of another point. Mathematical Science will enable us — *given*, one side of a triangle and the adjacent angles, — to ascertain the other sides; and this is acknowledged to be something worth learning, although mathematics will not enable us to answer the question which is sometimes proposed in jest, of ‘how long is a rope?’

Men are often misled in practice by not attending to these circumstances, plain as they are, when pointed out.

§ 6. It has been already explained that the Maxim [or Dictum] applicable to every Argument when stated in the clearest form, is, that ‘whatever is predicated universally of any term, may be predicated in like manner [affirmed, or denied, as the case may be] of whatever is comprehended under

* See Lesson XVII., § 10.

that term:’ and that this, consequently, is the ‘*Universal Principle*’ of Reasoning.

And you may observe that this Dictum [or Maxim] may in fact be regarded as merely the *most general* statement of ‘*An Argument*,’ — not, this, or that individual argument; but *any and every* ‘Argument, abstractedly.’

For instance, if you say ‘this man is contemptible because he is a liar,’ you evidently mean to be understood, ‘every liar is contemptible; this man is a liar; therefore he is contemptible.’ Now if you so far *generalize* this Syllogism as to omit all consideration of the very terms actually occurring in it, *abstracting*, and attending solely to, the *form* of expression, you will have ‘Every X is Y; Z is X; therefore Z is Y,’ and then if you proceed to make a still further abstraction, saying, — instead of ‘Every X’ — ‘*any-term-distributed*,’ and instead of ‘Y’ — ‘anything whatever affirmed of that term,’ and so on, you will have, in substance, the very ‘Dictum’ we have been speaking of: which may be separated into three portions, corresponding to the three Propositions of a Syllogism: thus,

1. ‘Anything whatever’ (as ‘Y’) affirmed of a *whole class* (as ‘X’)
2. under which class something else (as Z) is comprehended,
3. may be affirmed of that (namely ‘Z’) which is so comprehended;’

These three portions into which the Dictum has been separated, evidently answer to the Major-premise, Minor-premise, and Conclusion, of the Syllogism given above. And it is plain that the like explanation will apply (if ‘denied’ were put for ‘affirmed’) to a Syllogism with a *negative* conclusion. So that the ‘Dictum’ is, in fact, as we have said, merely the most abstract and general form of stating the *Act of Reasoning*, universally.

§ 7. Some persons have remarked of this ‘Dictum’ (meaning it as a disparagement) that it is merely a somewhat circuitous *explanation of what is meant by a Class*. It is, in truth, just such an explanation of this as is needful to the student, and which must be kept before his mind in reasoning. For you are to recollect that not only every Class [the Sign of which is, a ‘Common-term’] comprehends under it an indefinite number of individuals — and of other Classes — differing in many respects from each other, but also most of those individuals and classes may be referred, each, to an indefinite number of classes (as was formerly explained) according as we *choose to abstract* this point or that, from each.

Now to *remind* one, on each occasion, that so and so is referable to such and such a Class, and that the Class which happens to be before us comprehends such and such things, — this, is *precisely all that is ever accomplished by Reasoning*.

For you may plainly perceive, on looking at any of the examples above, that when you assert both the Premises taken in conjunction, you have, virtually, implied the Conclusion. Else, indeed, it would *not* be impossible, (as it is) for any one to deny the Conclusion, who admits both Premises.

§ 8. Hence, some have considered it as a disparagement to a Syllogism (which they imagine to be *one kind* of Argument) that you can gain no *new truth* from it; the Conclusions it establishes being in fact known already, by every one who has admitted the Premises.

Since, however, a Syllogism is not a certain distinct kind of argument, but *any* argument whatever, stated in a regular form, the complaint, such as it is, lies against Reasoning altogether.

And it is undeniable that no *new truth*, — in one sense of the word — (and that, perhaps, the strictest sense) can ever be established by *Reasoning alone*; which merely unfolds, as it were, and develops, what was, in a manner, wrapped up

and implied in our previous knowledge; but which we are often as much unaware of, to all practical purposes, till brought before us, as if it had been wholly beyond our reach.

New truths, — in the strictest sense of the word — that is, such as are not implied in anything that was in our minds before, — can be gained only by the use of our senses, or from the reports of credible narrators, &c.

An able man may, by patient Reasoning, attain any amount of mathematical truths; because these are all implied in the Definitions. But no degree of labor, and ability, would give him the knowledge, by '*Reasoning*' alone, of what has taken place in some foreign country; nor would enable him to know, if he had never seen, or heard of, the experiments, what would become of a spoonful of salt, or a spoonful of chalk, if put into water, or what would be the appearance of a ray of light when passed through a prism.

§ 9. These two modes of arriving at any truth are perceived by all men as distinct. And they are recognized in the expressions in common use. The one is usually called '*information*;' the other '*instruction**.' We speak of trusting to the *information* (not, the *instruction*) of our senses. Any one who brings *news* from any place, or who describes some experiments he has witnessed, or some spot he has visited, is said to afford us *information*.

A Mathematician again, a Grammarian, — a Moralist, — any one who enters into a useful discussion concerning human life, — any one in short who satisfactorily *proves* anything to us by *reasoning*, — is said to afford us *instruction*.

And in conversing with any one who speaks judiciously, one sometimes says 'very true!' or 'that is a very just remark: that never struck me before, &c.' In these and suchlike expressions, we imply both that what he says is not *superfluous*,

* It is not meant that this is the *only* sense of these words.

but valuable and important, and also that we are conscious of having ourselves possessed, in our own previous knowledge, the germ of what he has developed, and the means of ascertaining the truth of what he has said; so as to have a right to bear *our testimony to it*.

But when any one gives us *information* about a foreign Country, &c. though we may fully *believe* him, and be interested by what he tells us, we never think of saying 'very true!' or 'you are quite right.' We readily perceive that in this case the knowledge imparted is new to us in quite another sense; and is what no *reasoning* alone could have imparted; being not *implied* in anything we knew already.

These two modes of attaining what are, in different senses, new truths, (and which of course, are often *mixed* together) may be illustrated by two different modes in which a man may obtain an addition to his wealth. One man, suppose, has property to a certain value, *bequeathed* to him: another *discovers* on his estate a mine of equal value. Each of these is enriched to the same degree. But the former of them acquires what he had, before, *no right* to; the latter merely comes to the knowledge and use of that which was, before, legally, his property; though, till discovered, it brought him no advantage.

Any mode of attaining knowledge, distinct from *Reasoning*, is, of course, foreign from the present inquiry.

LESSON XII.

§ 1. The Dictum [or Maxim] above explained as the Universal-principle of Reasoning, will apply to a Syllogism in such a form as that of the examples given. 'Every (or No)

X is Y* ; Z (whether some Z or every Z) is X ; therefore — some, or every — Z is Y ;' or 'No Z is Y ;' or 'Some Z is not Y ;' as the case may be.

And in that form every valid argument may be exhibited.

But there are other Syllogisms in other forms, to which the 'Dictum' cannot be *immediately* applied, (though they may be reduced into the above form) and which yet *are* real Syllogisms, inasmuch as their conclusiveness is manifest from the *form* of expression, independently of the meaning of the Terms.

For instance, 'no Savages have the use of metals ; the ancient Germans had the use of metals ; therefore they were not savages,' is a valid Syllogism, though the Dictum cannot be applied to it as here stated. But it may readily be reduced into the form to which the Dictum does apply ; by illatively-converting the Major-premise, into 'men who have the use of metals are not Savages.'

But the argument as it originally stood was a regular Syllogism ; and so are some others also in a different form ; although the Dictum does not *immediately* apply to them.

Accordingly, certain rules [or 'Canons'] have been framed, which do apply directly to *all* categorical Syllogisms, whether they are or are not in that form to which the Dictum is immediately applicable.

1st Canon. Two Terms which *agree* with one and the same third, may be pronounced to agree with each other : and

2d Canon. Two terms whereof one *agrees* and the other *disagrees* with one and the same third, may be pronounced to disagree with each other.

The technical sense of the words 'agree' and 'disagree' have been explained in a former Lesson.

The two Terms which are each compared with the same

* See Lesson ix. § 7.

third, are the Terms [or 'Extremes'] of the Conclusion; viz.: the Major-term and Minor-term: and that third Term with which they are separately compared in the two Premises, is the Middle-term. www.libtool.com.cn

On the former of these two Canons rests the proof of affirmative-conclusions; on the latter, of negative.

§ 2. To take first a Syllogism in the form originally given: 'Every X is Y; Z is X; therefore Z is Y:' or again 'No X is Y; Z is X; therefore Z is not Y:' in these examples, 'Y' and 'Z' are in the two Premises respectively, compared with 'X:' in the former example they are assumed to 'agree' with it; and thence in the Conclusion, they are pronounced (according to the 1st Canon) to 'agree' with each other; in the latter example, 'Y' is assumed to 'disagree' with 'X' and 'Z,' to 'agree' with it; whence in the Conclusion they are pronounced (according to the 2nd Canon) to 'disagree' with each other.

Again, to take a Syllogism in the other form, such as that in this Lesson, 'No Savages &c.,' or, 'No Y is X; Z is X; therefore Z is not Y;' you will perceive that the 2nd Canon will apply equally well to this as to the preceding example.

You will also find, on examination of the apparent-syllogisms [fallacies]—of which examples were given in former Lessons, and whose faultiness was there explained,—that they transgress against the above 'Canons.'

Take for instance, 'Some X is Y; Z is X; therefore Z is Y*;' and again 'Every Y is X; Z is X; therefore Z is Y;' or 'every tree is a vegetable; grass is a vegetable; therefore grass is a tree:' in these (as was formerly explained) the Middle-term is *undistributed*; [taken particularly in both premises] the two 'Extremes' therefore [Terms of the Conclusion] have been compared each with *part* only of the

* See the example from Hume, respecting Testimony

Middle; and thence we cannot say that they have each been compared with *one and the same third*: so that we are not authorized to pronounce their agreement or disagreement with each other.

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But remember, that it is sufficient if the Middle-term be distributed in *one* of the Premises; since if one of the 'Extremes' (of the Conclusion) has been compared with *part* of the 'Middle' and the other, with the *whole* of it, they have both been compared with the same; since the whole must include every part. And accordingly, in the form originally given 'Every X is Y; Z is X' &c. you may observe that the Middle-term is distributed in the Major-premise, and undistributed in the Minor.

§ 3. Again, take the example formerly given, of 'illicit-process;' [proceeding from a term undistributed in the Premise, to the same, distributed, in the Conclusion] as, 'Every X is Y; Z is not X; therefore Z is not Y;' or, 'Every tree is a vegetable; grass is not a tree, therefore, grass is not a vegetable;' here the 'Extremes,' which in the Conclusion are compared together, are not really what had been compared, each, with the Middle. For in the Conclusion, it is the *whole* of the term 'vegetable' that is compared with the term 'grass;' (since negatives distribute the Predicate) though it was only PART of that term that had been, in the Premise, compared with 'tree;' the Predicate of an 'Affirmative' being undistributed.

In this instance, therefore, as in the former one, the Canons have not been complied with; each of these apparent-syllogisms having in reality four terms.

You will observe, also, that when the Middle-term is *ambiguous*, there are, in sense, *two* Middle-terms, though you may have, apparently, a correct Syllogism: as 'Light is opposite to darkness; feathers are *light*; therefore feathers are opposite to darkness.' The word 'light' is here used *equivocally*.

cally. (See the explanation in Lesson VII. § 3 of ‘univocal’ and ‘equivocal.’)

So glaring an equivocation as this, could, of course, deceive no one, and could ~~only be employed in jest.~~* But when there is a very *small* difference between the two senses in which a Middle-term is used in the two Premises, then, though the reasoning is not the less destroyed, the equivocation is the more likely to escape notice. And men are practically deceived in this manner, every day, both by others, and by themselves.

§ 4. For instance, there is an argument of Hume’s (in the Work referred to in a former example, and which is said to have been convincing to some persons) which may be regularly stated, thus: ‘Nothing that is contrary to experience can be established by testimony; every miracle is contrary to experience; therefore no miracle can be established by testimony.’ Now the middle-term, ‘*contrary to experience*,’ admits of being understood in either of two senses; sometimes (and this is the strict and proper sense) it means ‘what we know by our own experience to be false; as, for instance, if several witnesses should depose to some act having been done, at a certain time and place, by a person known to me, and in whose company I was, at that time, and in a different place, I should be enabled to contradict their testimony from my own experience.

Sometimes, again, the expression is employed to denote ‘something which we have *never experienced*, and have not known to be experienced by others:’ which would be the case with the ascent of a balloon, for instance, to one who had never seen or heard of such a thing; or with the freezing of water, to a king of Bantam, mentioned by Hume.

* Most jests, it is to be observed, — such as puns, conundrums, &c. — are *mock fallacies*.

Now if the Term 'contrary to experience' be understood in this latter sense in *both* Premises, then the *Major*-Premise of the Syllogism will be manifestly false; since it would imply that the king of Bantam, or any one living in a hot Country, could have no sufficient reason for believing in the existence of ice. And if the term be understood (in *both* Premises) in the other sense, then the *Minor* will be false; since a Man cannot say that he *knows by his own experience* (whatever he may *believe* or *judge*, and however rightly) the falsity of every individual narrative of every alleged miracle.

But if the term is in each Premise to be so understood as that *each* shall be true, then it is evident that it must be taken as *two* different terms, (in sense, though not in sound) no less than the term 'light' in the former example.

§ 5. As for the truth or falsity of any Premise, or the sense in which any Term is to be understood, in this or that Proposition, of course no fixed rules can be given; as this must evidently be determined, in each case, by the subject-matter we are engaged on.

But though no rules can be given for *detecting* and *explaining* every fallacious ambiguity, it is useful to learn and to keep in mind *where to seek* for it: namely, to look to the *Middle-term* (the argument having been first stated in a syllogistic form) and to observe whether *that* is employed precisely in the same sense in each Premise.

As for the Terms of the *Conclusion*, there is not much danger of error or fallacy from any possible ambiguity in one of these; since in whatever sense either of these is employed in the Premise, it will naturally be understood in the Conclusion, in that same sense; though in itself it might admit of other meanings.

If, for instance, any one should conclude that the '*Plantain*' is 'worth cultivation in places where it will flourish, because it produces a vast amount of human food,' you would under-

stand him to mean, both in the Premise and the Conclusion, the fruit-bearing 'Plantain' of the West Indies, and not the herb that grows in our fields.

Sometimes, however, in a long train of Reasoning, a person may be led into error, by remembering merely that a certain Proposition *has* been proved, while he forgets *in what sense* it was proved.

§ 6. There are six rules commonly laid down, as resulting from the two Canons above mentioned; by which rules any apparent Syllogism is to be tested: since none can be objected to which does not violate any of these rules; and any apparent-syllogism which does violate any of them, is not, in reality, conformable to the above Canons.

i. A Syllogism must have three, and only three, Terms.

ii. It must have three, and but three Propositions.

iii. The Middle-term must be *one* only, [*i. e.* not *double*] and, therefore, must be *unequivocal*, and must be (in one at least of the Premises) *distributed*.

iv. No Term is to be distributed in the Conclusion that was not distributed in the Premise: [or, there must be no 'illicit-process.']

v. One at least of the Premises must be affirmative; since, if both were negative, the Middle-term would not have been pronounced either to agree with each of the 'Extremes,' or to agree with one and disagree with the other; but to *disagree* with *both*; whence nothing can be inferred: as 'No X is Y; and Z is not X,' evidently affords no grounds for comparing Y and Z together.

And vi. If one Premise be *negative*, the *Conclusion* must be negative; since — inasmuch as the other Premise must be affirmative — the Middle will have been assumed to agree with one of the 'Extremes,' and to disagree with the other.

All these rules will have been sufficiently explained in what has been already said.

And from these you will perceive that in every Syllogism one Premise at least must be Universal; since, if both were Particular, there would be either an undistributed Middle, or an Illicit-process. www.libtool.com.cn

For if each Premise were I (Particular-affirmative) there would be no distribution of any Term at all; and if the Premises were I and O, there would be but one Term, — the Predicate of O [the particular-negative] — distributed; and supposing that one to be the Middle, then the Conclusion (being of course *negative*, by rule vi.) would have its Predicate — the Major-term — distributed, which had not been distributed in the Premise. Thus ‘Some X is Y; some Z is not X,’ or again ‘Some X is not Y; some Z is X,’ would prove nothing.

And for the like reasons, if one of the Premises be Particular, you can only infer a Particular Conclusion: as ‘Every X is Y; some Z is X,’ will only authorize you to conclude ‘Some Z is Y;’ since to infer a Universal would be an ‘*illicit-process of the Minor-term.*’

§ 7. What is called the ‘*Mood*’ [or ‘*Mode*’] of a Syllogism, is the designation of the three Propositions it contains (in the order in which they stand) according to their respective Quantity and Quality; that is, according as each Proposition is A, E, I, or O.

Looking merely at the arithmetical calculation of *permutations*, (as it is called) all the possible combinations of the four Symbols, by threes, would amount to 64. For each of the 4 admits of being combined, in *pairs*, with each of the 4; [as A, with A, with E, with I, and with O, &c.] which gives 16 pairs; and each of these 16 pairs admits of being combined with each of the 4 as a third; which gives $16 \times 4 = 64$.

But it is plain that several of these combinations are such as could not take place in a Syllogism. For instance E, O, O, could not be a Mood of any Syllogism, since it would have

negative-premises (see Rule V.) nor I, O, O, which would have both premises *particular*, nor I, E, O, which would have an illicit-process of the Major-term; since the Conclusion, being negative, would have the Major-term distributed, while the Major-premise, being I, would have no term distributed. And so with many others.

There will be found on examination to be in all only eleven Moods in which any Syllogism can be expressed: and these are, A, A, A, — E, A, E, — A, I, I, — E, I, O, — A, E, E, — A, O, O, — A, A, I, — I, A, I, — E, A, O, — O, A, O, — A, E, O.

§ 8. What is called the '*Figure*' of a Syllogism, is, the *situation of the Middle-term*, in the two Premises respectively, with relation to the two '*Extremes*' [or Terms] of the Conclusion, — the Major and Minor-terms.

It is evident that all the possible collocations of the Middle must be four: since it must be either the Subject of the Major-premise and the Predicate of the Minor; or the Predicate of each; or the Subject of each: or the Predicate of the Major and Subject of the Minor.

On looking to the examples originally given, you will see that a Syllogism in that form ['Every X is Y; Z is X; therefore Z is Y'] has the *Middle-term made the Subject of the Major-premise*, and the *Predicate of the Minor*.

This is called the *First Figure*; and it is to Syllogisms in this Figure alone that the '*Dictum*' above-mentioned will *at once* apply.

§ 9. If you look to the forms afterwards exemplified, (§ 1 of this Lesson,) as 'No savages, &c.' or 'No Y is X; Z is X; therefore Z is not Y,' you will see that the Middle is the *Predicate of each* Premise. This is called the *Second Figure*. And in this, evidently none but *negative* Conclusions can be proved; since one of the Premises must be *negative*, in order that the Middle-term may be (by being the *Predicate* of a *Negative*) distributed.

Again, the Middle-term may be the *Subject of each* Premise. And this is called the *Third Figure*. Thus 'Some X is Y; every X is Z; therefore some Z is Y;' is a correct Syllogism in the third Figure, being conformable to the first *Canon*.

And the Syllogism here given as an example may be easily reduced to the first Figure, by simply-converting the Major-premise, and taking it for the *Minor*; [*transposing* the Premises] which will enable you to infer the simple-converse of the Conclusion: as 'Every X is Z; Some Y is X; therefore Some Y is Z:' and this implies that 'Some Z is Y;' since (as was explained formerly) the simple conversion of I is *illative*.

For instance, 'some painful things are salutary; every thing painful is an object of dread; therefore some things which are objects of dread are salutary;' this, though a valid Syllogism as it stands, may be reduced, in the manner above stated, to the first Figure.

In this, or in other ways, any Syllogism in the third Figure may be easily '*reduced*' (as the technical phrase is) to the first Figure.

In this third Figure you will find that none but *Particular* Conclusions can be drawn. To infer a Universal would always, you will find, involve an '*illicit-process* of the Minor-term.' For if the Premises are both Universal, which (as we have already seen, (§ 6) they must always be, to warrant a Universal Conclusion) then, supposing them to be A, A, there will have been, — in this third Figure — no term distributed except the Middle; (affirmatives not distributing the Predicate) and consequently no term can be distributed in the Conclusion; which must, therefore, be I.

And if the Premises be E and A, there will have been (besides the Middle) only one term, — the Predicate of E, distributed; and consequently only one term can be dis-

tributed in the Conclusion; and that one must be the Predicate of O; since the Universal [E] would have *both* terms distributed.

§ 10. The third Figure might be called the ‘*exceptive*’ or the ‘*refutatory*’ Figure; (or, agreeably to the expression of the Greek writers, the ‘*enstatic*’;) as being a very natural form of expressing arguments which go to establish the *contradictory of some Universal Proposition* that any one may have maintained, or that may be generally believed.

For instance, if any one were speaking of ‘*metals*’ as being, *universally*, ‘*conductors of heat*,’ you might *adduce* ‘*Platina*’ as an *exception*. Or should any one contend that ‘*no agent incapable of distinguishing moral good and evil* (as, for instance, a madman) can be deterred from any act by apprehension of punishment,’ you might refute this, by adducing the case of a brute, — for instance, a dog — deterred from sheep-biting by fear of punishment. And such arguments would fall very naturally into the third Figure.

It is, especially, the most natural form in which to express an argument — such as we often employ for the above purpose — in which the Middle-term is a *Singular-term*; as when, for instance, you prove by the example of a certain individual,* the contradictory of a Proposition (which would seem to most persons a very probable conjecture) that a deaf and dumb person, born blind, cannot be taught *language*.

The second Figure may be called the ‘*exclusive*’ Figure; being a very natural form for arguments used in any inquiry in which we go on *excluding*, one by one, certain suppositions, or certain classes of things, from that whose description we are seeking to ascertain.

Thus, certain symptoms, suppose, exclude ‘*small-pox*’; that is, prove this *not* to be the patient’s disorder; other

* See the Note on a former Lesson, on the case of Laura Bridgeman.

symptoms, suppose, exclude '*Scarlatina*' &c., and so one may proceed by gradually narrowing the range of possible suppositions.

These three Figures are the only ones in which any argument would, designedly, be stated. For, as to *what* is called the 4th Figure (in which the Middle-term is made the Predicate of the Major-premise and the Subject of the Minor) though a Syllogism so stated would be undeniably valid if conformable to the rules (as 'every Y is X; no X is Z; therefore no Z is Y') this form is only a clumsy and *inverted* way of stating what would naturally be expressed in the 1st Figure; as, in this example, might be done by transposing the Premises, and simply-converting the Conclusion.

LESSON XIII.

§ 1. Besides *Categorical*-arguments, which we have been treating of, Reasoning is often expressed in a *Hypothetical* form. And though such arguments may be reduced into a categorical form, this is not necessary, except for the purpose of pointing out the *sameness*, in all cases, of the Reasoning-process. For you may exhibit in a hypothetical form, a perfect '*Syllogism*' as above defined.

A Hypothetical (or as some writers call it, a 'compound') Proposition, consists of 'two or more Categorical-propositions, united by a Conjunction, in such a manner as to make them *one* proposition.' And the different kinds of hypothetical-proposition are named after their respective Conjunctions;

namely 'Conditional' and 'Disjunctive*.' For instance, 'if A is B, then X is Y' is a Conditional-proposition†; 'either A is B, or X is Y' is Disjunctive.

And each of these is a real *Proposition*, *i. e.*, asserts something; and consequently is either *true*, or *false*; which (as was formerly explained) is peculiar to *Propositions*: and each is also *one* Proposition, though consisting of several parts [or 'members'] each of which, if taken separately, would be itself a Proposition; but the Conjunction (which is called a Copula) makes the whole *one* Proposition.

§ 2. For instance, 'the world is eternal,' is a proposition: 'records earlier than the Mosaic exist,' is another proposition; and 'if the world be eternal, records earlier than the Mosaic must exist,' is a third proposition distinct from each of the other, and which may be true, though they be both false: since it does not assert the *truth* of either of them, but only the *connexion* between them. Again, should any one say 'if the Northern-lights be shining, some great revolution of an Empire is going on,' this would be, properly speaking, a false Proposition, even should it turn out that each of the 'members' stated as a categorical-proposition, is true; supposing it admitted that they have no *connexion* with each other.

Observe, however, that no *false Conclusion* can be deduced from a false Conditional-proposition, when it so happens that both its 'members' (stated as categorical-propositions) are true.

In the case of a Disjunctive-proposition on the other hand, it is implied that one at least, of *its* 'members' (stated as a categorical-proposition) must be true, and that, if not, the whole Proposition must be false. As 'this man was either at

* See Lesson X.

† Those writers who use the word *compound* proposition instead of *hypothetical*, employ 'hypothetical' to signify 'conditional.'

Oxford or at Cambridge' would not be true, if he were *not* at Oxford, *and not* at Cambridge.

And it is usually meant to be understood that *only* one of the members can be true: for if this were not the meaning in such an example as the foregoing, it would have been more correct to say 'this man was either at Oxford, or Cambridge, or *both*.'

§ 3. A Hypothetical-syllogism is one in which the *reasoning itself turns on the hypothesis*; not, every syllogism that has in it a hypothetical premise; for the 'hypothesis' may be a portion of one of the Terms, and the syllogism may be merely categorical.

For instance, 'Real miracles are evidence of a divine commission; if the works of Jesus were acknowledged miraculous by the unbelieving Jews, they must have been real miracles; therefore, the works of Jesus (if they were acknowledged, &c.) are evidence of a divine commission;' is a categorical syllogism; the hypothesis being merely a portion of the Minor-term.

And so also with such an example as 'Every X is either Y or W; Z is X; therefore Z is either Y or W.'

In a hypothetical-syllogism, properly so called, — that is, in which the reasoning is based on a hypothetical-premise, that premise is called the *Major*, and the other — which is categorical — is called the *Minor-premise*.

We will speak first of *Conditional-syllogisms*.

There are in a Conditional-proposition *two* members, [categorical-propositions] whereof one is asserted to *depend* on the other. That on which the other depends is called the '*Antecedent*'; that which depends on it, the '*Consequent*;' and the *connexion* between the two, (expressed by 'if,' or 'supposing') is called the '*consequence*.'

For instance 'If ————— this man is a murderer —————

(Consequence)

(Antecedent)

he ^(Consequent)deserves death.’ ‘The ^(Consequent)English are well off——
 —— ^(Consequence)if —— ^(Antecedent)they know their own advantages.

The natural order is to place the ‘Antecedent’ *first*; but this (as you will see from the example above) is not essential.

§ 4. The meaning, then, of a Conditional-proposition, is, that ‘the *Antecedent* being assumed to be *true*, the *Consequent* is to be granted as true also.’ And this may be considered in two points of view: 1st, allowing that the Antecedent *is* true, the Consequent *must* be true; 2ndly, supposing the Antecedent *were* true, the Consequent *would* be true.

Hence, there are two kinds of Conditional-syllogism; 1st, if the Antecedent be (in the minor-premise) granted to be true, the Consequent may (in the Conclusion) be inferred: 2ndly, if the Consequent be *not* true — that is, if its *Contradictory* be assumed in the minor-premise — the Antecedent cannot be true; that is, its Contradictory may, in the Conclusion, be inferred: since if the Antecedent *had been* true, the Consequent (which we have assumed to be false) *would have been* true also.

A Syllogism of the former kind, is called ‘*Constructive* ;’ of the latter kind, ‘*Destructive*.’

For instance, ‘if A is B, X is Y:’ let this be the major-premise; then if you add, ‘but A is B; therefore X is Y,’ this forms a Constructive-syllogism: if you say ‘X is not Y; therefore A is not B,’ this is a Destructive-syllogism. Thus, ‘if this river has tides, the sea into which it flows must have tides;’ then if I add ‘this river has tides,’ it follows in Conclusion, that ‘the sea into which it flows has tides;’ which is a Constructive-syllogism. If I add, ‘the sea into which it flows has not tides,’ it follows that ‘this river has not tides.’

§ 5. And here observe, by the way, that, in hypothetical-arguments, we are not concerned with the distinction between

affirmative and negative Conclusions. For, of the two members of a Conditional-proposition, either, or both, may be affirmative, or may be negative; so that we may establish the truth 'constructively' of either an affirmative or a negative Consequent; or may ('destructively') establish the falsity — that is, infer the Contradictory — of either an affirmative or a negative Antecedent.

For instance 'if no miracles had been displayed by the first preachers of the Gospel, they could not have obtained a hearing; but they did obtain a hearing; therefore some miracles must have been displayed by them,' is a Destructive-conditional-Syllogism.

The Consequent, as has been said, depends on the Antecedent; so that, if the Antecedent be true, the Consequent will be true also; but as the Antecedent does not depend on the Consequent, nothing is proved by *denying* the Antecedent, or again, by *assuming* the *truth* of the Consequent. Suppose it granted that 'if A is B, X is Y,' though it may indeed so happen that X is Y, *only on that* condition, — that is, that if X is Y, A is B, — this is not implied by the original assertion: so that (merely assuming that original assertion,) to add that 'A is not B,' or again, to say 'X is Y,' proves nothing.

For instance, 'if this man has committed theft he deserves punishment' does not authorize me to proceed either to say 'he has not committed theft; therefore he does not deserve punishment;' or again, 'he deserves punishment; therefore he has committed theft.' For it is (in this case) evident that a man may deserve punishment for some other offence.

§ 6. And you may observe, that the fallacy of *affirming the Consequent* and thence inferring the truth of the Antecedent, answers to the fallacy (in Categoricals) of *undistributed middle*, or to that of *negative-premisses*; as may be seen from the above example. For to say 'every one who has committed

theft deserves punishment; and this man deserves punishment,' would evidently be a case of undistributed-middle. And again, if instead of saying 'if this man has a fever he is not fit to travel; and he is not fit to travel; therefore he has a fever,' you say 'no one who has a fever is fit to travel,' &c. there will be the fallacy of two negative-premises.

The Fallacy again, of denying the Antecedent and thence inferring the denial of the Consequent, would correspond (in Categoricals) either to an 'Illicit-process of the Major-term,' or to the Fallacy of 'two negative-premises,' or that of introducing palpably 'more than three terms.' For instance, suppose instead of saying 'if this man has committed theft &c.' you say, 'Every one who has committed theft deserves punishment; this man has not committed theft, &c.' this would be an illicit-process of the Major. Or again, suppose, instead of saying 'if this man has a fever, he is not fit to travel; but he has not a fever; therefore he is fit to travel,' you say 'No one who has a fever is fit to travel; this man has not a fever &c.' this would be to employ 'two negative-premises.' Again, 'If this army is not brave it will not be victorious; it is brave; therefore it will be victorious;' would, if expressed categorically, have palpably more than three terms.

§ 7. It is plain from what has been above said, that a Conditional-proposition may be illatively *converted*, by taking the *Contradictory of the Consequent for an Antecedent*, and (of course) the *Contradictory of the Antecedent, for a Consequent*. 'If A is B, X is Y' implies that 'if X is not Y, A is not B.' 'If all wages be regulated by the price of food, an English laborer will have higher wages than an American;' this manifestly implies, that, 'if an English laborer has not higher wages than an American, all wages are not regulated by the price of food.'

This corresponds to the conversion of the categorical-proposition A, 'by negation;' ['contraposition,'] every Conditional-

proposition corresponding in fact to a Universal-affirmative-Categorical: the *Antecedent* answering to the *Subject*, and the *Consequent*, to the *Predicate*.

It is evident, that if you will convert the Major-premise [the hypothetical-premise] of any Conditional-syllogism, you change the Syllogism from 'Constructive' to 'Destructive,' or vice versa, from Destructive to Constructive.

The Proposition 'if A is B, X is Y' may be considered as amounting to this; 'The case [or supposition] of A being B, is a case of X being Y.' And then to say (as in the Minor-premise and the conclusion, of a constructive-conditional syllogism) 'A is B; and therefore X is Y,' is equivalent to saying 'the present [or the existing] case is a case of A being B; therefore this is a case of X being Y.'

Or again, 'if the Stoics are right, pain is no evil; but pain is an evil; therefore the Stoics are not right,' (which is a destructive-conditional syllogism) may be reduced to a Categorical, thus: 'To say that pain is no evil -- is not -- true; to say that the Stoics are right -- is -- to say that pain is no evil; therefore to say that the Stoics are right -- is not -- true.'

This Syllogism is in the first Figure. The argument might be exhibited in the third Figure, thus: 'that pain is no evil is not true; but that is maintained by the Stoics; therefore something maintained by the Stoics is not true.'

In some such way (taking care always to preserve the *same sense*) any argument may be exhibited in various different *forms* of expression, (the choice of which is merely a matter of convenience) so as to point out and impress on the mind that the reasoning-process itself is always essentially one and the same, and may ultimately be referred to the 'Dietum' formerly mentioned.

§ 8. In a disjunctive-preposition, as has been already observed, it is implied *that at least some one of the 'members'*

must be true. If, therefore, *all except one* be (in the minor-premise) denied, the truth of the remaining one may be inferred.

For instance, 'either the Gospel was an invention of impostors, or it was a dream of fanatics, or a real revelation; it was neither of the two former; therefore it was a real revelation.'

But if there be more than two members, and you deny (in the minor-premise) one or more of them, but not *all except one*, then you can only draw a *disjunctive Conclusion*; as, 'this event occurred either in Spring, Summer, Autumn, or Winter; it did not occur in Summer or in Winter; therefore it occurred either in Spring or in Autumn.'

In a Disjunctive-proposition it is (as has been said above) usually understood that the members are *exclusive*; *i. e.* that *only one*, of them can be true: and you may, on that supposition, infer from the *truth* of one of them (assumed in the Minor) the Contradictory of the other, or others. As 'either A is B, or C is D, or X is Y; but A is B; therefore C is not D, nor is X Y.'

§ 9. A Disjunctive-Syllogism may readily be reduced to a *Conditional*, by merely altering the form of the Major-premise; namely, by taking as an *Antecedent* the Contradictory of one or more of the members; everything else remaining as before. Thus, in the example lately given, you might say, 'If this did not occur in Summer nor in Winter, it must have occurred either in Spring or in Autumn;' &c.

A Disjunctive-proposition, you are to observe, is, (as well as a Conditional) always *affirmative*. For, either kind of Hypothetical-proposition always *affirms* the *connexion* of the members of it [categorical-propositions contained in it] whether these be affirmative or negative propositions.

And the *contradiction* of a Hypothetical-proposition must, therefore, consist in *denying* this *connexion*; which is done,

not in a Hypothetical, but in a Categorical-proposition. When it is asserted that 'if A is B, X is Y,' you would contradict this by saying 'it does not follow that if A is B, X must be Y;' or by some such expression. Or when it is asserted that 'either A is B, or X is Y,' you might contradict this by saying '*it is possible that* neither A is B, nor X, Y;' or you might contradict a Disjunctive-proposition by two or more Categorical propositions; namely, by asserting separately the Contradictory of each member; as 'either some Z is Y, or else some W is not X,' might be contradicted by 'no Z is Y, and every W is X.'

LESSON XIV.

§ 1. IT will often happen that you will have occasion to employ that complex kind of Conditional-syllogism (consisting of two or more such syllogisms *combined*) which is commonly called a '*Dilemma*.'

When you have before you as admitted truths two (or more) Conditional-propositions, with different Antecedents, but each with the same Consequent, and these Antecedents are such that you cannot be sure of the truth of any *one* of them, separately, but are sure that *one* or *other* must be true, you will then, naturally be led to state *both* of the Conditional-propositions, first; and next, to assert *disjunctively* the Antecedents; and thus to infer the common Consequent. As 'if every A is B, X is Y; and if some A is not B, X is Y; but either every A is B, or some A is not B; therefore X is Y.'

This kind of Argument was urged by the opponents of Don Carlos, the pretender to the Spanish Throne; which he

claimed as heir-male, against his niece the queen, by virtue of the Salic-law excluding females; which was established (contrary to the ancient Spanish usage) by a former king of Spain, and was repealed by king Ferdinand. They say 'if a king of Spain has a right to alter the law of succession, Carlos has no claim: and if no king of Spain has that right, Carlos has no claim; but a king of Spain either has or has not, such right; therefore (on either supposition) Carlos has no claim.'

§ 2. When several Conditional-propositions have different Consequents as well as different Antecedents, then we can only *disjunctively* infer those Consequents: that is, we can only infer that (supposing some one or other of the Antecedents true) *one or other* of the Consequents must be true. As, 'if A is B, X is Y; and if C is D, P is Q; but either A is B, or C is D; therefore either X is Y, or P is Q.' Thus, 'if the obedience due from Subjects to Rulers extends to religious worship, the ancient Christians are to be censured for refusing to worship the heathen idols; if the obedience, &c., does not so extend, no man ought to suffer civil penalties on account of his religion; but the obedience, &c., either does so extend, or it does not; therefore either the ancient Christians are to be censured, &c., or else no man ought to suffer civil penalties on account of his religion.'

So also, 'if man is capable of rising, unassisted, from a savage to a civilized state, some instances may be produced of a race of Savages having thus civilized themselves; and if Man is not capable of this, then, the first rudiments of civilization must have originally come from a super-human instructor; but either Man is thus capable, or not; therefore either some such instance can be produced, or the first rudiments, &c.'

§ 3. And when there are several Antecedents each with a different Consequent, then, we may have a Destructive-dilemma: that is, we may, in the Minor-premise *disjunctively*

deny the Consequents, and in the Conclusion disjunctively deny the Antecedents. Or again, you may have a Dilemma partly Constructive and partly Destructive; that is, in the Minor-premise (which in a Dilemma is always a Disjunctive-proposition) the members — suppose, for instance, there are two, — may be, one of them, the assertion of the Antecedent of one of the Conditional-propositions, and the other, the contradictory of the Consequent of the other Conditional.

Suppose we say, ‘if X is not Y, A is not B; and if P is not Q, C is not D; but either A is B, or C is D; therefore either X is Y, or P is Q;’ this would be a Destructive-Dilemma; and you may see that it corresponds exactly with the example given a little above, only that we have, here, *converted* both of the Conditional-propositions. See § 7 of the preceding Lesson. If we had converted *one* only, and not, the other, of the Conditionals, (as ‘if A is B, X is Y; and if P is not Q, C is not D;’ &c.,) then the Dilemma would have been *partly* Constructive and partly *Destructive*. For, as has been formerly explained, the Difference between a Constructive and a Destructive Syllogism consists merely in the form of expression, and it is very easy to reduce either form into the other.

It may be worth while to observe, that it is very common to state the *Minor*-premise of a Dilemma first; in order to show the more clearly that the several Categorical propositions which are, each, doubtful, when taken separately, may be combined into a Disjunctive-proposition that admits of no doubt. And this *Minor*-premise being disjunctive, some have hence been led to suppose that a Dilemma is a kind of *disjunctive* argument; though it is really, as we have shown, a *Conditional*.

The name of ‘Dilemma, again, has led some to suppose, that it must consist of *two* members only; though it is evident that there may be any number.

§ 4. When there is a long series of arguments, the Conclusion of each being made one of the Premises of the next, till you arrive at your ultimate Conclusion, it is of course a tedious process to exhibit the whole in the form of a series of Syllogisms. This process may in many cases be considerably abridged, without departing from the strict syllogistic-form: [that is, such a form as shows the conclusiveness of the reasoning, from the *expression alone*, independently of the meaning of the Terms, and equally well when arbitrary Symbols are used to stand for the Terms.]

What is called a 'Sorites' (from a Greek word signifying a *heap*, or *pile*) is such an abridged form of stating a train of arguments. When you state a series of propositions in which the Predicate of the first is made the Subject (distributed) of the next, and the Predicate of that, again, in like manner, the Subject of the next, and so on, to any length, you may then predicate in the Conclusion the *Predicate* of the *last* Premise of the Subject of the first.

Thus 'A (either "some" or "every") is B; every B is C; every C is D; every D is E; &c. therefore A is E;' or 'no D is E; therefore A is not E.' Thus, also, 'this man is selfish; whoever is selfish is neglectful of the good of others; whoever is neglectful of the good of others is destitute of friends; and whoever is destitute of friends is wretched; therefore this man is wretched.'

§ 5. To such a form of argumentation the 'Dictum' formerly treated of may be applied, with one small addition, which is self evident. 'Whatever is affirmed or denied of a whole Class, may be affirmed or denied of whatever is comprehended in [*any Class that is wholly comprehended in*] that Class.' This sentence, omitting the portion enclosed in brackets, you will recognize as the 'Dictum,' originally laid down: and the words in brackets supply that extension of it which makes it applicable to a 'Sorites,' of whatever length; since

it is manifest that that clause might be enlarged, as far as you will, into 'a Class that is wholly comprehended in a Class, which again is wholly comprehended in another Class, &c.'

You will perceive, on looking at the above examples, that, though the first of the propositions of a Sorites may be either Universal or Particular, all the succeeding Premises must be *Universal*; since, else, the 'Dictum,' as stated just above, would not apply.

You will perceive also that, though the last of the Premises may be either Negative or Affirmative, all the preceding ones must be *Affirmative*, in order that the Dictum may be applicable. Thus, in the example, first given, it is allowable to say 'no D is E; therefore A is not E;' but then it is necessary that 'C' should be *comprehended* in 'D' (not *excluded* from it) and 'B' likewise in 'C,' and 'A' in 'B,' since otherwise the 'Dictum' would not be applicable.

§ 6. It will be seen, on examining the examples, that there are, in a Sorites, as many Middle-terms as there are *intermediate* propositions between the first and the last; and that it may be stated in just so many separate syllogisms in the 1st Figure; which is the simplest and most common form of a syllogism.

The first of these syllogisms will have for its *Major*-premise the *second* of the propositions in the series, and for its *Minor*-premise, the first of them: and the Conclusion of this first syllogism will be a proposition which is (in the Sorites) not expressed but understood; and which will be the *Minor*-premise of the next Syllogism. And of this next syllogism the *Major*-premise will be the *third* that is expressed in the Sorites; and so on.

For instance, (1st,) 'every B is C; A is B; [therefore A is C;]' and (2dly) 'every C is D;' ['A is C; therefore A is D,'] &c.

The portions enclosed in brackets are those which in the Sorites are *understood*.

The *only Minor*-premise expressed in the Sorites is the first proposition of the Series; all the succeeding minor-premises being understood.

And hence it is that (as has been above said) this first is the only one of all the Premises that may allowably be a *Particular*: because, in the first Figure, though the Minor may be either Universal or Particular, the *Major* (as you see from what was formerly said, of the 'Dictum,') must always be *Universal*; and *all* the premises in the Sorites except the first, are *Major*-premises.

In this way may also be explained what was above said, that the *last* of the premises of a Sorites is the only one that can allowably be a *Negative*: since if any of the others were negative, the result would be that one of the Syllogisms of the Series would have a negative minor-premise; which, in the first Figure (as you will see by again referring to the 'Dictum') is inadmissible.

§ 7. A series of *Conditional*-syllogisms (which correspond, as has been shown, to Categorical-syllogisms in the first Figure) may in like manner be abridged into a Sorites; by making the Consequent of the first proposition the Antecedent of the next; and so on: and then drawing the Conclusion by either asserting the *first* Antecedent, and thence (constructively) inferring the last Consequent, or else, denying the *last* of the Consequents, and (destructively) inferring the Contradictory of the first Antecedent. 'As, 'If A is B, C is D; and if C is D, E is F; and if E is F, G is H,' &c.: and then, if the Sorites be 'Constructive,' you add 'but A is B; therefore G is H;' or, if 'destructive,' 'but G is not H; therefore A is not B.'

The foregoing are all the forms in which Reasoning can be

exhibited *Syllogistically*; i. e. so that its validity shall be manifest from the *mere form of expression*.

For, an *Enthymeme*, (see Lesson II. § 3) is manifestly not syllogistic; since it is possible to admit the truth of the one premise that it is expressed, and yet to deny the Conclusion.

An Enthymeme may indeed be such (since it contains all the three Terms requisite for a Syllogism,) that we can readily perceive what the premise is that *ought* to be understood, and which *if* supplied, would make the Syllogism complete: as 'Z is X; therefore Z is Y;' [or 'the Elk has horns on the head; therefore it is a ruminant'] this *would* be syllogistic, *if* you were to prefix 'Every X is Y;' but whether this be the Premise *actually meant* to be understood, we can only judge from the sense of the words that are expressed, and from what we believe respecting the subject-matter in hand, and the design of the Speaker.

In a Syllogistic form, on the other hand, — whether Categorical, or Hypothetical, and whether at full length, or abridged into a Sorites — that which is *actually expressed* in the Premises is such that no one *can possibly suppose these true* (whatever be the *meaning of the Terms*, or whether we *understand* them or not) *without admitting the truth of the Conclusion* thence drawn.

§ 8. As for any arguments that are *not* expressed in a regular form, of course no precise rules can be laid down for reducing them into such a form; since any arguments to which such rules do apply, must evidently be, on that very ground, pronounced to be *already* syllogistic. Some general remarks, however, (drawn chiefly from what has been taught in the foregoing Lessons) may be practically serviceable in the operation of reducing arguments into regular form.

i. It has been remarked (in Lesson III. § 7) that men are very impatient of tedious prolixity in Reasoning; and that the utmost *brevity*, — the most *compressed* statement of argu-

mentation, — that is compatible with clearness, is always aimed at, and is, indeed, *conducive* to clearness. And hence (as was pointed out) a single sentence, — or even a word, — will often be a sufficient *hint* of an entire syllogism.

And it may be added, that such a sentence will sometimes be in the form, not of a *Proposition*, but of an *Exclamation*, — a *Question*, or a *Command*; and yet will be such as readily to suggest to the mind a *Proposition*.

For instance, in some of the examples lately given, one might say (in place of one of the *Propositions*) ‘Choose which you will of these two suppositions;’ or ‘Who can doubt that so and so follows?’

The message to Pilate from his wife* furnishes an instance of a single word (*‘just’*) suggesting a *Major-premise*, while the *Conclusion* is stated in the form of an *exhortation*: ‘have thou nothing to do with that *just* man.’ And the succeeding sentence must have been designed to convey a hint of *Arguments* for the proof of each of the *Premises* on which that *Conclusion* rested.

§ 9. ii. Remember that (as was formerly shown) we may change any proposition from *Affirmative* to *Negative*, or vice versa, without altering the sense: it being the same thing, for instance, to *affirm* of any one the term ‘not happy,’ or to deny ‘happy.’ So that an argument may be valid which might appear, at the first glance, to have ‘negative premises.’

But if the above experiment be tried in an argument that is *really* faulty on that ground, the only effect will be, to change one fallacy into another: as ‘A covetous man is not happy; this man is not covetous; therefore he is happy:’ here, if you take ‘happy’ as the predicate of the *Major*, you have negative-premises: if you take ‘not happy’ [or ‘unhappy’] as the term, you will have *four terms*.

On the other hand, 'no one is happy who is not content; no covetous man is content; therefore no covetous man is happy,' is a valid syllogism.

That the Conversion-by-negation [contra-position] of a Universal-affirmative, is *illative*, has been formerly explained. And it is very common, and often conducive to clearness, to state such a proposition (A) in the form of this its converse (E); as, for instance, instead of 'every motive that could have induced this man to act so and so, must have been purely benevolent,' to say 'no motive but pure benevolence could have induced him to act so.'

iii. Remember that one single sentence (as was formerly explained, Lesson IX. § 7) may imply several distinct propositions, according to the portions of it which you understand as the Subject, and as the Predicate. For instance, 'It is the duty of the Judge to decide for him who is in the right; this plaintiff is in the right; therefore it is the Judge's duty to decide for him,' might be understood as having *five terms*: but according to the *drift* of the first premise (considered as a part of this argument) what you are speaking of is, not, 'the duty of the Judge,' but 'the person who is in the right;' of whom you assert that 'he is fairly entitled to the Judge's decision on his side.' And if thus stated, the argument will be seen to be valid.

And here it may be remarked, that to state distinctly as Subject and Predicate, that which is *really spoken of*, and that which *is said of* it, will be often the best and most effectual exposure of a Fallacy; which will always be the more likely to escape detection, the more *oblique* and *involved* is the expression.

PART III.

SUPPLEMENT.

LESSON XV.

§ 1. THERE are some other technical-terms, which it is useful to be familiar with, and which we will therefore now proceed to treat of in a supplementary Lesson. They are such as are usually introduced in an earlier place, previously to the matter of the last five Lessons. But it has been thought better to postpone everything that was not indispensable for the right understanding of what has been said concerning the several forms of Syllogism.

A 'Common-term,' we have seen, is so called from its expressing what is *common* to several things; and is thence called also a 'Predicable,' inasmuch as it can be affirmatively-*predicated*, in the same sense ['univocally'] of certain other terms. It is evident that the word 'Predicable' is *relative*, i. e. denotes the *relation* in which some Term stands to some other, *of* which it can be predicated. And this relation is of different kinds: in other words, there are several *Classes* [or *Heads*] of Predicables.

When you are asked concerning any individual thing, '*what* is it?' the answer you would give, if strictly correct, would be what is technically called its 'Species:' as 'this is a *pen*;' 'that is a *man*;' 'this is a *circle*;' 'that is a *magnet*,' &c.

And the 'Species' of anything is usually described in technical language as expressing its 'whole Essence;' meaning, the whole of what *can* be expressed by a *Common-term*: for

it is plain, that, (as was formerly shown) it is only by taking an *inadequate* view of an 'Individual,' so as to *abstract* from it what is common to it with certain other individuals, disregarding all that distinguishes it from them (including its *actual existence* as a single object) — it is only then, I say, that we can obtain any Common-term.

§ 2. When the same question 'what is this?' is asked respecting a *Species*, the term by which you answer, is, that Predicable which is technically called the '*Genus*' of that Species. As, 'what is a *pen*?' answer 'an Instrument;' [a *kind*, or *species* of Instrument] 'what is a circle?' 'a curvilinear-plane-figure:' so also 'a magnet' would be said to be 'a Species [or kind] of Iron-ore,' &c.

When you are asked 'what kind of [or "what sort of"] instrument is a pen?' you would answer, one 'designed *for writing*;' this being what *characterizes* it, and distinguishes it from *other* instruments: 'what kind of animal is Man?' the answer would be 'rational;' as distinguishing the Species from other animals; 'what kind of plane-curvilinear-figure is a circle?' answer, 'one whose circumference is everywhere equidistant from the Centre;' which circumstance distinguishes it from an Ellipse: &c.

Such a Predicable, then, is technically called the '*Difference*;' [or, by the Latin name, '*Differentia*'] in popular language, frequently, the '*Characteristic*,' or the '*distinguishing point*.' And the '*Difference*' together with the '*Genus*,' are technically spoken of as '*constituting*' ['making up'] the '*Species*.'

Any quality [or 'attribute'] which *invariably and peculiarly* belongs to a certain Species, but which yet is not that which we fix on as characterizing the Species, is technically called a '*Property*;' [or '*Proprium*'] of that Species. Thus, '*risibility*' [or the faculty of laughter] is reckoned a '*Property*' of Man: one of the '*Properties*' of a Circle, is, that any angle drawn in a semi-circle, is a right-angle: &c.

The power of 'attracting iron' might be taken as the 'difference' [or 'characteristic'] of a magnet; and its 'Polarity' as a 'Property:' or again, this latter might be taken as its Difference, and ~~and the other, reckoned~~ among its Properties.

For it is evidently a mere question of convenience, *which*, in any such case, we fix on as the Characteristic of the Species we are contemplating. And either the one arrangement, or the other, may be the more suitable, according to the kind of pursuit we may be engaged in.

An Agriculturist, for instance, (see Lesson 8, § 5) would not characterize each kind of plants in the same way as a Botanist, or again, as a Florist: no more would a Builder, and a Geologist, and a Chemist, characterize in the same way the several kinds of stones.

§ 3. Any Predicable which belongs to *some* (and not to other) individuals of the same Species, [or which 'may be present or absent, the Species remaining the same'] is called an '*Accident*.'

And these are of two kinds. A 'Separable-accident' is one which may be *removed from the Individual;* [or, which may be absent or present, in that which we regard as one and the same individual] as, for instance (in an example formerly given) the 'Sun' is regarded as the same individual thing, whether 'rising,' or 'setting,' or in any other situation relatively to the spot we are in: 'rising,' therefore, or 'setting,' are separable accidents of the Sun.

So, also, to be in this or that *dress*, or *posture*, would be a separable accident of an individual man; but to be a *native of France*, or of England, or to be of a certain *character*, would be an 'inseparable accident.'

It is by inseparable-accidents that we commonly distinguish one Individual from another of the same species. And to enumerate such Accidents is called 'giving a *Description*.' (See § 10.)

Of course, it is only from *individuals* that any ‘Accident’ can be ‘inseparable;’ for anything that is inseparable from a *Species*, [or, which forms a part of the signification of a Term by which we denote a certain *Species*.] is not an Accident, but a Property.

§ 4. Some writers enumerate among Properties such Predicables as are *peculiar* but not *universal*; that is, which do not apply, each, to *every* individual of a certain species, but are *peculiar* to that species: as *Man alone* can be ‘virtuous,’ — can be a ‘philosopher,’ &c. which are attributes not belonging to man. But these are more correctly reckoned Accidents; though Accidents *peculiar* to the Species.

Some again speak of ‘Properties,’ which are *universal* but not *peculiar*; as ‘to breathe air’ belongs to the *whole* human species, but not to that species *alone*. Such a Predicable, however, is not, strictly speaking, a Property of the *Species* ‘Man,’ but a Property of a higher [more *comprehensive*] Species, ‘land-animal;’ which stands in the relation of ‘*Genus*’ to the species ‘Man.’ And it would be called, accordingly, in the language of some writers, a ‘*generic-property*’ of Man. A Property, strictly so called, of any Species under our consideration, would be called its ‘*specific-property*.’

Predicables, then, have been usually divided into these five heads: ‘Genus, Species, Difference, Property, and Accident.’

You are to remember, that, as every Predicable is so called *in relation to* the Terms of which it can be (affirmatively) predicated, so, each Common-term is to be regarded as belonging to this or that Head of Predicables, according to the Term to which it is, in each instance, applied, or which may be applied to it. Thus, the term ‘Iron-ore’ is a *Species* in respect of the term ‘Mineral,’ and a *Genus* in respect of the term ‘Magnet;’ and so, in other instances.

§ 5. When we ‘enumerate *distinctly*’ [or ‘separately’]

the several things that are signified by one Common-term, — as the several species included under some Genus — we are said to ‘*divide*’ that Common-term. Thus, ‘natural-productions’ are *divided* into ‘Animal, Vegetable, and Mineral;’ and each of these again may be subdivided into several ‘members;’ and so on.

Perhaps the word ‘*distinguish*,’ if it had been originally adopted, would have been preferable to ‘*divide*:’ (which, however, has been so long in general use in this sense, that it could not now be changed) because ‘*Division*’ being (in this sense) a *metaphorical* word, the ‘*Division*’ we are now speaking of is liable to be confounded with ‘*Division*’ in the other (which is the original and proper) sense of the word.

‘*Division*,’ in its primary sense, means separating from each other (either actually, or in enumeration) the parts of which some really-existing single object consists: as when you divide ‘an animal’ (that is, any single animal) into its several members; or again, into its ‘bones, muscles, nerves, blood-vessels,’ &c. And so, with any single Vegetable,’ &c.

Now each of the *parts* into which you thus ‘physically’ (as it is called) divide ‘an animal,’ is strictly and properly a ‘part,’ and is *really* less than the whole; for you could not say of a bone, for instance, or of a limb, that it is ‘an Animal.’

But when you ‘divide’ — in the secondary sense of the word’ (or, as it is called, ‘*metaphysically*’) — ‘Animal,’ that is the *Genus* ‘Animal,’ into Beast, Bird, Fish, Reptile, Insect, &c., each of the *parts* [or ‘members’] is metaphorically called a ‘part,’ and is, in another sense, *more* than the whole [the *Genus*] that is thus divided. For you may say of a Beast or Bird that it is an ‘Animal;’ and the term ‘Beast’ implies not only the term ‘Animal,’ but something more besides; namely, whatever ‘Difference’ *characterizes* ‘Beast’ and separates it from ‘Bird,’ ‘Fish,’ &c.

And so also any Singular-term [denoting one individual] implies not only the whole of what is understood by the Species it belongs to, but also more; namely, whatever distinguishes that single object from others of the same Species: as 'London' implies all that is denoted by the term 'City,' and also its distinct existence as an individual city.

§ 6. The parts ['members'] in that figurative sense with which we are now occupied, are each of them *less than the whole*, in another sense; that is, of *less comprehensive* signification. Thus, the Singular-term 'Romulus' embracing only an individual-king, is *less extensive* than the Species 'King;' and that, again, less extensive than the Genus 'Magistrate,' &c.

An 'Individual,' then, is so called from its being *incapable of being* (in this figurative sense) *divided*.

And though the two senses of the word 'Division' are easily distinguishable when explained, it is so commonly employed in each sense, that through inattention, confusion often ensues.

We speak as familiarly of the 'division' of Mankind into the several races of 'Europeans, Tartars, Hindoos, Negroes,' &c. as of the 'division' of the Earth into 'Europe, Asia, Africa,' &c., though 'the Earth' [or 'the World'] is a Singular-term, and denotes what we call *one Individual*. And it is plain we could not say of Europe, for instance, or of Asia, that it is 'a World.' But we can predicate 'Man' of every individual European, Hindoo, &c.

And here observe that there is a common colloquial incorrectness, (increasing the liability to confusion) in the use of the word 'division,' in each of these cases, to denote *one of the parts* into which the whole is divided. Thus, you will sometimes hear a person speak of Europe as one 'division' of the Earth; or of such and such a 'division' of an Army; meaning '*portion*.' And so, again, a person will sometimes speak of

‘animals that belong to the *feline division* of the Carnivora,’ [flesh-eating-animals] meaning, that portion of the class ‘Carnivora.’

§ 7. Division, in the sense in which we are here speaking of it, (the figurative) is evidently the reverse process to ‘Generalization.’ (See Lesson VII. § 4.) For as, in *generalizing*, you proceed by *laying aside the differences* between several things, and *abstracting* that which is *common* to them, so as to denote them, — all and each, — by one Common-term, so, in *dividing*, you proceed by *adding on the differences*, so as to distinguish each by a *separate* term.

When you take any Common-term to be divided and subdivided, for any purpose you have in hand, — as, the Term ‘Animal’ in a work on Zoology, — that Term is called your ‘*Summum* [highest] *genus*,’ the several Species into which you proceed to divide it, and which are afterwards divided each into other Species, are called, each of them, a ‘Subaltern’ Species or Genus; being, each, a Species in relation to that which can be predicated of it, and a Genus, in relation to the Species of which it can be predicated.

Thus ‘Iron-ore’ (in the example lately given) is a Subaltern Species, or Genus, in relation to ‘Mineral’ and to ‘Magnet,’ respectively.

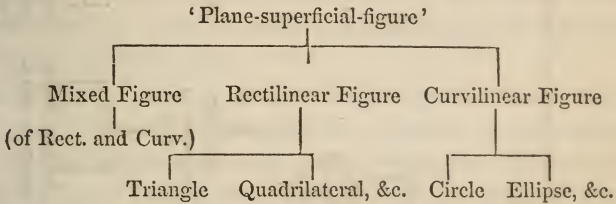
Any Species that is ‘not made a Genus of any lower Species’ in the division you happen to be engaged in, — or, in other words, which is not regarded as any further *divisible* except into *individuals*, — is usually called (by the Latin name) ‘*infima* Species;’ that is, the ‘*lowest* Species.’

‘*Proximum* Genus’ is a technical name often used to denote the ‘*Genus-next-above*’ [or ‘nearest,’] the Species you may be speaking of: as ‘Iron-ore’ would be the ‘*nearest*’ [proximum] *Genus*, of Magnet; and ‘Mineral’ would be its *more remote* Genus; that is, the Genus of *its* Genus.

§ 8. It is usual, when a long and complex course of Di-

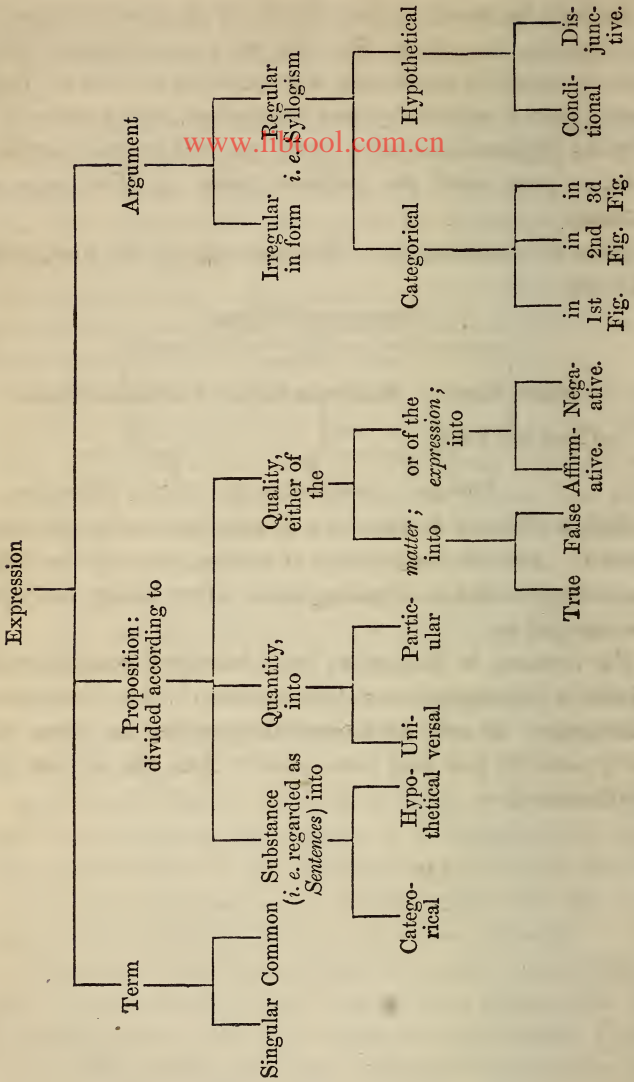
vision is to be stated, to draw it out, for the sake of clearness and brevity, in a form like that of a genealogical 'Tree.' And, by carefully examining any specimen of such a 'Tree,' (going over it repeatedly, and comparing each portion of it with the explanations above given) you will be able perfectly to fix in your mind the technical terms we have been explaining.

Take, for instance, as a 'Summum-genus,' the mathematical-term



Such a 'Tree of division' the Student may easily fill up for himself. And the employment of such a form will be found exceedingly useful in obtaining clear views in any study you are engaged in.

For instance, in the one we have been now occupied with, take for a Summum-Genus, 'Expression;' (*i. e.* 'expression-in-language' of any such mental-operation as those formerly noticed) you may then exhibit, thus, the division and subdivision of—



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§ 9. The rules for dividing correctly, are,

i. That the whole [or Genus-to-be-divided] be *exactly equal* to all the Parts [or Members] together. Nothing, therefore, must be *included*, of which the Genus can *not* be (affirmatively) predicated; — nothing *excluded*, of which it *can*.

ii. The Members [Parts] must be ‘contradistinguished,’ (or, as some writers express it, ‘opposed’) and not *include one another*; which they will do if you mix up together *two or more kinds of division*, made by introducing several *distinct classes of differences*.

Thus, if you were to divide ‘Books’ into ‘Ancient, Modern, Latin, French, English, Quarto, Octavo, Poems, Histories,’ &c., (whereof a ‘modern-book’ might be ‘French,’ or ‘English,’ — a ‘Poem,’ or a ‘History,’ &c., a ‘Quarto-book,’ ‘ancient’ or ‘modern,’ &c.) you would be mixing together four different kinds of divisions of Books; according to their Age, Language, Size, and Subject.

And there are what are called *Cross-divisions*; (because they run *across each other*, like vertical and horizontal sections of anything) being divisions formed according to ‘distinct classes of Differences:’ or, in other words, ‘on several distinct *principles of Division*.’

It is a useful practical rule, whenever you find a discussion of any subject very perplexing, and seemingly confused, to examine whether some ‘Cross-division’ has not crept in unobserved. For this is very apt to take place: (though, of course, such a *glaring* instance as that in the above example could not occur in practice) and there is no more fruitful source of indistinctness and confusion of thought.

When you have occasion to divide anything in several different ways, — that is, ‘on several principles-of-division,’ — you should take care to state distinctly *how many* divisions you are making, and on what principle each proceeds.

For instance, in the 'Tree' above given, it is stated, that 'Propositions' are divided in different ways, '*according to*' this and that, &c. And thus the perplexity of Cross-division is avoided.

§ 10. *iiily*. A Division should not be '*arbitrary*;' that is, its members should be distinguished from each other by 'Differences' (see above § 7) either expressed or readily understood; instead of being set apart from each other at random, or without any sufficient ground. For instance, if any one should divide 'coins' into 'gold-coins,' 'silver,' and 'copper,' the ground of this distinction would be intelligible; but if he should, in proceeding to subdivide silver-coin, distinguish as two branches, on the one side, 'shillings,' and on the other 'all silver-coins *except* shillings,' this would be an *arbitrary* Division. (See below, § 13.)

ivly. A Division should be *clearly arranged* as to its Members: that is, there should be as much subdivision as the occasion may require; and not a mere catalogue of the 'lowest-Species,' omitting *intermediate* classes ['*subaltern*'] between these and the 'highest genus:' nor again an intermixture of the 'subaltern,' and 'lowest-species,' so as to have, in any two branches of the division, Species contradistinguished and placed opposite, of which the one ought naturally to be placed *higher up* [nearer the 'Summum'] and the other *lower down* in the Tree.

For instance, to divide 'plane-figure' at once, into 'equilateral-triangles, squares, circles, ellipses,' &c., or again 'vegetable,' into 'Elms, pear-trees, turnips, mushrooms,' &c., or again to divide 'Animal' into 'Birds, Fishes, Reptiles, Horses, Lions,' &c. would be a transgression of this rule.

And observe that, (as was formerly remarked) although such *glaring* cases as are given by way of examples could not occur in practice, errors precisely corresponding to them may, and often do, occur; and produce much confusion of thought and error.

§ 11. When you state the *Genus* that any *Species* belongs to, together with the *Difference* that *constitutes* it [‘characterizes’ it, so as to separate it from the rest] you are said to give a ‘*Definition*’ of that species.

As, ‘the Magnet,’ (meaning, a *natural-magnet*) is defined ‘an iron-ore, having an attraction for iron:’ a ‘Triangle,’ a ‘three-sided figure:’ a ‘Proposition,’ ‘an indicative’ [affirming or denying ‘Sentence.’ ‘Iron-ore’ — ‘Figure’ — ‘Sentence,’ are evidently each the *Genus*, in these definitions respectively; and the other part, the *Difference*.

This is accounted the most perfect and proper kind of *Definition*. And the two portions of which it consists — the ‘*Genus*’ and the ‘*Difference*,’ are called technically the ‘*metaphysical parts*:’ as not being two real parts into which any individual-object can be *actually* divided, but only different views taken [or notions formed] of a *Class* of objects, by our mind.

What is called a ‘*physical-definition*,’ is made by an enumeration of such parts of some object as are *actually separable*; such as are the *Subject*, *Predicate*, and *Copula* of a *Proposition*; — the root, trunk, branches, bark, &c. of a *Tree*, &c.

A *Definition* which proceeds by enumerating several *Properties*, — or, in the case of an individual — *Inseparable-accidents*, is called a ‘*Description*;’ or, according to some writers, an ‘*Accidental-Definition*.’

It is evident that an *Individual* can be defined *only* by a *Description*; that is, by stating the *Species* and (not ‘*Properties*;’ since *they* belong to *all* the individuals of the *Species*; but) the *Inseparable-accidents*. As ‘Alexander the Great’ would be described as ‘a ^{Sp.} King’ ‘of Macedon, who subdued Persia;’ ‘Paris,’ ‘The capital. . . ^{Sp.} City. . . of France.’

§ 12. *Definitions* have also been distinguished — according

to the *object designed to be effected* by each, — into ‘Nominal’ and ‘Real.’

A Nominal-definition is usually described as being one which explains merely the *meaning of the word* defined; and a Real-definition, that which explains the *nature of the thing* signified by that word.

Now it may naturally occur to you to ask, are not these (at least, in defining a Common-term) the same thing? Since the object of our thoughts, when we employ a Common-term, is, (see above, Lesson VII. § 7,) — not any such *really-existing-thing* as those imaginary abstract-ideas some speak of, but, — the *Term* itself, regarded as a ‘*Sign*’ &c., as was formerly explained.

And in many cases, accordingly, the ‘Nominal’ and the ‘Real’ definition do coincide. But by a *Nominal*-definition is meant, (strictly speaking) one which expresses exactly what the *Name* itself conveys to *every-one* who understands that name: and *nothing beyond* this. And any Definition may be called (in a greater or less degree) a *Real*-definition which explains anything — more or less — *beyond* what is necessarily implied in the Name itself.

Thus, any one who gives such an account of some one of the ‘metals,’ for instance, or of the ‘Sun’ as modern researches would enable him to give, would be advancing beyond a mere Nominal-definition; since, in this latter, — the mere explanation of the words ‘iron’ or ‘sun’ — we, and our ancestors 500 years ago, would coincide; since both they and we use those words in the same sense; though they knew much less than we do, of the nature of those things.

In the case of strictly-*scientific*-terms, the Nominal and the Real-definition may be regarded as coinciding. Thus, the mathematical-definition of a circle, may be considered as strictly ‘Nominal,’ inasmuch as it denotes precisely the same as the *word* ‘Circle,’ and nothing beyond; every name being (in

Mathematics) regarded as merely the 'definition abridged. And again, it may be regarded as so far a '*Real-definition*,' that it conveys all that *can belong* to the thing spoken of, since there can be *no* property of a Circle that is *not* in fact *implied* in the definition of a Circle; or, which is the same thing, in the name, 'Circle.' It is, therefore, *as much of a* real-definition as *can*, conceivably, be given, of a Circle.

And, so with other scientific-terms. In respect of these, in short, the *meaning of the name*, and the *nature of the thing*, are one and the *same*.

And accordingly, in Mathematics, the Definitions are the *Principles* from which our reasonings set out.

On the other hand, since a 'diamond' or a 'planet' or 'a sheep' &c. have, each of them (that is, each individual of any such Species) a real, actual existence in nature, independently of our thoughts, any of these may possess attributes not implied in the meaning we attach to the name; and which are to be discovered by observations and experiments. Any explanation, however, of the nature of any object *beyond* what is implied in the signification of its name, is not usually called a 'Definition;' but the word 'Description' is often used to *denote* such an explanation.

§ 13. What we are concerned with at present is 'Nominal-definition;' it being important, with a view to *Reasoning*, to ascertain the exact sense in which each Term is employed, and especially, to guard against any ambiguity in the *Middle-term* of any argument.

The Rules [or cautions] commonly laid down in various treatises for framing a Definition, are very obvious: namely,

i. That a Definition should be '*adequate*;' i. e. comprehending neither more, nor less, than the Term to be defined. For instance if, in a definition of 'Money' you should specify its being 'made of metal,' that would be too *narrow*, as excluding the *shells* used as money in some parts of Africa: if,

again, you would define it as an ‘article of value given in exchange for something else,’ that would be too *wide*, as it would include things exchanged by *barter*; as when a shoemaker, who wants coals, makes an exchange with a collier, who wants shoes.*

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And observe, that such a defect in a Definition cannot be remedied by making an *arbitrary exception*; (such as was alluded to above, § 10,) as if, for instance, (and it is an instance which actually occurred,) a person should give such a Definition of ‘Capital’ as should include (which he did not mean to do) ‘Land;’ and should then propose to remedy this by defining ‘Capital,’ any ‘property of such and such a description, *except Land.*’

ii. The other caution usually given, is, that a definition should be *clearer* than the Term defined: clearer, that is, to *the persons* you are speaking to: since that may be obscure to one man, which is intelligible to another.

And this rule evidently includes (what some give as a third rule) a caution against excessive prolixity, excessive brevity, and ambiguous language.

* See Lesson I. on *Money Matters.*

PART IV.

FALLACIES.

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LESSON XVI.

§ 1. ALTHOUGH sundry kinds of Fallacies have been from time to time noticed in the foregoing Lessons, it will be worth while to make some further observations thereon.

By a 'Fallacy' is commonly meant 'any *deceptive* argument or apparent-argument, whereby a man is himself convinced, — or endeavors to convince others — of something which is not really proved.'

Fallacies have been usually divided into two Classes; those in the *form*, and those in the *matter*: though the difference has not been in general clearly explained.

The clearest way of proceeding will be to consider a 'Fallacy-in-form' as one in which the Conclusion does not really *follow* from the Premises; and a 'Fallacy-in-matter' as one where the Conclusion does follow from the Premises, though there will be still something faulty in the procedure.

In this latter case (where the Conclusion does follow) one may either object to the *Premises* as being 'unduly assumed,' or to the *Conclusion* as *irrelevant*; that is, different, in some way, from what *ought* to have been proved, — namely, from what was originally maintained, — from what had been undertaken to be established, — from what the particular occasion requires, &c.

These that have been mentioned (as the 'Fallacies-in-form,' and 'in matter') must evidently include *every possible* Fallacy; since whatever objection can be brought against any ar-

gument or apparent-argument, must be an objection either against the *Conclusion*, or against the *Premises*, or against the *connexion* between the premises and conclusion; that is, against the *conclusiveness* of the apparent argument.

§ 2. ‘Fallacies-in-form,’ [in which the Conclusion does not really follow from the Premises] are such as we have already given examples of, as violations of the rules above-explained: such as ‘undistributed-middle,’ — ‘illicit-process,’ &c.

Among others was noticed the fault of an ‘equivocal Middle-term,’ taken in one sense in the one premise, and in a different sense in the other. And since this Fallacy turns on the *meaning of words*, and not on the mere form in which the argument is expressed, some may be disposed to rank it rather under the Head of ‘Fallacies-in-matter.’

The most convenient course, however, will be to keep to the division already laid down; and, accordingly, to reckon the Fallacy of ‘equivocal-middle’ along with all the others in which the Conclusion *does not follow* from the Premises.

And in truth the technical rules do apply to this, — the ‘Fallacy of equivocation’ — *as soon as* it is ascertained that the Middle-term *is* employed in two different senses, and consequently is, in reality, not one, but *two* terms.

But of course the rules of Syllogism do not, alone, enable us to ascertain the meaning or meanings of any Term. *That* must be judged of from our knowledge of the subject-matter, — from the *context*, [or general *drift* of the discourse] — and often from what we know or believe concerning the writer or speaker.

And the same may be said, in many cases, in respect of not only the *signification*, but also the *distribution* or non-distribution, of a Term; on which depend the Fallacies of ‘undistributed-middle’ and ‘illicit-process.’ For when a Proposition is expressed *indefinitely* (as, ‘Man invents arts;’ ‘Man is mortal;’) we are left to judge from the subject-matter,

&c., whether it is to be understood as Universal or as Particular.

And again, the sign 'all,' which, in an Affirmative proposition, denotes Universality) in a Negative-proposition, *generally*, though *not invariably*, indicates a *Particular*; that is, usually, though not always, the negation is understood as a *negation of universality*. For instance, of these two propositions, 'all they that trust in him shall not be confounded,' and 'we shall not all sleep,' the one would be understood as Universal, and the other as Particular.

Observe, also, that the sign 'all' is sometimes understood as meaning 'all-collectively;' sometimes 'every-one, *separately*.' As 'all the apples on that tree are enough to fill a bushel:' i. e. all *together*: and 'they are all ripe;' i. e. *every one*.

§ 3. You are to observe that we cannot always decide absolutely as to *which* Class we should pronounce some particular fallacy to fall under, those in 'form,' or those in 'matter:' because it will often happen, when an argument is stated (which is usually the case) as an *Enthymeme*, that the *suppressed* premise may be *either* one which is *false*, but which *would*, if granted, make the Syllogism complete: or else one which is *true*, but which would *not* complete a regular Syllogism. Now, on the former supposition, the Fallacy would be in the 'matter;' on the other supposition, it would be in the 'form.'

For instance, in this Enthymeme, 'The Country is distressed; therefore it is misgoverned,' we cannot decide absolutely whether the premise meant to be understood, is 'every Country that is distressed is misgoverned;' which would make the *syllogism* correct, but would not be admitted as true; or, 'every Country that is misgoverned is distressed;' which would leave the Middle-term undistributed.

And again, when both Premises are expressed, it will often happen (as in an example formerly given) that we have the

alternative of either denying the *truth* of one of the premises, — supposing the Middle-term used in the *same* sense in both, — or denying the *conclusiveness* of the argument, supposing the Middle-term used in *each* premise in such a *sense as to make that premise true*. If by ‘*contrary to experience*’ you mean *two different* things, in the two premises, respectively, then, each is, by itself, true, but they prove nothing: if you mean by it the *same* in both premises, then, one of them is untrue.

§ 4. But observe, that when you mean to charge any argument with the fault of ‘equivocal-middle,’ it is not enough to say that the Middle-term is a word or phrase which *admits* of more than one meaning; (for there are few that do not) but you must show, that in order for each premise to be admitted, the Term in question must be understood in one sense (pointing out *what* that sense is) in one of the premises, and in another sense, in the other.

And if any one speaks contemptuously of ‘over-exactness’ in fixing the precise sense in which some term is used, — of attending to minute and subtle distinctions, &c., you may reply that these *minute* distinctions are exactly those which call for careful attention; since it is *only* through the neglect of *these* that Fallacies ever escape detection.

For a very *glaring* and palpable equivocation could never mislead any one. To argue that ‘feathers dispel darkness, because they are *light*,’ or that ‘this man is agreeable, because he is *riding*, and *riding* is agreeable,’ is an equivocation which could never be employed but in jest. And yet, however slight in any case may be the distinction between the two senses of a Middle-term in the two premises, the apparent-argument will be equally inconclusive; though its fallaciousness will be more likely to escape notice.

Even so, it is for want of attention to *minute* points that houses are robbed, or set on fire. Burglars do not in general

come and batter down the front-door; but climb in at some window whose fastenings have been neglected. And an incendiary, or a careless servant, does not kindle a tar-barrel in the middle of a room, but leaves a lighted turf, or a candle-snuff, in the thatch, or in a heap of shavings.

In many cases, it is a good maxim, to 'take care of little things, and great ones will take care of themselves.'

§ 5. Of the Fallacies of 'undistributed-middle' and of 'illicit-process,' &c. (which have been formerly explained) no more need be said in this place.

But in respect of the 'Fallacy of equivocation,' it is worth while to notice briefly some of the different modes in which a word or phrase comes to be employed in several senses.

i. That may be reckoned an *accidental* equivocation, in which there is no *perceived* connexion between the different senses. Thus 'pen' is an instrument for writing, or an enclosure for cattle; 'turtle' a kind of bird, and a kind of tortoise; and 'case' is used (as was noticed in Lesson VII. § 3,) in three senses. Of this kind is the ambiguity of several proper-names (as John, Thomas, &c.) also noticed in the same place.

ii. There are several words which are ambiguous from being employed in what is technically called a '*first intention*' and a '*second intention*.'

A '*Second-intention*' of any word is that signification which it bears in reference to some particular art, science, study, pursuit, or system; and its *first-intention* is its ordinary colloquial sense when there is no such reference.

Thus, the ordinary signification of the words 'ship,' 'beast,' and 'bird,' every one knows; but sailors *limit* the word 'ship' to vessels of a certain construction; 'beast' is the word applied by farmers in some parts, especially, and exclusively, to the '*ox-tribe*;' and 'bird' is used in a '*Second-intention*' to signify 'partridge.'

§ 6. It is evident that a word may have several different 'Second-intentions,' according to the several systems, &c. into which it may be introduced as one of the technical-terms.

Thus 'line' is technically employed in Geometry, in Geography, in the Military-art, in the art of Angling, in Printing, &c.

The word '*Species*' is employed by *Naturalists* in a certain 'Second-intention' when they are speaking of organized-beings.

The ordinary sense ['first-intention'] of the word, is that which has been explained in these Lessons: but *Naturalists* restrict it to such a class of animals or plants as are supposed to have *descended from a common stock*.

In ordinary discourse any one would say that a 'Greyhound' or a 'Mastiff' is a kind ['Species'] of dog: but a *Zoologist* would say (in technical language) that these are only '*Varieties*,' and that all dogs are of one *Species*. So also, in common discourse any one would speak of 'Cauliflower,' and several others, as 'kinds' of 'Cabbage:' but the *Botanist* reckons all these as 'varieties' of the single *Species*, Cabbage.

Those, in short, which are (in the technical language of these Lessons) the 'lowest-Species' that the *Naturalist* treats of, are called by him, not *Species*, but *Varieties*; and again those classes *under* which his *Species* come, he never calls *Species* of a higher Genus, but *Genera*, *Orders*, &c.

Much confusion of thought has often arisen from overlooking this technical-sense ['second intention'] of the word '*Species*.'

In some instances the 'second-intention' [or philosophical sense] of a word, is, — instead of being more *limited*, — more *extensive* than the 'first-intention' [or, popular sense.]

Thus 'affection,' which is limited, in popular use, to 'love,' is employed by philosophers as comprehending both 'benevo-

lent and malevolent affections.' So also 'charity,' which is often, in popular use, confined to 'almsgiving' — 'flower,' to such flowers as have 'conspicuous petals,' — and 'fruit' to such fruits as are 'eatable,' have each a technical second-intention, which is more extensive.

§ 7. iii. A word will often be employed to denote (in different senses) to things which have a 'resemblance,' or 'analogy' to each other.

A 'blade,' of *grass*, or of a *sword*, have the same name from the direct resemblance between the things themselves. But instances of this kind are far less common than those in which the same name is applied to two things, not from their being *themselves* similar, but from their having *similar relations* to certain other things. And this is what is called 'Analogy.'

Thus, the 'sweetness' of a 'sound' and of a 'taste' can have no *resemblance*: but the word is applied to both, by *analogy*, because as a 'sweet' taste *gratifies* the palate, so does a 'sweet' sound, the ear.

Thus also we speak in the 'secondary' [or 'transferred,' or 'analogical'] sense of the 'hands' of a Clock — the 'legs' of a Table, — the 'foot' of a Mountain, — the 'mouth' of a River, &c. which words in their 'primary' ['proper,' or original] sense, denote the 'hands' of a man, — the 'legs, foot, and mouth' of animals; from the *similar relations* in which they stand to other things, respectively, in reference to use, position, action, &c.

The words pertaining to *Mind* may in general be traced up, as borrowed (which no doubt they all were, originally) by Analogy, from those pertaining to *Matter*: though in many cases the primary sense has become obsolete.

Thus, 'edify*' in its primary sense of 'build up†' is dis-

* See Peter, i. ch. 2, v. 5.

† See JOHNSON'S *Dictionary*.

used, and the origin of it often forgotten; although the substantive 'edifice' remains in common use in a corresponding sense.

When, however, we speak of 'weighing' the reasons on both sides, — of 'seeing,' or 'feeling' the force of an argument, — 'imprinting' any thing on the memory, &c. we are aware of these words being used analogically.

It is an analogical sense that 'Division,' 'Part,' and several other technical terms have been employed in these Lessons.

§ 8. There are two kinds of error, each very common — which lead to confusion of thought in our use of analogical words:

i. The error of supposing the *things themselves* to be similar, from their having *similar relations* to other things.

ii. The still commoner error of supposing the Analogy to *extend further* than it does; [or, to be more *complete* than it really is;] from not considering *in what* the Analogy in each case consists.

For instance, the 'Servants' that we read of in the Bible, and in other translations of ancient books, are so called by Analogy to servants among us: and that Analogy consists in the offices which a 'servant' performs, in waiting on his master, and doing his bidding. It is in this respect that the one description of 'servant' 'corresponds' ['answers'] to the other. And hence some persons have been led to apply all that is said in Scripture respecting Masters and *Servants*, to these times, and this Country: forgetting that the Analogy is not *complete*, and extends no further than the point above-mentioned. For the ancient 'servants,' (except when expressly spoken of as *hired-servants*) were *Slaves*; a part of the Master's *possessions*.

§ 9. iv. A word will often (in different senses) be applied to two things, connected, not by Resemblance or Analogy, but

by the circumstance of *time or place*, as being ‘Cause and Effect,’ or ‘Part and Whole,’ &c.

Thus, when we say, ‘the fire gives *heat*,’ and ‘I feel *heat*,’ it is plain that the ‘*heat*’ of the fire is not a sensation in the fire, and cannot resemble or be analogous to a sensation; but is the *cause* of the ‘sensation’ of ‘*heat*’ in me.

This kind of transfer of a word from its ‘primary’ to a Secondary sense, is called ‘*Metonymy*.’ It is thus we speak of a ‘*Crown*,’ or a ‘*Throne*’ for ‘regal-power’ ‘the sword,’ for ‘war;’ a ‘*voice*,’ for a ‘*declaration*;’ and a man is said to be ‘*worth*’ such and such a sum of money; meaning that he *possesses property that is worth* so much, &c.

Much confusion of thought, and many Fallacies, have arisen from inattention to this source of ambiguity.* It seems strange, but it is quite true, that things have often been in this way confounded together, which have not the least resemblance or analogy to each other.

A remarkable instance of this is to be found in the ‘primary’ and ‘secondary’ uses of such words as ‘*same*’ — ‘*one*’ — ‘*identical*,’ &c. In the primary sense they imply ‘*numerical unity*,’ [individuality] and do *not* imply, necessarily, any *similarity*. For when we say of any grown man that he is the ‘*same person*’ whom we remember to have seen when an infant, this is, not from his now *resembling* an infant. *Another* infant, now, would be much more like what he then was.

In the secondary sense, on the other hand, these words imply *nothing but* exact — or nearly exact — *similarity*. For instance, if a man finds in a mine some metal which turns out to be gold with a small alloy of copper, he would say, it is the *same* metal of which coins, or of which watches are made:

* The ambiguity of the word ‘*Division*,’ when used to signify one of the *portions* into which anything is divided (See Lesson XV., § 6,) is of this kind.

not meaning, of course, that one single piece of metal can be in two places at once; but only, that there is a perfect similarity.

So, also, several persons are said to be in *one and the same* posture, when they are all *placed alike*; and to have 'one and the same' *idea* in their minds, when they are all thinking alike. (See Lesson VII. § 8.)

§ 10. Now the mode in which these words have been thus transferred (to the utter bewilderment of the inattentive) is this: *one single* word, — such as 'gold,' or 'man,' or 'triangle,' or 'fever,' — will equally well apply to any one piece of gold, or individual man, or triangle, or fever, &c. And so also will *one single Definition* [or Description] of a triangle: and hence the things themselves come to be called '*one*,' — — the '*same*,' '*identical*,' &c., because all the individuals thus named or described, are (according to the modern phrase, which is very correct) '*of the same description*.'

In the transferred [secondary] sense, accordingly, you may observe, that things are often spoken of as '*very nearly the same, but not quite*;' there being some small difference between them. In the 'primary' sense on the other hand, '*unity*,' — '*identity*' &c. do not admit of *degrees*. For instance, 'This man' either *is* or *is not* the same person whom I saw formerly when he was an infant or child; and that, whether he differ much or little, from what he then was.

But what helps to introduce confusion, is, that '*identity*' in the primary sense, is in many cases, *judged* of, and *inferred*, from similarity. For instance, a man may be ready to swear to some picture as *the one* which he had lost, *from* his perceiving a perfect similarity; and yet it might, perhaps, be afterwards proved to his satisfaction, that it was *not* that *one*, but an exact copy.

§ 11. Besides the causes of ambiguity that have been just mentioned, it is to be observed that there are several words

which it is customary to employ *elliptically*; that is, in combination with something *understood*; and that men are apt to forget *when* it is that such a word is used with, and when without, this ellipsis. www.libtool.com.cn

For instance, we speak of such a one *possessing* £10,000; (though, perhaps, he may not *actually* possess ten pounds in money) meaning, that his whole property *would exchange for* that sum. And, ordinarily, such a mode of speaking leads to no practical inconvenience. But there is no doubt that it has contributed to foster that enormous practical error known among Political Economists* as the 'Mercantile System.'

So also we speak commonly of 'the *example* of such a one's punishment serving to *deter* others from crime.' And usually, no misapprehension results from this, which is, in truth, an *elliptical* expression. But sometimes sophistical reasoners take advantage of it, and men who are not clear-headed are led into confusion of thought. Strictly speaking, what deters a man from crime, in such cases as those alluded to, is, the *apprehension* of *himself* suffering punishment. *That apprehension* may be excited by the *example* of another's being punished; or it may be excited *without* that example, if punishment be denounced, and there is good reason to expect that the threat will not be an empty one. And on the other hand, the example of others suffering punishment does not deter any one, if it *fail* to excite this apprehension for himself; if, for instance, he consider himself as an *exempt* person as is the case with a despot in barbarian countries, or with a madman who expects to be acquitted on the plea of insanity.

So also, when any one speaks of being in distress from being 'out of *work*,' and of his 'seeking for *employment*,' we

* See Senior's and Whately's Lectures on Political Economy.

understand him to mean 'work by which he can *earn* a *subsistence*.' But great errors have often been committed by writers who have lost sight of the elliptical character of the expression, till they have practically forgotten in their reasonings that the thing really desired is, not the *labor*, but the *gain*.

To this head may, perhaps, be referred the ambiguity (which has been a source of endless confusion) formerly noticed (Lesson II.,) of such words as 'because,' &c., and again 'therefore,' and several others.

When, in *accounting* for the wetness which I perceive on the ground, I say, 'the ground is wet *because* it has rained,' I mean (speaking at full length) to assign the 'rain' as the 'cause of the *wetness*:' when, again, I *infer* that 'it has rained *because* the ground is wet' the meaning of the word 'because' is, if fully expressed, that I assign the wetness as the 'cause of my *belief*.'

The same may be said of such words as 'may,' 'possible,' &c., and again, 'must,' 'necessary,' &c. (See Lesson X., § 8.)

When I say of a man forcibly carried off by enemies, 'he *must* go wherever they conduct him,' I mean, 'he cannot avoid *going*:' when I say that on his release 'he *must* eagerly return to his home,' I mean that 'I cannot avoid *drawing that conclusion*.'

So also, if I say of a man in health and at liberty, 'he *may* go out or stay within,' I mean that neither going nor staying is *unavoidable* to him: but when I say of a man who is sick, that 'he *may* recover,' I do not mean (as in the former case) that 'this depends on *his choice*,' but that 'I am not led *unavoidably* to the *conclusion*, that he will recover, or that he will not recover.'

§ 12. There are also other ways in which a Term may be so modified in its sense as not to have precisely the same meaning in both premises.

For you are to remember that even any one word which is not itself one of the Terms, but only a small portion of one of them, may be so understood as to affect the sense of the whole Term. Even a difference in the *position* of a word in respect of the rest, may greatly alter the sense.

For instance, 'He who believes his opinion always right, deems himself infallible; you always believe your opinion right; therefore you deem yourself infallible.' Here, the premises are both true; for any opinion which you did *not* believe to be right, would plainly not be *your* opinion; and it would be difficult to deny that a man considers himself infallible, who should believe that his opinion is invariably right. But the different situation of the word 'always' gives a different sense to the Middle-term in the two premises. To 'think your opinion always right,' means, to have a *general* conviction respecting the *whole of your opinions collectively*, that none of them is ever wrong: but 'always to think your opinion right,' means, 'to have a *particular* conviction, on each occasion, *separately*, that your opinion, on that occasion, is right.'

A Fallacy of this character, — that is, where the Middle-term is taken *collectively* in one premise, and *dividedly* in the other, — is technically called the 'Fallacy-of-*division*,' or of '*composition*;' according as the Middle-term is understood in a *collective-sense* in the *Major*-premise, and in a *divided-sense* in the *Minor*; or vice versa.

A glaring example would be 'all the apples from that tree are worth 20s.; this is an apple from that tree; therefore it is worth 20s.'

Such a fallacy has helped to give plausibility to what has been called 'the doctrine of *necessity*.' For instance, 'He who necessarily goes or stays' (in reality, 'who necessarily goes, or again, who necessarily stays') is not a free-agent; you necessarily go or stay; (that is, — taking these two things in

connection, — you ‘necessarily take the alternative’) ‘therefore you are not a free agent.’

§ 13. The way in which this Fallacy usually occurs in practice, is, when something is proved *separately* concerning each one of several things belonging to some class; and then this is considered as having been proved concerning the whole class *collectively*; that is, concerning those things taken in *connexion with each other*.

A man, for instance, swallows a certain drug, and is seized with alarming symptoms: you show that these symptoms may possibly have arisen from other causes: the same drug is swallowed by another man, who is seized with like symptoms; and you show that other causes may have produced the symptoms in him: the same may be shown, suppose, in each separate case (considered each by itself) out of 100; and then you assume that it has been proved that all the men who have taken the drug and exhibited like symptoms may have been affected, all of them, by natural causes.

This kind of argument has been employed to refute the accounts given by the Evangelists of the miracles they record; that is, explaining *some one* of the recorded cures — *considered by itself*, as an accident; and then the same with another, and another; and so on.

Sometimes again a Middle-term is ambiguous from being understood in one premise in *conjunction with certain circumstances* actually pertaining to it, at a particular time, &c., and, in the other premise, *independently of* those circumstances. A glaring example would be, if any one should pretend to prove, (which would of course be only as a jest,) that because what you have on your back was the covering of a sheep, therefore the sheep wore a coat of blue or red broadcloth. This is called, in the technical language of the Latin treatises, ‘*Fallacia accidentis*.’

It is evident that when any ambiguity, of whatever kind, in

a Middle-term, is suspected, the natural course is to seek for, or to demand, a *Definition* of it. Only, remember that it would be impertinent to insist, in every such case, on a *complete* definition, beyond what is requisite for removing any doubt as to the argument before us; i. e. as to the Middle-term's being employed in the same sense in both premises.

For instance, if there were a discussion respecting a person's having *swallowed* 'poison,' and some ambiguity connected with the reasoning, were suspected in the employment of that word, it would not be necessary to give a definition such as should extend to 'every poison,' including such as savages use for their *arrows*: because the supposed question relates only to poisons taken into the stomach.

§ 14. The Fallacies-in-matter are divided (as has been said) into two kinds: '*undue-assumption-of-a-premise*,' and '*irrelevant-conclusion*.'

It is to be observed that no one is to be charged with *fallacious*-proceeding merely because he argues from Premises which we deny; or because the Conclusion he draws is not the one we would wish to see proved. For neither of these implies any *deception*.

One man may assume facts or principles which another will not admit; but provided he does this openly and knowingly, there is no Fallacy in the case.

Or again, we may, (suppose,) wish to have it pointed out and proved *who* is the perpetrator of such and such a crime; but if the accused party prove that it was not *he*, we have no right to demand more.

But if any one is convinced by an argument based on some Premise which he would *not* have admitted if *distinctly put before him*, there is in this case a Fallacy.

And so there is, if any one is satisfied, or endeavors to satisfy others, by proving some conclusion different from what he had *originally maintained*; or from what was originally

proposed as the Question: or, (which comes to the same) which is the contradictory, not, of what he had *originally denied*, but of some different proposition. This is properly the Fallacy of 'irrelevant-conclusion.'

§ 15. Under the former of these two classes of Fallacy comes what is, technically, called 'begging the Question;' that is, assuming as a Premise the very Proposition which, — in other words, — is proved as the Conclusion. The way in which this is usually done is that which is commonly called 'arguing in a circle;' that is, proving some conclusion by means of a Premise which is itself deduced — more or less remotely — from premises deduced from that very Conclusion, assumed as a Premise. As if you were to prove that A is B, because C is D; and that C is D, because E is F; and so on, till at length you come to infer that Y is Z *because A is B*.

Of course the *narrower* the Circle, the less likely it is to escape the detection, either of the reasoner himself, (for men often deceive *themselves* in this way) or of his hearers. When there is a long circuit of many intervening propositions before you come back to the original Conclusion, it will often not be perceived that the arguments really do proceed in a 'Circle.' Just as when any one is advancing in a *straight line* (as we are accustomed to call it) along a plain on this Earth's surface, it escapes our notice that we are really moving along the *circumference of a Circle*, (since the earth is a globe) and that if we could go on without interruption in the same line, we should at length arrive at the very spot we set out from. But this we readily perceive, when we are walking round a small hill.

For instance, if any one argues that you ought to submit to the guidance of himself, or his leader, or his party, &c. because these maintain what is right; and then argues that what is so maintained is right because it is maintained by persons whom

you ought to submit to; and that these are, himself and his party; or again, if any one maintains that so and so must be a thing morally wrong, because it is prohibited in the *moral portion* of the Mosaic law, and then, that the prohibition of it does form a part of the *moral* (not the ceremonial, or the civil) portion of that Law, *because* it is a thing *morally wrong*, — either of these would be too narrow a Circle to escape detection, unless several intermediate steps were interposed. And if the *form of expression* of each Proposition be *varied* every time it recurs, — the sense of it remaining the same, — this will greatly aid the deception.

Of course, the way to expose this Fallacy, is to reverse this procedure: to narrow the Circle by cutting off the intermediate steps; and to exhibit the same proposition, — when it comes round the second time, — in the same words.

§ 16. In all cases, an *unduly-assumed* premise (i. e. one which would not be admitted if clearly stated, and deliberately considered) is the more likely to escape detection, the *longer* the train of argument is, and the greater the number of well-established propositions introduced. When this artifice is employed, a dull or thoughtless hearer is apt to say, ‘there is *much truth* in what has been urged.’ And so, perhaps, there is. There may have been introduced, in the course of the reasoning, twenty propositions, all of them true, *except one*: the denial of which *one* would nullify the whole train of arguments. A chain which has *only one* faulty link, is not indeed the stronger, but is the more likely to *appear* strong, by the addition of a great many sound links.

It also contributes to this kind of deception, to *suppress* the unduly-assumed premise; stating the argument as an Enthymeme expressing the *true* premise, and giving proofs of the truth of that, as if everything turned on the establishment of *that* premise.

So also, in Fallacies of the other class, — the ‘irrelevant-

conclusion' — it often aids the deception, to *suppress* the *Conclusion* itself: bringing forward arguments which do indeed go to prove a Conclusion, somewhat *like* the one required, though not the very one: and then (instead of expressly stating the conclusion that really does follow, or again, that which had been originally maintained) a man will say 'the inference from this is plain: or 'I have thus established my point;' or the position of our opponents is thus completely overthrown,' &c.

§ 17. The two kinds of 'Fallacy-in-Matter,' are very commonly combined in one course of argument: that is, a false or a doubtful premise will be assumed as having been proved by arguments which go to prove, not *that*, but *another* proposition, somewhat like it.

For instance, instead of proving that 'this Prisoner has committed an atrocious fraud,' you prove that 'the fraud he is accused of is atrocious:' instead of proving (as in the well-known tale of Cyrus and the two coats) that 'the taller boy had a right to force the other boy to exchange coats with him,' you prove that 'the exchange would have been advantageous to both:' instead of proving that 'a man has not the right to educate his children or to dispose of his property, in the way he thinks best,' you show that the way in which he educates his children, or disposes of the property, is not really the best: instead of proving that 'the poor ought to be relieved in this way rather than in that,' you prove that the poor ought to be relieved;' instead of proving that 'an irrational-agent — whether a brute or a madman — can never be deterred from any act by apprehension of punishment,' (as for instance a dog, from sheep-biting, by fear of being beaten) you prove that 'the beating of one dog does not operate as an *example* to other dogs,' &c., and then you proceed to assume as premises, conclusions different from what have really been established.

The chief difficulty in detecting any Fallacy of whatever kind, in our own reasonings, or another's, arises (as was formerly remarked) from its being usually stated in an oblique, indirect, and somewhat inverted and perplexed form of expression; and more especially when *diluted*, as it were, with a multitude of words: just as poison is more likely to escape detection when disguised and diluted by being mixed up with a quantity of innocent ingredients, than when presented in a small concentrated dose.

The validity, or the fallaciousness, of any course of reasoning, will then be made the most evident, when examined according to the foregoing rules, after laying aside all redundant words put in for mere embellishment of style, and stating the whole in the most simple language, and in regular order, as briefly as is compatible with perfect clearness.

PART V.

DIFFERENT KINDS OF ARGUMENTS.

LESSON XVII.

§ 1. IT remains to make a few remarks on the '*finding*' [according to the Latin writers, *Invention*] of arguments; the foregoing Lessons relating only to the rules for *passing judgment* on arguments.

It is to be observed, in the first place, that the words '*infer*' and '*prove*,' (which we have frequently had occasion to employ) denote, not, *two different things*, but the same thing considered in *two different points of view*. He who '*infers*' (correctly) *proves*; and he who '*proves*' *infers*: and yet the two expressions are not *synonymous*.

So also, the '*road from London to Liverpool*' and the '*road from Liverpool to London*,' are not different things; but the one expression calls to mind the thought of a journey *from* the Metropolis to the Seaport; and the other, the reverse. And in like manner, the word '*infer*' fixes the mind *first* on the Premises and then on the Conclusion; the word '*prove*,' on the contrary, leads the minds *from* the Conclusion (in this case called the '*Question*') *to* the Premises.

Hence, we say commonly '*what do you infer from that?*' How do you prove this?' namely, this *Conclusion*.

And the corresponding *Substantives* are often used to denote that which is, in each instance, *last* in the mind: '*inference*' being often used to signify a *Conclusion* [Proposition-inferred,] and '*proof*,' a *Premise*.

When, then, any long train of reasoning is carried on, we proceed — in ‘inferring,’ and in ‘proving’ — in opposite directions: our object being, in the one case, to ascertain from all that we know on ~~what~~ ~~certain~~ ~~subject,~~ ~~what~~ *Conclusion* is to be drawn; and in the other case, — when we are satisfied as to the *Conclusion* — to consider by *what arguments* we shall establish it.

§ 2. In the former case, from established ‘*data*’ [certain known facts, and acknowledged principles] we infer so and so; and from this conclusion, in conjunction with other known truths, we infer something else; and so on, till we have ascertained what is decisive of the question before us, or as much as we are able.

In the latter case, we proceed *upwards* from the Premises which will establish the *Conclusion* we are maintaining, to the arguments which will prove those Premises: and so on, till we arrive at something that is *admitted*. And from this, — when we have to convince others — we generally proceed through the same train of reasoning, in a reversed order, *downwards*, till we have arrived at the *Conclusion* to be established.

We are sometimes then employed in what may be called ‘seeking for a *Conclusion*,’ and sometimes again, in ‘seeking for *Middle-terms*.’

For instance, a *Judge* is inquiring whether the estate does, or does not, belong by law to the claimant: the *Suitor* (or his *Advocate*) is seeking for proofs that the estate is his. The *Natural-philosopher*, when *investigating*, inquires, ‘*what* is the cause of the tides;’ the *Physician*, ‘*what* is this patient’s disease;’ and each, when he has satisfied himself, and is proceeding to teach or to convince others, sets himself, — like the *Advocate*, — to seek for *proofs*; sometimes employing the same that had led *himself* to the conclusion, and sometimes different ones; according to what he judges will serve

best to satisfy the understanding of others, that ‘the cause of the tides is so and so;’ or that ‘such and such is the patient’s disease.’

And in thus laying before others this process of reasoning, a man will sometimes proceed in the same order in which he had *sought* for the arguments, (that is, beginning from the Conclusion, and proceeding *upwards*) or again, sometimes, in the reverse order; setting out from something that is admitted, and proceeding *downwards*, towards the ultimate Conclusion.*

§ 3. In treating of the operation of seeking for Middle-terms — in other words, for Arguments to establish, on each occasion, the Conclusion maintained — we are naturally led to inquire concerning the different *kinds* of Arguments one often finds alluded to in books, or in conversation.

These are in general very indistinctly described, and confusedly enumerated.

We hear persons speaking of ‘Syllogistic reasoning,’ and such as is not ‘Syllogistic;’ — of ‘Categorical, or Hypothetical Arguments,’ — of ‘Demonstrative, and Probable’ [or Moral] Reasoning; of ‘Direct and Indirect Arguments;’ — of ‘A priori Arguments,’ ‘Arguments from Testimony,’ — from ‘Analogy,’ — from ‘Example,’ — by ‘Parity-of-reasoning;’ &c., without any distinct account being given of these and other modes of procedure.

In reality, to enumerate thus confusedly the several kinds of Argument, is to commit the fault formerly noticed in reference to ‘cross-divisions;’ there being, in this instance, no less than four different divisions; which ought not to be blended together.

ist. The division of Arguments into irregular and syllogistic, and of Syllogisms again, into Categorical and Hypo-

* See the notice in Lesson IX. of the Analytical and Synthetical order.

thetical, &c. is a division, strictly-speaking, not of *Arguments* themselves, but of the *forms of stating* an argument. For it is manifest (as above explained) that one individual argument may be stated either in a Hypothetical, or in a Categorical form, and in the first figure, or in the second, &c.

iily. The division of Arguments into *probable* and *demonstrative*, is evidently according to the *subject-matter*: and is, strictly, not a division of *Arguments*, considered as Arguments, but rather, of the *Propositions* they consist of, in respect of the 'matter' of those Propositions.

§ 4. *iiird.* Arguments are divided into 'direct' and 'indirect', according as your object is to establish either the *truth* of the *Conclusion*, or the *falsity* [the 'Contradictory'] of one of the *Premises*. For when we arrive, by sound reasoning, at a false Conclusion, it is plain that one at least of the *Premises* must be false.

In short, every valid Argument may be stated in the form of a *Conditional-Proposition*: 'If the Premises are true, the Conclusion is true:' then, supposing you admit the Premises to be true, you must admit the truth of the Conclusion: (which corresponds to a *Constructive* Conditional-syllogism) and hence, also, supposing you find the Conclusion false, you must admit that the Premises, or one of them, cannot but be false; since if they were both true, the Conclusion would be true: and this corresponds to a *Destructive* Conditional-syllogism.

Now the above is evidently a Division, not, strictly speaking, of *Arguments*, but of the *purposes* for which any Argument may be designed: namely, either to prove its Conclusion, or to *disprove* one of its Premises.

For the *same individual Argument* may answer both purposes, to different persons. For instance, 'Whatever is maintained by the Stoics (or by such and such a philosopher, sect, party, &c.) must be admitted; that pain is no evil (or such

and such a doctrine, whatever it may be, in each instance) is so maintained; therefore this must be admitted:’ now a zealous partizan will be so fully convinced of the Premises that he will assent to the Conclusion, others may be so revolted by the Conclusion, that they will thereupon reject the Major-premise.

The Argument, therefore, will, to the one, be ‘direct,’ and to the other ‘indirect.’

§ 5. *ivly.* When we speak of arguing from a *Cause* to an *Effect*, or of arguing from *Testimony* to the truth of what is attested, or again, from a *known case* to an unknown *similar case*, &c. these kinds of Argument are distinguished from each other ‘according to the *relation existing between the Premises and the Conclusion*, in respect of the *subject-matter* of each.’

This, then, and this alone, is properly a division of *Arguments, as such.*

When we say, for instance, that in arguing from the ‘fall of rain’ to the consequent ‘wetness of the roads,’ the Premise is a *Cause*, and the Conclusion drawn, an *Effect*, it is evident we are not speaking of the mere *sylogistic* connexion of the Premise and Conclusion; (which, as was formerly explained, is always the same) nor again are we speaking of the subject-matter of those Propositions (as in the iid Head) considered, — each by itself, — merely *as Propositions*, independently of the Argument: for ‘Cause,’ and ‘Effect’ are *relative* words; and the Premise is called a *Cause of* that *Effect* which is inferred in the Conclusion. So that it is the *relation*, in respect of *matter*, of the Premise to the Conclusion, that we are speaking of.

And so also in respect of Arguments from *Testimony*, and the other kinds that have been alluded to.

§ 6. Arguments, then, may be divided, first, into two classes: *ist.* such as *might* have been used to *account* for the Con-

clusion, supposing it had been already granted; and *iily*, those which could not. Or, in other words, *ist*. Arguments from Cause to Effect; and *iily*, all other kinds.

For instance, if I infer from 'a fall of rain,' that 'the roads must be wet,' I am using an Argument of the former Class; [an 'A-priori-Argument'] since if it were *known*, and remarked by any one, that the roads are wet, I should *account* for that fact by informing him that it had rained.

Or again, if a person were *known* to have committed a murder, and it were inquired *how he came* to perpetrate such a crime, then, any one would be said to *account* for it, [to show *why* he did it,*] by saying that he was a man of ferocious and revengeful character; or that he was known to bear malice against the deceased; or to have an interest in his death, &c. And these very circumstances might have been used (supposing the charge *not* proved) as an *argument* to cast suspicion on him.

On the other hand, if his guilt were inferred from the *testimony* of some witnesses, or again, from his clothes having been bloody, or from his having about him some property of the deceased, these would be arguments of the other class, since they are such as could not have been employed to *account for* the fact, supposing it established.

§ 7. The Arguments of this latter class may be subdivided into two kinds; which may be called Arguments from '*Sign*,' and Arguments from '*Example*;' [or '*Instance*'] each of which may also be further subdivided.

i. As far as any circumstance is what may be called a '*Condition*,' — more or less necessary, — to the existence of a certain effect, phenomenon, event, result, law, &c.; in other words, as far as it is a '*Condition*' of the truth of some asser-

* It is to be observed that the word 'why' has three different senses; viz. from what *cause*? by what *proof*? for what *purpose*?

tion or supposition, — so far it (the ‘condition’) may be *inferred* [or ‘concluded’] from the truth of that assertion or supposition, — from the existence of that effect, &c.

If it be a ‘Condition’ absolutely *essential* to something which we know or assume to be true, it may, of course, be inferred with complete *certainty*: and the nearer we approach to this case, the stronger will be the probability.

Thus, in the instance just above, when a man is suspected of a murder, from being found near the spot, his clothes bloody, and property of the deceased about him; the perpetration of the murder by him is just so far probable, as it is presumed to be a *Condition* of the existence of the ‘*Signs* ;’ i. e. so far as it is presumed that *otherwise* his clothes would *not* have been stained, &c. [or that they would not have been stained *unless* he had committed the deed.]

So also the wetness of the roads is a ‘*Sign*’ that rain has fallen,’ just so far as we suppose that *otherwise* the roads would *not* have been wet; — in short, that the fall of rain was a *condition* of that wetness.

To this head we may refer all mathematical reasonings. Every property, for instance, of a Triangle, may be regarded as a ‘condition’ of the supposition that ‘a Triangle,’ is what is defined. A figure would *not be* a Triangle, *unless* its angles were equal to two right angles,’ &c.

It is to be observed, that although in many Arguments from ‘*Sign*’ — as when we infer wetness of the roads from a fall of rain — we infer a *Cause* from an *Effect*, this is not *inasmuch as* [or ‘so far forth as’] it is a *Cause*, but inasmuch as it is a *Condition*. For we should no less infer from finding a certain spot wet, that it had been left *uncovered*; though the mere absence of covering could not be properly called a *Cause* of its wetness.

And in like manner, a man’s having been alive on a certain day, might be inferred as a necessary ‘*Condition*’ (though certainly not a ‘*Cause*’) of his dying the next day.

§ 8. 'Testimony' is one kind of 'Sign.' For it evidently has weight just so far as we suppose the *truth* of what is attested, to be a necessary 'Condition of the testimony; that is, just so far as we suppose that the testimony would *not* have been given, *unless* the thing attested had been true.

The different degrees of weight due to different Testimonies must, of course, depend on a great variety of circumstances: of which we must, on each occasion, judge in great measure from the particulars of the case then before us.

There are two remarks, however, on this point, which are needful to be kept in mind: *ist.* we should remember the difference between Testimony to 'matters-of-fact' and to 'matters-of-opinion.' When the question is about a *fact*, we look merely, or chiefly, to the *honesty* of the witness, and to his *means of obtaining information*: when the question relates to doctrine [or opinion] of any kind, his *ability to judge* must equally be taken into account.

By a 'matter [or "question"] of fact,' is commonly understood something which might, *conceivably*, be submitted to the *senses*; and about which it is supposed there could be no disagreement among persons who should be present, and to whose senses it should be submitted.

By a 'matter-of-opinion,' again, is meant anything whereon an exercise of *judgment* would be called for on the part of persons having the same objects presented to their senses; and who might, *conceivably*, disagree in their judgment.

Suppose, for instance, a man is accused of a murder; whether he did or did not strike the blow, or fire the shot, &c., would be a question of *fact*; whether he did so *wilfully and maliciously* (which is necessary to constitute an act, *murder*) would be a question of [*'judgment,'*] or *opinion*.

And observe, that the distinction does not at all turn on the greater or less degree of *certainty* attainable in the two cases respectively. For instance, whether King Richard the 3d

did, or *did not*, put to death his nephews in the Tower (which is a 'question of *fact*,') is very doubtful, and a matter of dispute among historians: but *what sort of an act* it was, if he did commit it, is a 'matter of *opinion*,' but one on which no one would be likely to doubt.

§ 9. In most cases this distinction is very obvious: but it sometimes happens that a person is supposed, — and supposes himself — to be attesting a *fact*, when in truth he is giving an *opinion*; that is, either stating the *inference* he draws from the fact he has witnessed; or again, professing to attest a fact which he has not really witnessed, but which he *concludes* to have taken place, from something he did witness.

An instance of the former kind is, when some one who is in attendance on a sick person, bears witness that the patient was benefitted, or was disordered, *by* taking such and such a medicine. He was an eye-witness, perhaps, of the medicine's being swallowed, and of the subsequent change for the better or for the worse; but that the medicine *caused* that change, (though he may be very right in believing that it did) is evidently his *judgment*.

As an instance of the other kind, a man, suppose, will attest that he saw such one killed: though, perhaps, he did not see him dead; but saw him receive a wound which he *judged* (perhaps very rightly) could not fail to occasion speedy death.

For it is to be remembered that there may be, and often are, 'questions-of-opinion' *relative to facts*; *i. e.*, we *judge* from such and such circumstances, that so and so is, or is not, *likely* to occur; or to exist. It is a *fact* that there is, or that there is not, a great lake in the interior of New-Holland; but till that interior shall have been explored, everyone is left to form his opinions, and to judge according to probabilities.

And hence, it should also be remembered that men are apt to *reason unconsciously*; and thus to suppose themselves bear-

ing testimony (as has been said) to something their senses have witnessed, when in truth they are stating their own inferences therefrom. www.libtool.com.cn

The process which usually takes place is this: their senses furnish them with *one Premise*, (the *Minor*) the *other* is supplied by their own mind; and the *Conclusion* drawn from these two (as you may see in the above examples) is what they describe themselves as having *witnessed*.

§ 10. *iily*. The other remark to be borne in mind, is, that when several *independent* witnesses [witnesses between whom there could have been no *collusion*] attest the *same* thing, the weight of their testimony depends on this *agreement*, and not on the weight of each considered separately, or on the mere *addition* of these together.

Thus, if a stranger, or one on whose veracity I have no reliance, gives me intelligence of some remarkable transaction, or state of things, which he professes to have witnessed, describing fully all the details, I may, perhaps, think it more likely than not that the whole story and all the particulars, are a fabrication. But if I receive the *same* account from another, and again from another person, (equally undeserving of credit) who could not have had any communication with the first, nor could have had access to any source of false information common to them all, I should at once believe them; because the chances would be immeasurably great against several persons (however likely, each, to invent *a* story) having, independently, invented the *same* story.

And the force of evidence in such an argument depends mainly on the number and minuteness of the *particulars* in the thing attested; because the chances are thus increased against an *accidental* coincidence.

The same rule applies not only to 'Testimony,' but to other 'Signs' also. As when, (to refer to an example in the preceding Lesson,) a person after swallowing a certain drug is

attacked with such and such symptoms ; which may have been accidental ; if the same symptoms follow in another case, and another, &c., we are convinced at length that these cannot have been accidental coincidences, but that the drug *caused* the symptoms.

§ 11. When we reason from a known case to another, or others, less known, under the same Class, this is called arguing from 'Example,' — by 'Induction,' — from 'Experience,' — by 'Analogy,' — by 'Parity-of-reasoning,' &c., all of which expressions, though not exactly synonymous, denote a process substantially the same. And the two cases, — the known and the unknown, — are said to be '*analogous*,' or 'parallel cases ;' the common Class which they both fall under, being, the point of Resemblance or Analogy between the two.

Thus, we show from the example of the French Revolution, and that of England in the time of Charles the 1st, that the extreme of Democracy is likely to lead to a military Monarchy.

It is in this sense that we speak of 'making an Example' of one who is punished for any faults ; so as to deter others by the expectation that a like fault in them will lead to *their* punishment.

And it is thus that we learn to anticipate such and such weather, in certain situations, at certain seasons ; and in short, become acquainted with the general *Laws of Nature*.

In all these cases we proceed, strictly speaking, by Analogy. But this word is most usually employed in those arguments where the correspondence between the two cases is not so complete as to warrant a *certainty* in our conclusions. When the two cases do correspond completely, or nearly so, we usually employ the word *Experience*.

Thus, a man would be said to be convinced from 'Experience' that such and such a kind of diet, or of medicine, or of weather, is wholesome or unwholesome to himself ; if he

had invariably observed like effects on a number of men, he might, perhaps, speak of Experience as having convinced him that this diet, &c. was wholesome or unwholesome for the whole human Species; though in this, he would be more liable to mistake: but if he conjectured the same with respect to some other Species of animal, every one would say that he was reasoning by 'Analogy.'

§ 12. And here observe, that it is not strictly correct to speak of 'Knowing by Experience' such and such a *general truth*; or that so and so *will take place* under such and such circumstances. Not but that we may often have the most complete and rational *assurance* of general truths, or future events; but, properly speaking, what we *know*, 'by experience,' is, the *past* only; and those *individual* events which we have actually experienced; and any conviction concerning a *general rule* and concerning *future* occurrences, is what we *judge from Experience*.*

And this distinction is important to be remembered, because, although (as we have said) there are numberless cases in which the conclusion thus drawn is not liable to mistake, many persons are apt—as was above remarked—to make mistakes as to *what* it is that they themselves,—or that others,—are, on each occasion, bearing witness to.

A mere fact, or a number of *individual* facts, however strange they may seem to us,—that are attested by a person whose veracity we can fully rely on, we are justified in believing, even though he be a man of no superior judgment. But if he states *some general fact* [or 'law'] as a thing *experienced* by him, we should remember that this is his *inference*, from his experience. It may be a very correct one; and it may be one in which no great ability is needed,

* See the instance formerly cited from Hume of the argument that miracles are contrary to experience,' &c.

for forming a correct judgment; but still the case is one in which his *ability*, as well as *veracity*, is to be taken into account.

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For instance, a Farmer or a Gardener will tell you that he 'knows by experience' that such and such a crop succeeds best if sown in Autumn, and such a crop again, if sown in Spring. And in most instances they will be right: that is, their Experience will have led them to right *conclusions*. But what they have actually *known by* experience, is, the success or the failure of *certain individual* crops.

And it is remarkable, that for many ages all Farmers and Gardeners without exception were no less firmly convinced — and convinced of their knowing it by *experience* — that the crops would never turn out good unless the seed were *sown during the increase of the Moon*: a belief which is now completely exploded, except in some remote and unenlightened districts.

§ 13. In all cases, Arguments of the Class we are now speaking of, proceed on the supposition (which is the Major-premise) that 'what takes place, — or has happened — or which we are sure *would* happen — in a certain case, must happen, or take place, in a certain other similar [or analogous] case; or in all such cases.'

The degrees of probability of this Major-premise will, of course, be infinitely various, according to the subject-matter. In the investigation of what are called 'physical-laws,' a single experiment, fairly and carefully made, is often allowed to be conclusive; because we can often *ascertain all the circumstances* connected with the experiment. Thus, a Chemist, who should have ascertained by trial, that a specimen of Gold, or of some other metal before him, would combine with Mercury, would at once conclude this to be a property of that metal universally.

In human transactions, on the contrary, it would be thought

very rash to draw a conclusion from a single occurrence ; or even from two or three. We make, in such cases, a *wide* ' *Induction* ' (as it is called) of a number of individual instances, [or ' examples '] before we venture to conclude universally, — or even as a *general* rule — what is likely to be, for instance, the result of such and such a form of Government, — of the existence of Slavery, — of the diffusion of Education, — of Manufactories, &c.

§ 14. We have said that we sometimes argue not only from what has *actually* happened in certain cases, but also from what we feel certain *would* happen in such and such a *supposed* case. Of this description are instructive ' *Fables* ' [or ' Parables,' ' Apologues,' ' Illustrations '] in which a general maxim [or ' principle '] is inferred from a supposed case, *analogous* to that to which we mean to apply the maxim.

Thus, the imprudence of a man who should hastily join the disciples of Jesus, without having calculated the sacrifices required, and the fortitude expected of him, is illustrated by the supposed case of a man's beginning to build a house without computing the cost.

So also Socrates argued against the practice of some of the Greek republics, who chose their Magistrates by *lot*, from the supposed case of mariners casting lots, *who* should have the management of the vessel, instead of choosing the best Seaman.

And Nathan's parable brought home to David a sense of the enormity of his own crime. Indeed, the ' golden rule ' of supposing yourself to change places with your neighbor, and reflecting what you would, then, think it right for him to do towards you, is merely an admonition to employ in one (very numerous) class of cases, such a mode of reasoning.

In every employment of what may be called (' fictitious ' or) ' invented example,' [reasoning from a supposed case] the

argument will manifestly have no weight, unless the result that is supposed in the imaginary case, be such as one would fully *anticipate*.

On the other hand, *real* instances have weight, even though they be such as one would not have *expected*. For instance, that all animals with horns on the head, should chew the cud, and should be destitute of upper cutting-teeth, is what no one would have originally *conjectured*; but extensive observation has so fully established this as a universal rule, that a naturalist, on finding the skeleton of some unknown animal with horns on the skull, would at once pronounce it a ruminant, and would be certain of the absence of upper incisors.

§ 15. When an Argument of the Class now before us, [from Example, Analogy, &c.] is *opposed* by denial of one of the Premises, it is usual, in ordinary discourse, to say, either, ‘the statement is *not correct*,’ which is denying the *Minor*-premise, — or ‘this case does not *apply*,’ [or is ‘not in *point*’] — or does not *hold good* in reference to the one before us;’ or ‘the cases are not *parallel*:’ which amounts (as you will see on examination) to denying the *Major*-premise.

Thus, if any one recommends to this patient a certain medicine, as having been found serviceable in cases of Typhus, it might be either denied that it did prove serviceable in those cases, which would be a denial of the *Minor*) or again it might be denied that this patient’s disorder is the *same* as those: which would be a denial of the *Major*-premise.

And here observe, that two things may be very unlike in most respects, and yet quite alike — i. e. the Analogy may hold good — in the one point that is essential to the argument: or again, they may disagree in that one, though they are analogous in many other points.

And it is from inattention to this distinction, that just arguments from Analogy are often rejected, and fallacious ones admitted.

§ 16. For instance, in the Parables alluded to above, if a man should object that ‘a lamb is a very *different thing* from a wife,’ and ‘a ship from a Republic,’ the differences, every one would see, do not affect the Analogy in question.

On the other hand, there is an Analogy in many respects between all ‘valuable-Articles’ that Man uses; as corn, and iron or lead, and again (what are called the precious-metals) gold and silver. And as an increased supply of *most* of these articles, while it lowered their *price*, would not diminish their *usefulness*, and would thus prove a general benefit, some might infer that this would hold good in respect of gold and silver.

If the earth should yield two bushels of corn, or two tons of iron or lead, for one that it now yields, these articles would be much cheaper; while a bushel of corn would be as useful in feeding us, as now; and so, with most other articles.

But if the supply of gold or silver were thus doubled, the chief *use* of these being for *coin*, and the *utility* of coin *depending on its value*, the only important change would be, that a sovereign or a shilling would be twice as large as now; and, therefore, twice as cumbrous. So that no advantage would result.

It is manifest that in a train of Reasoning, it will often happen, that several of the different kinds of argument we have spoken of will be combined. Thus we may, perhaps, have to prove by several examples, the existence of a certain ‘Cause;’ and from that Cause to infer a certain ‘Effect;’ and that effect again may be employed as a ‘Sign’ to infer a certain ‘Condition,’ &c.

In this, and the preceding Lessons, several interesting subjects have been very slightly touched on, which may be found

more fully treated of, and the views now taken more developed, in treatises on those several subjects.*

If you proceed, in following up this course of study, to peruse such treatises, you will have been prepared, it is hoped, to find that perusal the easier and the more interesting, from what has been explained in these Lessons; and you will be the better able to understand what is valuable in other Works on such subjects, and to detect anything that may be erroneous.

* In the Elements of Rhetoric, Part I., the subjects of this last Lesson are more fully treated of.

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