ELEMENTS OF LOGIC.

ON

THE APPLICATION OF LOGIC.

In the preceding Compendium the rules of Logic, in their bare elementary form, have been explained and illustrated. Although brevity has been particularly studied, it is hoped that the leading principles of the Science have been developed, and that nothing really essential to the subject has been overlooked. Little remains to be said which is not implied in the rules and principles already laid down. But the application of these principles to ordinary practice, if not distinctly pointed out, is liable to be misapprehended. On this part of the subject as many mistakes have prevailed, as respecting the nature of the Science itself. As therefore, it never was intended that the syllogism, expressed in full length, should be introduced into ordinary practice; and as some writers have affirmed that the rules laid down for distinguishing the conclusive from the inconclusive forms of argument, or the
true Syllogism from the various kinds of Sophisms, are at once cumbrous to the memory, and unnecessary in practice; and as others have maintained that the Inductive philosophy, or some kind of rational Logic, should be introduced, in the room of the Syllogism; it is thought necessary to subjoin a few supplementary observations on the application of the Logical system. We shall thus have an opportunity of exposing some of the incorrect notions that still prevail respecting this Science, and of embodying several particulars which, although of great importance in reference to the application of the system, could not with propriety be introduced while the mere theory was under consideration. We shall, therefore, endeavour to define the legitimate province of Logic—notice the various forms which Reasoning, though strictly syllogistic in its nature, assumes in popular use—the evidence on which the validity of these arguments rests—the obstacles which lie in the way of conviction and belief—and the connection which this Science has with rhetorical studies. Whether these topics can justly be regarded as a part of Logic may be questioned. There can be no doubt, however, but that they are important in themselves; and as they are intimately connected with the application of Logic, they may be very properly subjoined to the precepts of that Science.
CHAP. I.

OF THE PROVINCE OF LOGIC.

Much of the ridicule that has been so unjustly heaped upon this Science, has arisen from the mistakes that are prevalent respecting its legitimate object. It is customary to represent the syllogistic art, with its figures and moods, as serving merely to display the ingenuity of the inventor; and to furnish the student with the means of making an artificial and ostentatious parade of learning, which has the appearance of great profundity, but which is in reality destitute of all practical value. It has often been urged that syllogistic reasoning is altogether ineffectual as an instrument for discovering new facts in science, or for the acquisition of general knowledge. Hence some writers are very fond of bringing forward the Inductive philosophy in contrast with the Aristotelian Logic; and dilate on the advantages to be derived from substituting Induction for the "Logic of the Schools."

There is an evident unfairness in this mode of arguing. It is taking for granted that Induction and the Syllogism are two distinct methods of reasoning, which may be justly contrasted with each other; whereas this is by no means the case. It has been expressly laid down in the preceding treatise that the Reasoning process, in all cases, and on all subjects, is one and the same; and that the syllogism is the form in which all correct reasoning may be clearly exhibited,
and by which its validity may be ascertained. If, then, Induction be a method of reasoning distinct from the Syllogism, and which can fairly be brought into contrast with it, the foundation of the Syllogistic theory is shaken, and the whole venerable edifice must totter and fall. But we are not afraid of this overthrow. This argument so frequently, and, apparently, so triumphantly brought forward, is founded in mistaken views both of the Aristotelian and the Baconian philosophy.

When the illustrious Bacon arose to emancipate the world of science and letters from the thraldom of the Schools, he saw that Induction was the natural, and indeed the only way of discovering new truths, and collecting facts, by means of which the sciences might be cultivated and improved. He therefore brought back Philosophy to the path of nature and of common sense, and became the Father of that Experimental Philosophy, which is unfolded with so masterly a pen in his immortal writings. That the system which he introduced is, in many respects, superior in value and practical importance to the Aristotelian system, we apprehend there are few at the present day who would venture to deny. Still, as they both, in so far as they really differ, occupy a province perfectly distinct from each other, we hold it unfair that they should thus be contrasted, or that the one should be exalted to the disparagement of the other.

In order that this may appear, it is necessary that we glance for a moment at the Inductive philosophy.
In his Novum Organon Lord Bacon first shows that the Syllogism is of no use in ascertaining new truths; he next classifies and sets in a clear light the sources of error which impede us in reasoning; and lastly he unfolds the right mode in which we should seek after truth, and study nature. This method of philosophizing consists in investigating nature by observation and experiment, and ascending from a clear and distinct knowledge of facts and particulars, to those general laws or principles on which they depend. The name Induction has been given to it, because, by this mean, instances are brought in, one after another, to bear on the point in question, till a sufficient number has been collected to establish it into a general law; and when the conditions which are necessary to make the induction worthy of credit have been fulfilled, the mind is induced to believe the result.

In this method of searching after truth there is nothing that can properly be called new. It is thus that children, and savages, and men in general collect their information. They observe, and make experiments; and from the collation of facts thus ascertained draw their inferences. But Lord Bacon resolved this universal practice into its principles; and recommended it to the learned who had been led astray for ages by their erroneous or abused systems. In many cases a complete induction cannot be obtained; hence this mode of investigating admits of degrees of conviction, from a mere probability to absolute certainty. When our observation extends to a considerable number of par-
ticulars, and no exception takes place, this is considered sufficient to justify belief. But no rule can be laid down to fix the number of instances that may in every case be fairly considered sufficient to establish any matter of inquiry. This must depend, in a great measure, on the nature of the subject; on the manner in which the investigation has been carried on; on the skill, information, and acuteness of the observer; and on a variety of other circumstances which the peculiarities of the case can alone suggest. But the following rules were deemed essential, and were laid down as scrupulously to be observed in all inductive investigations: we must observe with attention and constancy—compare with circumspection and caution—discriminate with acuteness and accuracy—distribute with exactness and regularity—and apply principles already ascertained to the discovery of new truths. This is the method of searching after truth which has been called the Baconian or Inductive philosophy; and the superiority of this branch of philosophy, and the advantage of substituting it in the room of the Aristotelian Logic, is a subject which is, almost in every instance immediately brought forward, whenever any reference is made to the Syllogistic theory.

The proposition thus advanced, as we formerly remarked, is founded in mistake. It confounds the two perfectly distinct operations that take place in the Baconian method of philosophizing; and derives all its apparent force as an argument merely from the ambiguity of a term. From the brief outline of the
Inductive philosophy given above, it will be seen that one process which takes place in Induction, is that of Investigation, by which, through observation and experiments, we obtain new facts; another process is that of Inference, by which we draw conclusions from the facts which we have, by the other process, already acquired. Now, although these two processes are perfectly distinct, the name Induction is sometimes applied to the one, and sometimes to the other; and it is from the ambiguity which has thus arisen that Induction has been so generally considered worthy to rival and supplant the Syllogism.

When viewed as a process of investigation, by which we discover new truths, and acquire general knowledge, Induction certainly appears superior to the Syllogism. But, then, in this case, it is not a process of reasoning, but a process of inquiry; and in this sense to contrast it with the Syllogism is evidently unfair. It is by investigation that the premises of an argument are obtained; but this process lies beyond the legitimate province of Logic, which is employed exclusively with the reasoning process, or in drawing conclusions from premises of which we are already in possession. This latter process must, therefore, ever remain a perfectly distinct operation from the collecting of facts, or the laying down of premises. They may be both valuable; and may very properly be studied as mutual aids to each other; but to set up the one to the disparagement of the other is altogether unfair, since it is in fact condemning one department
of science because it does not accomplish the work of another. They have each their separate duties to perform, which the one cannot discharge for the other; and as they are not rival systems, they ought not to be set in competition.

But if we look at the other process which takes place in Induction, that of deducing inferences from the facts already obtained by observation and experiment, we shall find that this is a process of reasoning, and that, like all other arguments, it is capable of being syllogistically stated. In every case in which we deduce an inference respecting something unknown, from our certain knowledge obtained by observation or experiment, we are employing a syllogism in Barbara, with the major premise suppressed. Take, for example, one of Lord Bacon's instances; "The approach of a hot body increases heat according to the degree of nearness; and the case is the same in light, for the nearer an object is placed to the light the more visible it becomes." In this case it had been ascertained, in a number of instances, that the nearer a hot body approached, the greater was the degree of heat; it is therefore inferred that whatever belongs to the particular instances that had been examined, belongs to the whole class to which these instances are referred; and hence the conclusion is drawn that "the approach of a hot body in every instance increases heat according to the degree of nearness." The argument may be stated syllogistically, thus:
Bar. "Whatever belongs to these particular instances, belongs to all that class in which they are included;

ba. In all these instances the nearer the approach of a hot body, the greater the degree of heat; therefore,

ra. In all instances the approach of a hot body increases heat according to the degree of nearness."

The same reasoning process takes place when Lord Verulam infers in the above example that "the nearer an object is placed to the light the more visible it becomes." So is it in every instance in which we deduce, from our observation of certain known cases, an inference respecting some thing that is not known. Thus, to take another instance from the Inductive philosophy: "This, and that, and the other flame—except the flame of gun-powder and the like, where compression and confinement increase its force—prove strong, vigorous, and generative, only when they find some cavity wherein to move and play and exert themselves; therefore, so do all flames—except the flame of gun-powder, and the like."

Thus it appears that Induction, in so far as it is an argument, may be, like all other arguments, stated Syllogistically. Whether the induction has been sufficiently ample, and sufficiently accurate, and how far the instances examined may correspond with the class to which they are referred, must depend on the judgment, and acuteness, and diligence of the person who
ascertains the facts, and lays down the premises; but this all belongs to the process of investigation, which, it should be remembered, lies beyond the proper province of Logic. Whether the premises are true or false, the rules of Logic cannot of themselves ascertain. This must be provided for by a competent knowledge of the nature of the subject respecting which the reasoning is taking place. But if the premises are granted, which in every argument must be the case, or we never could advance a single step in any form of reasoning, then Logic will enable us to ascertain whether or not the conclusion follows fairly from the premises laid down. If the Inductive process has been without fault, Logic will ascertain whether or not the argument founded upon it be sound or fallacious. It is therefore altogether unfair to represent Induction as a method of reasoning superior to the Syllogism, since, in so far as it is argument at all, although expressed in a popular form, it perfectly coincides with it, and depends entirely on the one principle which Logic unfolds, and on which all correct reasoning must be founded.

Hence we may see how unmerited the obloquy is which has been poured on this study. The legitimate province of Logic is reasoning, not discovery. It never was intended as an instrument for the discovery of what may be strictly called new truths; but merely to unfold the general principle on which correct reasoning is conducted, and to furnish a standard by which the validity of any argument may be ascertained. It has
indeed been contended that every syllogism must be futile and worthless, because the premises virtually assert the conclusion; and that there is always some radical defect in a syllogism, which is not justly chargeable with involving a petitio principii. But this objection is applicable necessarily to the reasoning process itself, and consequently to all kinds of arguments. Whatever form reasoning may assume, the inference that is drawn, if it be at all warranted, must be contained in the principle from which it is deduced. The premises in every instance contain a general truth which is evolved by the reasoning process, and asserted in the conclusion; hence the conclusion never can contain more than is virtually contained in the premises. Every argument must proceed on some data; and the object of all argumentation is to expand and unfold what is thus granted, so as to bring a person to perceive and acknowledge what he has already admitted. This is the principle on which all correct reasoning must necessarily proceed; and it is the object of the Aristotelian Logic to unfold the general law to which every individual argument may be referred, and by which it may be ascertained whether it be conclusive or not.

It is evident, then, that the province of Logic is not to discover truths absolutely unknown, or that are not implied in anything with which we are previously acquainted. All these matters of fact must be obtained through information; an acquaintance with them must be gained by observation, or experiment,
or testimony, or any of those means whereby we acquire general knowledge: but no process of mere reasoning will ever put us in possession of them. No mere process of argumentation could ever inform a person, that the earth is nearly fifty times the magnitude of the moon; or that Jupiter has four satellites, and that Saturn has a luminous ring. These are facts which must be learned not without reasoning, because this mental process enters largely into all the methods by which information is obtained; but argumentation alone is not sufficient, since without observation, or testimony, we have no premises from which such conclusions can be drawn. The discovery of all such matters of fact lies without the province of the science of Logic; but surely it is not any just cause of reproach that it cannot accomplish what it never was intended to do.

There are some truths, however, which may be elicited by reasoning, and which have been justly called Logical Discoveries. These are of course implied in what we already know; but we do not perceive or admit them, till they are brought out by argumentation. This process of evolving truths from others already admitted, takes place in every act of reasoning; and it is the province of Logic to analyse this process, to point out the principle on which it rests, and the laws by which it is regulated; and to enable us to ascertain, as far as the mere process of reasoning is concerned, whether the conclusion is or is not a legitimate deduction. In this way vague and inconclusive arguments
may be detected, which would probably escape, especially when involved in a multiplicity of terms. To represent such an instrument as destitute of all utility, or to speak of it as merely the science of logomachy, betray a utter ignorance of its nature and objects. It is reported of Lord Mansfield that, on one occasion, when pleading at the bar, he was confounded and perplexed with an argument, which he was convinced was false, but of which he could not detect the sophistry; and that, upon going home, and throwing the various propositions of which it consisted into the syllogistic form, he instantly discovered the fallacy. The Aristotelian Logic is therefore by no means so worthless, or so injurious, as has been represented. Had it not been greatly abused, both by its friends and its foes, a system formed on so just an analysis of the reasoning process, and calculated, when kept within its own limits, and employed on its own proper duties, to be of such use, had never been stigmatized and neglected as has unhappily and unjustly been the case.

CHAP. II.

OF THE POPULAR FORMS OF ARGUMENTS.

Much misapprehension relative to the practical utility of Logic has sprang from the mistake into which many justly celebrated writers have fallen, that
Aristotle meant the syllogistic form of reasoning, expressed in regular figure and mood, to supersede the various forms of reasoning in common use. This error lies at the foundation of all Locke's objections to the Syllogism. It is implied in what Campbell, in his Philosophy of Rhetoric, brings forward, when he affirms, "that this form of reasoning is a very incommodeous one, and has many disadvantages, but not one advantage of that commonly practised, will be manifest to every one who makes the experiment. It is at once more indirect, more tedious, and more obscure." And Lord Kames charges Aristotle with inconsistency, because "in his Treatise of Ethics, Politics, &c. he argues like a rational creature, and never attempts to bring his own system into practice."

A mistake so palpable we should scarcely have thought worthy to be mentioned, had it not been advanced by these distinguished authors, who have thus given it a prevalence and importance which it could not otherwise have obtained. It never was intended that this mode of unfolding arguments should be introduced into general practice, or that all the popular, abbreviated forms of stating an argument should be abandoned, in order that the Syllogism, stated at full length, might be universally employed. This would be as absurd as for a Grammarian to parse every sentence he reads. Who ever dreamt that this was the object which Grammar was intended to accomplish? And why should a supposition as absurd have been entertained respecting the Science now under considera-
tion? On this subject it has been well remarked, that "Logic, which is, as it were, the Grammar of Reasoning, does not bring forward the regular Syllogism as a distinct mode of argumentation, designed to be substituted for any other mode; but as the form to which all correct reasoning may be ultimately reduced; and which, consequently, serves the purpose (when we are employing Logic as an art) of a test to try the validity of any argument; in the same manner as by chemical analysis we develop and submit to a distinct examination the elements of which any compound body is composed, and are thus enabled to detect any latent sophistication and impurity."

The different forms which reasoning assumes in common practice have been variously classified by Logical and Rhetorical writers. They have divided arguments into regular and irregular; direct and indirect; *a priori* and *a posteriori*; hypothetic and inductive; synthetic and analytic; moral and demonstrative; arguments from example, testimony, analogy; and various other subdivisions which it is not necessary even to specify. Many of these divisions, however, are not divisions of reasoning at all: and many of them are evidently made on very different principles; sometimes according to the form which the arguments assume, sometimes according to their subject matter, and sometimes according to the purpose for which they are employed; hence they run into each other; and many of the arguments thus specified may be placed in one class or another, just according to the view that is
taken of them at the moment. To invent and arrange arguments is properly the business of Rhetoric; it may be proper, however, to state some of the forms which they assume in common practice; as an acquaintance with them is necessary in order to our being able to apply our scientific knowledge to the best advantage. It will be a useful exercise for the student to take examples of these different forms of argument, and reduce them to the regular syllogistic form, which it will be found, in so far as they are correct arguments, they can all be made to assume.

and irregular forms of arguments developed in the preceding pages. The same may be said also respecting the direct mode of arguing, which is merely the simple and obvious method of drawing a conclusion ostensively, from admitted premises. The indirect method of reasoning is that of drawing a conclusion indirectly, by means of some other conclusion which must be admitted as the alternative, if the proper conclusion be denied. Of the indirect arguments several kinds are enumerated by Logicians; as the argumentum ad hominem, or an appeal to the principles of an opponent; argumentum ex concesso, or a proof derived from some truth already admitted; argumentum a fortiori, or the proof of a conclusion deduced from that of a less probable supposition that depends upon it; argumentum ad judicium, or an appeal to the common sense of mankind; argumentum ad verecundiam, or an appeal to our reverence for some respected authority; argu-
mentum ad populum, or an appeal to the passions and prejudices of the multitude; argumentum ad ignorantiam, or an argument founded on the ignorance of an adversary; the reductio ad absurdum, which is the proof of a conclusion derived from the absurdity of a contrary supposition; and to these might be added various forms of demonstrations which may be found in the writings of Geometricians. These arguments are called indirect, because the conclusion that is established is not the absolute and general one in question, but some other relative and particular conclusion, which the person is bound to maintain by his consistency. The reductio ad absurdum is the form of argument which more particularly comes under this denomination. The argumentum ad ignorantiam is evidently nothing more or less than some Fallacy employed to deceive. Indeed they will all be found, in so far as they are correct arguments, capable of being reduced to the syllogistic form; and in so far as they are fallacious, their falsity may be detected and exposed, as was pointed out in the preceding pages when treating of Fallacies.

In reasoning a priori we use arguments to prove a fact from a given law, or an effect from an alleged cause. In this way the immortality of the soul was attempted to be proved, in a preceding part of this work, when treating of the Sorites. In reasoning a posteriori we endeavour to prove the existence of an alleged cause by reasoning from the effects which have been produced. Thus we may argue from the phenomena of nature,
and the proofs of wisdom and design in the works of
creation, that they must have been produced by an in-
telligent Creator. In each of these modes the reason-
ing process is the same; since it is merely the deduc-
ing a conclusion from given premises. The difference
lies in the nature of the premises, not in the argu-
mentation. And when treating of the abbreviated form
which this species of argument generally assumes, we
shewed that it was entirely dependent on the laws of
the Syllogism.

The various canons and properties of hypothetic rea-
soning have been already fully developed; and the
inductive process, in so far as reasoning is concerned,
has also been considered. The synthetic and analytic
processes, which are often brought forward as distinct
kinds of reasoning, are not properly different forms of
arguments, but different methods of investigation. In
so far as reasoning enters into these processes, they
differ nothing from what has been already developed.
The only difference that can be pointed out between
them lies merely in the manner in which the process
of investigation is carried on. To dwell on them is
therefore quite unnecessary.

To Moral and Demonstrative Reasoning we shall
have occasion to refer more particularly hereafter; we
only notice them at present to shew that they are ca-
pable of assuming the syllogistic form. Moral reason-
ing is employed in the discovery of contingent truths,
and consists in bringing forward a number of argu-
ments to shew that the matter respecting which the ar-
argumentation is carried on, is supported with sufficient evidence to claim our belief, though we cannot shew its absolute certainty. Thus when we say, "The man who is industrious and sober will acquire riches," the argument implied in this assertion is called moral, or is founded on probability; because we know that industry generally meets with encouragement, and enables a man to acquire wealth; that sobriety prevents him from needlessly spending it; and that the accumulated earnings of many years will at last increase to a considerable sum of money. But this does not amount to an absolute certainty; for though industrious, a man may not be able to get sufficient employment, or employment of such a kind as will enable him to acquire riches; or if they are acquired, he may be deprived of them by ten thousand accidents, which he can neither see nor prevent. This mode of arguing, however, in so far as the process of reasoning is concerned, was fully explained when treating of hypothetical syllogisms. Demonstrative reasoning is used in proving necessary truths. This form of reasoning produces belief immediately, as soon as the terms are understood in which it is expressed. It differs from probable or moral reasoning, since there is always a possibility of the latter being fallacious, which cannot be the case in the former; since a demonstration proved by one argument, is as firmly believed as if it were proved by twenty. In probable reasoning, however, the strength of evidence very often increases with the number of the arguments. The proper province of
demonstrative reasoning is the mathematics; and that it is capable of being moulded into the syllogistic form, admits of no question. Even the enemies of the logical system have been obliged to admit this. Dr. Campbell, when endeavouring to reprobate Logic as capable only of sheltering fallacies, under the awkward verbosity of this artificial system, acknowledges what we now have advanced. "I am satisfied," he says, "that mathematical demonstration is capable of being moulded into the syllogistic form, having made the trial with success on some propositions."

Such are the various forms of argument which are employed in common practice. They are all useful and necessary, and the person who would propose to abandon them, and introduce on all occasions the Syllogism, expressed in due form, in mood and figure, would be a fit object for pity or ridicule. This is not the intention of Logic. The examples given in the development of the syllogistic system are necessarily made to assume the form of the regular syllogism, since it is the object of the science to shew that all reasoning may be reduced to that form, and depends for its validity on the laws there laid down. From this, perhaps, the absurd idea may have arisen, that this mode of stating an argument was intended to supplant all others. Nothing could be more unbounded. These different forms may all be retained, and employed as may best suit the object of the reasoner, or the nature of his subject. All that Logic proposes to effect is, to develope the principles on
which the reasoning in all these cases depends,—to explain its nature and laws,—and to aid our practical ability in conducting an argument, by the impartation of scientific knowledge.

As, however, it is only to arguments when exhibited in their bare elementary form that the rules of Logic apply, it will be necessary, when these arguments are found in a popular form, to reduce them to the form of the syllogism, before the test of logical principles can be with advantage applied to them. The student therefore would do well to accustom himself to this method of analyzing and reducing popular arguments. Enough has already been laid down in what has preceded, to aid him in so doing, both by precept and example. It is not necessary, however, that he should confine himself, in thus applying the rules of Logic, to mere isolated arguments. He may examine paragraphs, or sections, or even whole books of an argumentative character, and enquire and try the whole chain of reasoning, to whatever length it may be drawn out. In this case, in order to gain his object effectually, he must begin with the last point proved, whether it be formally enunciated or not; and tracing the reasoning backward, he must first ascertain on what this assertion is founded. The assertion will then be the conclusion, and the ground on which it rests, will be the premises; the whole may then be expressed in the syllogistic form, and be tried by the rules of Logic. The premises must then be taken separately; and with each of them the same course must be pur-
sued, as was carried on with the former conclusion. The proof on which they rest must be carefully examined and tried; and the process be repeated till the whole train of argument, to whatever length it may extend, has been examined and decided on. This is all that Logic pretends or purposes to do; and to represent it as either able or intended to do more, is to abuse the Science. As this method of logical analysis is so intimately connected with the application of Logic to practice, we shall give in an Appendix a more lengthened detail and example of the right mode of conducting it.

CHAP. III.

OF THE NATURE AND LAWS OF EVIDENCE.

All Reasoning supposes that there are certain principles in which mankind acquiesce, and which they admit as sufficient to establish, beyond all reasonable doubt, the opinions to which they yield their assent. Were this not the case we should have no data on which to proceed in argumentation, and no criterion to which we could appeal in any case that was doubtful to ourselves, or disputed by others. The attempt to convince another, by any process of reasoning, would therefore be an endless and a fruitless labour; because, whatever might be advanced in favour of any disputed point, might itself be questioned as much as the
point which it was intended to establish; and thus we should go on for ever, without being able to appeal to any principle that was admitted as requiring no proof, or that was deemed sufficient to command assent, or produce conviction. We must have some ground or reason for what we believe; our opinions must be founded on something that is more evident than they are themselves; and this ground on which we rest our opinions is called Evidence. As it is necessary in all cases that we judge fairly according to the nature of the evidence before us, we never can be good reasoners without some knowledge of the principles on which the truth of an opinion or a proposition ought to be decided on. In order, then, that Logic may be applied with propriety and effect to practical purposes, it is necessary that we be acquainted in some degree with the nature, varieties, and laws of evidence.

The methods whereby we gain an acquaintance with the different departments of knowledge are very various; and the evidence that confirms these facts has also been arranged into numerous different classes by those who have written on the subject. Buffier, Beattie, Reid, Campbell, Stewart, and many other eminent authors, have discussed the doctrine of evidence with very great ability; and to their works we must refer those who wish to see this important branch of metaphysical and moral science fully discussed. A mere outline is all that can here be attempted consistently with the plan of this brief treatise. These writers have differed somewhat from each other in their clas-
sification and arrangement of the sources of evidence; but in the grand principles which are laid down and developed they have in a great measure agreed. The simplest classification is that founded on the manner in which our assent is commanded, or our judgments formed. In some cases we immediately yield our assent to a proposition as soon as the terms in which it is expressed are understood. In other cases, our decisions are formed in consequence of a process of thought consisting of different successive steps. This method of classification arranges all evidence into two great divisions, Intuitive and Deductive—the nature and properties of which we must shortly notice.

Under Intuitive Evidence has been ranked that which is derived from mathematical and physical axioms. Of this kind is the evidence attending propositions like these,—one and four make five—things equal to the same are equal to one another—a whole is greater than its parts—a body cannot be in two places at the same time; and in short all axioms in arithmetic and geometry. All such propositions have an original and intrinsic evidence, which makes them, as soon as the terms in which they are couched are understood, intuitively believed. If they are not thus admitted at once, no deduction of reason, nor process of argumentation, will ever make their truth more apparent, or give them any additional evidence. All axioms of this kind are founded on some certain first principles, which we are so formed as necessarily to admit as true and undeniable, as soon as they are presented to the mind.
To this head, also, is assigned the evidence derived from the report of our senses. It is in this way we obtain our knowledge of external objects, and the conviction that they really are what they appear to be. When we see a man, or touch a table, or taste a mango, we are irresistibly led to believe that these objects exist, and that they have size, shape, colour, and the various qualities which our senses inform us they possess. We have a perfect certainty of the reality of the sensations which we experience in these instances. Our senses furnish us with evidence of the real existence of any thing which thus comes within the sphere of our sensations; and to this evidence we are induced at once to give credit, without having recourse to any reasoning process to confirm its dictates. Sometimes, it is true, the apparent evidence of our senses is not correct, and not to be trusted. But in these cases the organs are not in a healthy state; or the objects are not conveniently situated; or the medium is not suitable, or in its proper state; and hence the evidence is vitiated. But even in these cases we yield an assent to what our senses appear to declare; and so certain is our belief in the testimony which they give, that, unless the testimony of one sense corrected the apparent evidence of another, we should often be led astray.

The evidence of consciousness belongs also to this class. By this means we have a perfect assurance of our own existence. We know that we exist, and that we are really the subjects of all that is passing
in our minds. We are convinced, by evidence the most irresistible, that we think, and reason, and remember, and feel, and perform all the functions of life. The evidence derived from consciousness is so undeniable, that it has never been questioned even by the most sceptical. This evidence is absolutely essential to us, since without it we never should be able to carry on the common business of life; and although the judgments thus formed cannot be moulded, as axioms are, into general positions, to which a chain of reasoning may be applied, yet, although they differ in nature, they are quite as conclusive and convincing as any axiom.

Another branch of intuitive evidence arises from what has been called *common sense*. This is a source of knowledge common to all mankind: it is possessed in different degrees by different persons, but none are totally destitute of it, except those who are not in the possession of their faculties. It is in this way we derive our conviction of the truth of propositions like these,—whatever had a beginning had a cause,—when there is contrivance and skill perceived in an effect, there must have been an intelligent cause—the course of nature will be the same to-morrow as it has been to-day; all propositions of this kind, the constitution of our mind compels us to believe, without any external proof. The evidence of common sense, being a natural dictate of the mind, is also as firmly believed as any mathematical axiom.

The evidence of *memory* is another branch of in-
tuitive evidence. When events which have lately happened are recalled to the mind, we are so constituted as to give implicit confidence to what memory reports respecting them. We are absolutely certain that the events happened, and that that, which is impressed on the mind respecting them is positively certain. Rememberance, it is true, is not always accompanied with this absolute conviction; since the facts which are recorded on memory are in many cases very soon partially effaced or obliterated; or, if they remain, from various causes, they may be confounded with other events, or perhaps with the mere figments of our imagination. But if we distinctly remember any past event, we are absolutely certain that it took place, and can no more doubt respecting it, than we can doubt the testimony of our senses. It is not possible to draw the line correctly between those impressions on the memory which command instant belief, and those others which are so imperfectly remembered as merely to justify supposition or opinion; nor is this at all necessary, since the mind itself will afford, in most cases, all that is needed to regulate our decisions and conduct. But whenever the truths which are called up in the mind are clearly and distinctly recognized, we implicitly rely on the evidence which memory thus affords. And experience will materially aid us in those cases in which we are doubtful whether what appears to us to be the intimations of memory are really so or not.

These are the principal classes into which intuItive
evidence has been divided. It includes every thing
the evidence of which results from the mere simple
contemplation of the object, and which requires no
medium to confirm its truth, but the evidence which
the object itself carries along with it. The classifica-
tion adopted respecting the various kinds of evidence
included under this head, is not perhaps perfect, or in
every case uniform; as some writers prefer one divi-
sion, others another; but the distinguishing character-
istics by which it may be known are these; the belief
attending it is instantaneous, irresistible, and universal;
wherever there is room for comparison, or any neces-
sity for reasoning, this evidence is wanting. If then
in any process of argumentation an appeal is made to
the evidence thus obtained, the appeal is final. The
decisions thus formed are first principles beyond which
we cannot advance, and which never can be made
more evident by any additional evidence or argu-
mentation. The various attempts which learned men
have made to prove that which evidently lies beyond
their power to evince, have only exposed them and
their efforts to ridicule. First principles are the ne-
plus-ultra in reasoning. These we must admit as self-
evident, without being able to assign any reason for
believing them, except that we are so formed as ne-
cessarily to admit them. The man that denies them
is irrational, and ought not to be argued with, but
commiserated.

On the other hand Deductive Evidence is that to
which we yield our assent, because we are satisfied
with the proof which has been brought forward to confirm it. This branch of evidence has been divided into two principal divisions—demonstrative and moral. The former rest either on axioms, that is, self-evident truths which we receive intuitively on their own naked authority, or on propositions which have already been proved. To this the name scientific has been given, because science is built on this kind of evidence. But moral evidence respects truths that are contingent, and is founded on what has been called moral axioms, or the principles we derive from consciousness, common sense, and experience. It proceeds on the presumption that those principles which guide us in life are to be depended upon. It, however, admits of degrees, and may be weakened or overthrown by contrary evidence. To this the name of probable has therefore been given. The nature of both these kinds of evidence, their properties, and varieties, must shortly be considered.

Demonstration has for its object abstract, independent truth. The propositions with which this kind of evidence is conversant have no respect to time or place; no dependance on any existing state of things, or matters of fact; their truth lies not in conformity to the nature of things, but in conformity to themselves, or to the hypotheses which have been formed respecting them. Hence their truth is necessary and eternal. They are not only true, but it is impossible they can be false. Every assertion opposite to truths of this kind is not only false, but absurd.
Thus the assertions,—the whole is greater than any of its parts—if equal things be taken from equals the remainders will be equal—all the angles of a triangle are equal to two right angles—circles are to each other as the squares of their diameters,—must ever remain immutable truths; and they would be so were there nothing in nature to which they as definitions could ever be applied. But were the opposite to be affirmed,—the whole is not greater than any of its parts—if equal things be taken from equals the remainders will be unequal—all the angles of a triangle are not equal to two right angles—circles are not to each other as the squares of their diameters,—these assertions would not only be false, but absurd, inconceivable, and self-contradictory. This does not hold, however, in moral evidence. It is conversant with matters of fact, that is, the various, changeable, contingent, though real connections that take place among things actually existing. These matters of fact can never be demonstrated mathematically; but they may be proved in such a manner as to leave no more doubt on the mind respecting them, than there is respecting a truth that has really been mathematically demonstrated. I have no more doubt that I was present in such and such a place, at such and such a time, than I have that ‘the cube of two is the half of sixteen;’ or that ‘all the angles of a triangle are equal to two right angles.’ But the kind of certainty I have of these different truths is very different; for mathematical propositions are not true in the same sense as
matters of fact. To deny truths founded on moral evidence implies no absurdity or contradiction. Were a person to say that I was not present in such and such a place, at such and such a time, though the assertion might be false, the contrary of it is neither absurd, inconceivable, nor self-contradictory; but it would be so were any person to deny the truth, or affirm the contrary, of the above mathematical propositions.

In demonstration the evidence is perfect, or it is no evidence at all. Eternal and necessary truth does not admit of degrees. But it is not so in moral evidence. This relates to actual truth, or matter of fact, in reference to which probability is often the highest point we can reach. It admits therefore of degrees, from mere probability, to absolute moral certainty. In almost every case in which moral evidence is employed there are contrary evidences to be balanced, and the evidence on the one side may weaken or overthrow the evidence on the other. But this cannot take place in demonstrative evidence. Here contraries can have no place. If a demonstration can be refuted it must be by another demonstration; and to suppose that this can happen, is to suppose that contraries can be demonstrated, or that the same proposition can be both true and false. Demonstrative evidence, then, is in many respects very superior to moral. It is simple, consecutive, and conclusive. But its sphere is limited; it is not therefore by any means so useful in the affairs of life, as the more complicated, disjointed, and
often doubtful evidence of a moral kind, which can be applied to almost every thing that comes within the compass of human knowledge, and particularly to every thing that comes home to our business and bosoms. Although, then, less dignified than demonstrative evidence, moral evidence is more useful, and therefore merits particular attention. It has been distributed into three classes, that of Experience, Analogy, and Testimony.

The evidence of experience results from our observation of the present, and our remembrance of the past. When we have observed a number of events of the same kind to happen uniformly in the same circumstances, we are induced to believe that these events will always happen in similar circumstances. This evidence is deductive, consequently it depends on the number of the antecedents and consequents. If the facts on which it is founded be sufficiently numerous, and are not confronted with any contrary experiences, the conclusion is morally certain, and we may be perfectly assured that the fact thus deduced is true. Thus we are perfectly assured that the sun will rise to morrow—that the seasons will succeed each other in their regular order—that fire will burn—iron sink—and deal float, because these conclusions are all built on a full and uniform experience. But when this full, uniform, and constant experience has not taken place, our judgments cannot amount to moral certainty, but only to some degree of probability. Thus, it is perhaps probable that, in the last week of April, a storm will
pass over Calcutta; because we know that storms frequently happen at that season in Bengal. That at some time or other, during that same month, it will rain in some specified part of Bengal is more probable; because this in almost every year is the case. Still it is not certain, because the experience is not uniform. That it will rain during the month of June in Bengal, may perhaps be pronounced certain, because this has been found almost without exception to be the case. If, then, constant experience has convinced us that certain events have, in certain circumstances, uniformly occurred, we are justified in expecting the same in like circumstances again. The uniformity of the laws of nature renders this sort of evidence sufficient to produce the most perfect assent. Experiment also may be brought in to confirm its testimony; because the more we become acquainted with elementary natures, they more we are convinced, by a general experience, that their operations are uniform and invariable. This species of evidence is of vast importance as it is the foundation and criterion of almost all moral reasoning.

Another branch of moral evidence is that derived from analogy, which is nothing more or less than a mere indirect experience, founded on some similitude existing between things that are compared together, and which we have ascertained by means of observation or experiment. We are thus induced to believe that similar causes will produce similar effects; and from our knowledge of certain properties in objects which we know, are led to infer that similar properties
exist in other objects which are unknown, or but imperfectly discovered. Thus we may conclude from analogy that the planets are inhabited; because we have every reason to believe that they are worlds like our own—enlightened by the same sun—subject to the same laws—undergoing similar revolutions—and enjoying the same vicissitudes of season; and as every part of nature, with which we are acquainted, teems with inhabitants, we have good grounds for supposing that the orbs which illuminate the vault of heaven are also inhabited. The evidence in this case, however, is much weaker than that of direct experience, because it is founded only on its resemblance to that which experience teaches us is really the case. It therefore amounts only to conjecture, while the other reaches to absolute certainty. The evidence of analogy rests entirely on the number and certainty of the degrees of resemblance, and hence it is weakened in proportion to the remoteness of the resemblance between the objects compared. When a subject admits of no other kind of proof, this species of evidence may be with propriety and advantage adopted. Its legitimate province, however, is rather to silence objections, than to establish truth; and with what effect it may be used for this purpose by a skilful hand, may be seen by consulting Butler’s Analogy of Religion Natural and Revealed, in which the objections of sceptics against Christianity are so triumphantly refuted.

The third grand division of moral evidence is that of testimony. Testimony is a serious statement given
by another respecting something with which he is supposed to be acquainted. By this means we become informed respecting facts which lie not within the sphere of our own observation; and when the conditions are fulfilled which are necessary to make the deposition of others credible, we are led as firmly to believe this evidence, as we do the evidence of our own experience. The confidence we repose in this species of evidence, springs from the conviction we naturally have of human veracity, or of the veracity of the witness who, in any particular instance, bears testimony to a fact. It is not founded in our own individual experience, because the evidence thus afforded is often stronger than any we can attain by mere experience. It embraces the experience of others as well as of our own; and to it we are indebted for by far the greater portion of our real and most valuable knowledge. This testimony may be either oral or written. The former is generally employed respecting those objects which have come under the observation of the person himself; the latter is employed in recording events that are past. And although in some instances human testimony is weak, and little to be depended on, it may nevertheless reach to absolute certainty. It requires, however, to be properly guarded; and the various circumstances must be carefully observed which tend to corroborate or invalidate its evidence. The credit given to oral testimony depends very much on the character, condition, and circumstances of the witness: and the credit given to written testimony depends, among other things,
principally on the opportunity which the writer had of becoming sufficiently acquainted with what he relates. And when the testimony of any one is confirmed by a number of concurrent, independent, and creditable testimonies, the truth of the fact is established beyond all reasonable doubt.

In examining the validity of human testimony we should enquire whether the witness is, or is not, himself deceived. If he is competent properly to understand the subject respecting which he speaks—if he has seriously applied himself to its examination—if his mind be free from those passions and biases which might warp his judgment, then we may reasonably conclude that he is not imposed on himself, and therefore, that his testimony, so far, is worthy of credit. Another point to be ascertained is, whether or not the witness has any wish to deceive others. In order to ascertain this we must consider whether his general character is such as to warrant confidence—whether he is likely to have any private ends to serve, in this particular instance, which might induce him to practice deception—or whether his testimony is likely to turn to his own disadvantage, for men will seldom attempt to impose on others without having some intention of thereby bettering themselves. Hence a man's testimony may generally be depended on, if it is given at the risk, or actual loss, of any worldly advantage. Concurrent testimony, where there has been no previous concert, will here render most valuable assistance. If the witness be neither deceived himself, nor have
any intention of deceiving others, we must still farther enquire, whether he has clearly and correctly given his testimony, and whether we have rightly understood his meaning; because neither the one party nor the other may have properly attended to the terms employed, and thus, through mere inattention and carelessness, both may go astray. When, however, the witnesses are intellectually and morally competent to give evidence—when their number is sufficient—their testimony clearly expressed—and we have correctly apprehended the import of the testimony given, the evidence thus derived is as convincing as demonstration.

Such, then, is a brief outline of the various kinds of evidence, both intuitive and deductive, which may be employed in judging of the truth or falsity of propositions. By attending to these particulars we may be materially aided in the assumption of premises, or in acquiring the matter of which our reasoning must be composed. The observations which writers on this subject have laid down may be highly serviceable in reference to the application of Logic; but they are of course comparatively vague and general, and cannot be reduced to any strict theory, like that which the reasoning process has been made to assume. Much in this matter must of necessity be left to the natural good sense, shrewdness, and intelligence of the individual.
CHAP. IV.

OF THE CAUSES OF ERROR IN JUDGING AND REASONING.

It is of great moment, in all our investigations, not only that we be acquainted with the evidence according to which we ought to judge, but that we bring our mind to the examination of the subject in a fit and proper state. Numerous are the impediments which hinder us in our search after truth, and which often render it a most difficult matter to persuade or convince others. The natural perverseness and precipitancy of the human mind, and the numerous pre-conceived opinions, mis-conceptions, and prejudices, which have sprung up, and grown with our growth, and strengthened with our strength, present, in many cases, an almost insuperable barrier to conviction and belief. These blind the mind, and pervert the judgment, so that we are easily led to assent to propositions that are false, while we neither perceive the truth of those that are almost self-evident, nor assent to them when proved by incontestable evidence. A few observations, then, on the causes which lead to these most injurious consequences, may not be out of place, or destitute of utility.

An error is the assent of the mind given to a false proposition. It has its seat in the mind, not in the proposition; hence the cause of the error must be sought for, not in the erroneous statement, but in the
state of the mind by which it was laid open to deception and imposition.

Almost all the errors into which mankind fall may be traced either to the precipitancy with which their opinions are formed, or to the prejudices which they have entertained. Nothing seems to be more irksome to the human mind than a state of doubt and hesitation. It delights to bound from truth to truth, with a rapidity that might have been sustained without detriment, had it not fallen from its original dignity, and lost much of its primitive capability. But as our physical strength is impaired by disease, so are our mental energies by spiritual maladies; and therefore it is only by patient research, close attention, and slow degrees, that we can with any safety proceed in our acquisition of knowledge. This is a drudgery, however, to which many cannot submit; hence, through the influence, sometimes of bodily constitution, or mental sloth, or mere indifference, or impatience of restraint, or the sudden impulse of some passion or propensity, or the necessity of choosing speedily between conflicting opinions, they hurry over the subject with thoughtless inattention, and easily fall into errors, which a very little consideration would have enabled them to escape.

Prejudice, however, is the most fruitful source of error. By prejudice we understand a judgment prematurely formed, and assented to without sufficient examination or evidence. Now, although we may be prejudiced in favour of the truth, as well as against
it, yet, as truth requires no such auxiliary, and as error finds in it a most powerful ally, it would be well were all the prejudices that abound to be exposed and abandoned, and their places occupied by sound reason and solid proof. Philosophers have therefore attempted to classify and describe these diseases of the mind, and to point out their proper remedies. The divisions that have been adopted in so doing, are, of course, various; and perhaps it is not possible to devise any general heads under which the whole can be distinctly arranged. The division adopted by Lord Bacon is the best with which we are acquainted. He has denominated the various causes of error, the Idols of the understanding, and arranged them into four classes: Idola tribus; Idola specus; Idola fori; and Idola theatri. We shall briefly explain the several members of this division, and illustrate them with examples.

To every false notion of the mind, by which men may be drawn into error, Lord Bacon has given the name idol. By this figurative term he elegantly distinguishes false science from true. In true science truth is the only proper divinity, and to this the understanding, when free from prejudice, yields her enlightened homage. But erroneous notions are a species of idols which usurp the homage which the mind ought to render only to truth. They are therefore stigmatized as false deities which ought to be abandoned and destroyed.

Of these causes of error the first class includes the
Idola Tribus, or the Idols of the Tribe. These have their foundation in human nature itself, without having regard to any modifying circumstances, and are therefore incident to the whole tribe or race of man. The principles that thus lead us astray are highly useful and necessary when properly regulated or applied; the danger springs entirely from their excess, or defect, or wrong direction. This head Lord Bacon illustrates in a very admirable manner, by shewing how apt we are to reason on a mere assumption; to regard our preconceived opinions; to follow our imagination; to expect too much from our limited capacities; to trust too implicitly to the testimony of the senses; and to cherish an undue fondness for generalization.

In illustration of these particulars Lord Bacon observes that the mind has naturally this property, that it supposes a greater order and uniformity in things than is really the case. Though many things in nature are unique, and many extremely dissimilar, yet the mind is still imagining parallels, correspondencies, and relations, which have no real existence. Hence the fiction of the ancient astronomers, that all the celestial bodies moved in perfect circles; and that of the ancient chemists, who imagined that there were only four principles, corresponding to the heavens, air, earth, and water. In short, all the numerous dreams in which the ancient philosophers so lavishly indulged may be traced to this error. The mistakes in common life which spring from this source are also without number.
With regard to our preconceived opinions, he observes, that when the mind is once pleased with certain things, it draws all others to consent and go along with them. Though the power and number of instances that make for the contrary opinion are greater than those which favour this adopted supposition, yet the mind either does not attend to them, or despises them, or removes, rejects, or explains them away, with a strong and pernicious prejudice to maintain inviolate the authority of its first choice. Hence in cases of superstition, of astrology, dreams, omens, and such like vanities, those who find pleasure in these things, always observe where the event answers to their predictions, but pass over, or but slightly notice, the instances in which their predictions fail; which generally however are by far the most numerous.

The human intellect is most moved by those things that strike it suddenly, enter in at once, and fill and swell the imagination. It is thus carried away before the understanding, which is slow in its movements, can be properly exercised on the subject; and feigns, and supposes, and imagines what is unknown to be like those objects which have already got possession of the mind. It is thus that visionaries impose on themselves and on others; they are soaring away in mid-air with the wings of an eagle, when they ought to be digging with patient research in the mine of true knowledge.

Nothing is a more fruitful source of error among philosophers than that of expecting too much from
the application of their intellectual powers. The mind of man is of course limited in its capabilities. We are surrounded with mysteries on every hand. We cannot move on in any line of thought for any length of time, without soon finding ourselves encompassed with insurmountable difficulties. But the mind of some men cannot rest. It is continually shooting itself out, and pressing on, though to no purpose. Not knowing how or where to stop, it bewilders itself in seeking greater satisfaction respecting truths which lie far beyond the reach of its limited faculties.

The passions and affections also often lead us astray. The light of the understanding is not a pure or dry light, but is drenched in the will and affections; hence what men desire to be true, they are most easily inclined to believe. The understanding rejects things that are difficult, because it is impatient of enquiry; things just and solid, because they limit hope; the deeper mysteries of nature, through the influence of superstition; and the light of experience, through pride and haughtiness. Thus in numberless ways, and sometimes in an almost imperceptible manner, the affections and propensities of men tinge and infect their understanding.

Too implicit confidence in the report of the senses, and drawing improper inferences from them, is another fruitful source of misconception and mistake. The objects of sense entirely engross our thoughts in the first part of life, and are most familiar to us all our days. Hence the dulness, incompetency, and fallacies of the
senses are very generally overlooked. Those things that strike the sense, unjustly over-balance those that do not; and little or no regard is paid to objects that lie beyond the reach of mere physical examination. We are thus led to judge of spiritual natures as we do of the material objects around us. Hence the human figure and human passions are very generally considered as belonging to the Supreme Being.

An undue fondness for abstraction, generalization, and simplicity, is likewise the source of numerous prejudices. To this cause most of the errors of ancient philosophy may be traced. The evidence which these theories had to support them was next to nothing, but their being reduced to a few simple, regular principles, supplied the place of proof, and obtained for them almost universal support. Thus the principle of gravitation was rejected by the greatest part of Europe for half a century, after Sir Isaac Newton had given the strongest proof of its existence in nature, because it could not be accounted for by matter and motion. Such, then, are the Idols of the Tribe, which belong to the whole human family. These having their origin in the uniformity of the human mind every person is in danger from them.

The second class of idols in Lord Bacon's division are the *Idola Specus*. These are prejudices which have their foundation not in the constitution of human nature, but in something peculiar to the individual. They take their rise from the peculiar nature of each particular person, either with regard to mind or to
body, and are produced by the education, customs, pursuits, and other accidental circumstances, that form the character. If any one should be educated from his infancy in a dark cave till he were of full age, and should then of a sudden be brought into open day, and behold for the first time the wonders of the heavens and the earth, no doubt many absurd fancies, contracted in his seclusion, would still adhere to him, and lead him into erroneous opinions. So is it with mankind; their minds are confined in the cavern of their bodies, which have each their own particular form, and particular manner of being enlightened; and these give false colours, and a delusive appearance to the objects that are seen in their twilight darkness. In this way we receive the images of innumerable errors and falsehoods, from which manifold prejudices spring up, and lead the understanding astray.

Men are fond of particular sciences and studies, either because they believe themselves their authors, or because they have bestowed much pains upon them, or have been peculiarly successful in their prosecution. Their thoughts are thus confined to a certain track, and when they venture out of their beaten course, and apply themselves to any new pursuit, they generally wrest and corrupt it with their former conceits. They judge respecting any subject that comes before them by the maxims of their profession, however foreign these may be from the point in hand; thus they fall into error, and expose themselves to ridicule. Mr. Locke mentions an eminent musician who
believed that God created the world in six days, and rested the seventh, because there are but seven notes in music. And Dr. Reid mentions that the learned and ingenious Dr. Henry More having very elaborately and methodically compiled his *Enchiridium Metaphysicum*, and *Enchiridium Ethicum*, found all the divisions and sub-divisions of both to be allegorically taught in the first Chapter of Genesis. Thus it is when Mathematicians apply to physics, medicine, or chemistry, they endeavour to render all these pursuits mathematical; when Chemists apply to physics, or medicine, they make them chemical; and when Divines apply to philosophy, they attempt to render all their investigations scriptural.

Thus it is that some men of genius are wrapped up in admiration of antiquity; others treat the ancients with contempt, and admire and value only that which is modern. Some are afraid to venture out of the common road, and their views, opinions, and principles, if they can be said to have any, are, like their clothes, cut according to the fashion; others are fond of singularity and paradoxes, and are never at rest except when indulging some strange conceit or new fancy. Some are desultory and changeable in their studies and opinions; others are too methodical and tenacious. Some are so taken up with the particles of which things are composed, that they neglect their structure; while others view the fabrication of things with so much astonishment and attention, that they never enter into the simplicity of nature. Both
these methods of study ought, however, to be taken by turns, that the understanding may be at once rendered more piercing and more capacious. All these peculiarities, resulting from the circumstances of the individual, shut him up as it were in a den, and prevent him from taking clear and comprehensive views of the objects presented to his notice. Hence the fanciful name given to the prejudices that are thus formed. If therefore we would dislodge the idols that are produced in this way, and which reign in this dark cavern, we must come out into open day; we must seek truth not in the seclusion of our own minds, but in the wide world that is open before us.

The next class of prejudices are those denominated *Idola Fori*. These are the prejudices peculiar to the market place, which have their origin in the imperfection of language. In all places of public resort, or wherever the general intercourse of mankind is carried on, words are used in a lax and capricious sense; hence they are ever ready to mislead and deceive. This is perhaps the most prolific source of prejudice. Misconceptions insinuate themselves into the mind from the association of words and terms. Men generally believe that their reason governs words; but it often happens that words retort, and reflect their force upon the understanding; and this is the source of numerous errors. Words are generally imposed according to vulgar conceptions, and must therefore have many imperfections, specially when applied to philosophy and the sciences. Most of the serious controversies of
learned men terminate in disputes about the meaning of words. Mr. Locke in his Essay on the Human Understanding found it necessary to occupy a great portion of his admirable work in pointing out the various kinds of words, their imperfections, abuses, and remedy. Almost every treatise on philosophy must be begun by defining and explaining the terms that are to be employed. But even these definitions do not altogether meet the wants of the case, and remedy the evil; for the definitions themselves consist of words, which in some circumstances may deceive as much as those for which they are substituted.

The idols which words impose on the understanding Lord Bacon classes under two heads; the names of things that have no existence—and the names of things that do exist. Of the former he mentions the *primum mobile*, the orbs of the planets, the element of fire, and the like figments, which arise from imaginary and false theories. Many terms of this kind exist at the present day, such as *chance, fortune, nature*, which, having nothing corresponding with them in actual existence, are used in a vague indefinite sense, and often lead to most serious errors in judging and reasoning. As there are things which, through want of being observed, remain without names, so there are names coined which have no things corresponding to them; and from this source many of the idols of the understanding take their rise. The other head includes those idols that are imposed upon us by words which are the names of actual existences,
but which are confused, ill-defined, and formed by a rash and unskilful abstraction. Lord Bacon selects the word moisture, as an example, and endeavours to ascertain how far the things agree that are signified by this term, and shews that it is a confused sign for different actions that cannot be reduced to one determined significance. Thus, moisture signifies—that which is indeterminable of itself and cannot fix—that which yields easily every way—that which readily divides and scatters itself—that which easily unites with itself and runs together—that which easily flows and is easily put in motion—that which readily sticks to another body and wets it—and that which is easily melted, or reduced from a solid to a liquid. Now, when this term comes to be employed, with an exception of some of the significations, flame will be moist; with the exception of others, air is not moist; with the exception of some others, fine powders and glass may be said to be moist. He therefore concludes that the notion conveyed by this term has been inconsiderately taken from water, and other common liquids, and has not been truly verified, or made to agree precisely with the thing which it signifies, before it was adopted. Much therefore remains to be done before the imperfections of language can be removed, and a sufficient copiousness and distinctness be given to the terms used both in philosophy and in common life. Whether this will ever be completely effected is more than problematic; since, as long as our knowledge is imperfect, language, which is the instru-
ment of "thought, as well as the means of communi-
cating it, will also remain imperfect. It would appear,
then, that the abuse and imperfections of language will
ever need to be guarded against, as one of the most
fruitful sources of error.

The last class of prejudices are those which Lord
Bacon denominates Idola Theatri. These are the
prejudices of fashion and authority, which spring from
great names, or from following a master; which arise
from the systems we adopt, or the sects which we
have espoused. These, like the representations of
the stage, are calculated to impose on us; hence the
appellation which they have received. Prejudices
of this kind are neither founded in our nature, nor
secretly insinuated into the understanding, but are
openly palmed upon it by false theories, and perverted
laws of demonstration. These false theories have ever
abounded in the philosophical, political, and religious
worlds; and they have this in common with dramatic
representations, whence the prejudices thus derived
have their name, that they are more neat, elegant, and
pleasing, than the reality of human life. Those who
invent these erroneous systems lay their foundation in
some hasty deductions, and then fill up the system
from their own invention and imagination. Thus a
very pleasing theory may soon be reared, very wide
indeed from the truth, but which may more powerfully
strike the vulgar, and command assent, than any
system founded in truth and nature. Thus the Car-
tesian philosophy is much more agreeable to read
than the Newtonian; just as the conjectures of a wild and vigorous imagination are much more imposing than the plain dictates of common sense.

Now, when any false system, either of philosophy, or politics, or religion, is received into the mind, it becomes the medium through which every other subject is contemplated. These objects thus acquire a very different colour from what they would otherwise have, if they were beheld by a mind free from these conceits. A Stoic and an Epicurean; a Whig and a Tory, a Churchman and a Dissenter, will frequently take a very different view of the same subject; not only when it relates to their peculiar tenets, but when not at all connected with these peculiarities. Still these prejudices are more particularly seen in reference to their favourite sects, or doctrines. Thus the zealous abettor of some favourite theory, in any particular science, will not listen to any arguments that can be brought against it: the political partizan is loud in the praises of his party, while he expects nothing good from those who are of a different opinion: and the religious bigot will maintain the most egregious errors, merely because they are a part of the creed he has espoused, and against those, who only claim the same right of judging for themselves which he claims for himself, he will thunder all his impotent but malignant anathemas. Thus it happens also with regard to the numerous petty enmities that are continually taking place in the various circles of mercantile and domestic life. The dislikes and partialities thus formed, are
conveyed from one to another; those who have influence impart them to those who are in some way or other under their authority. The destructive consequences to the peace of society, thus occasioned, cannot be calculated.

Such are the various sources of error which fill the mind with prejudices, and pervert our judgments and reasonings. The connection which this subject has with the application of the Science of Reasoning must be at once obvious. In many instances, although our arguments may be faultless, both as to the reasoning process, and the evidence on which they rest, if the mind be preoccupied with any of the prejudices enumerated above, we shall find it almost impossible to produce conviction. Hence the necessity of dislodging these idols, and of seeking as much as possible to free the mind from their pernicious influence, both in searching after truth ourselves, and in endeavouring to communicate it to others. To adopt the language of the great Restaurator of true science, "these several sorts of Idols are all of them to be solemnly and for ever renounced, that the understanding may be thoroughly purged and cleared; for the kingdom of man, which is founded in the sciences, can scarcely be entered otherwise than the kingdom of God—that is, in the condition of little children."
CHAP. V.

OF THE CONNECTION WHICH LOGIC HAS WITH GRAMMAR AND RHETORIC.

To every department of literature and science Logic bears a very intimate relation; but to none more so than to Grammar and Rhetoric. The former of these branches of study treats of the principles and structure of Language, and points out the purity, precision, and propriety that should obtain in words and sentences. Rhetoric advances a step farther, and shews how we may best gain the object which discourse proposes to accomplish, whether that be to please or instruct, to convince or persuade. These two branches of study when united enable us to communicate our thoughts to others, either in speech or writing, with purity and precision, with force and elegance. It is evident, then, that they are intimately connected with Logic which helps us to think, judge, and reason, with readiness and accuracy. If the terms which we employ are not clear and distinct; if we cannot easily discern wherein objects agree and disagree, and pronounce accordingly; and if the inferences deduced from these decisions are not drawn promptly and conclusively, it will matter little that grammatical purity and rhetorical elegance have been preserved. With these important studies, then, Logic should be associated, if we wish to reap, with the greatest
advantage, the benefits which they are each intended to communicate.

Grammar may be looked upon as the introduction to logical pursuits; and though its office be not dignified, it is nevertheless of indispensable necessity. Without a knowledge of the rules and principles developed by the Grammarian, it is impossible to advance a step in the prosecution of logical enquiries with any hope of success. The various definitions, distinctions, and classifications, which lie at the very threshold of this Science, in many instances, belong almost as properly to the one study as to the other. Logic has for its object the laws of thought, in so far as the reasoning process is concerned; but as language is the medium of thought, and as these two exert a mutual influence on each other, it is necessary that language, in some degree, come under the consideration of the logician. Here then it is that Grammar and Logic meet; the one takes up, and prosecutes, and applies to its own use, what the other had previously prepared. A knowledge of the principles and rules which have led to the formation of artificial signs for the communication of thought, and an acquaintance with the different classes of such signs, with their various functions, combinations, and accidents, must be valuable both in a speculative and practical point of view. It was by considering speech and language in this way that the science of Grammar was produced, which consists of two kinds, the one popular, the other philosophical. The former is
intended to aid us in the speedy and perfect acquisition of languages, so that we may intelligibly communicate and understand the ideas which are conveyed from one to another in the common intercourse of society, whether by speech or by writing. This branch of Grammar therefore treats of the order, connection, and dependance of words as laid down in rules of syntax and construction; and whoever enters on the study of Logic without having previously made himself intimately acquainted with the principles and rules there developed, undertakes a difficult if not an impracticable task. But that part of Grammar which has been styled philosophical moves in a higher sphere. It is employed in examining the nature and powers of words; and its office is to enter into the philosophy of languages. It is when taken in this latter sense that Grammar is seen to be intimately connected with Logic. The first part of Logic, which treats of terms, enters deeply into the philosophy of language. Much depends, in every process of argumentation, on the mere verbal part of the argument; and, in so far as this is concerned, the labours of the Grammarian and the Logician very nearly coincide. But, properly speaking, the former prepares the way for the latter, introduces him to the right path, and removes many obstacles that would materially impede him in prosecuting his journey.

As Grammar may be considered the introduction, so Rhetoric is merely an extension of this Science. The object which Logic and Rhetoric propose to ac-
complish is in some respects the same, since they are both intended to produce conviction by a process of reasoning. But the manner in which they accomplish this end is different. The Logician has his premises laid before him, and his office is to draw a conclusion from them; on the other hand the Rhetorician has the conclusion given, and his object is to seek for arguments by which it may be established. The one is the Advocate, who has to exert his talent and ingenuity to find arguments to support the cause he has espoused: the other is the Judge, who has to determine whether these arguments are valid or not. The subject matter of both may be the same; and, in so far as the bare process of reasoning extends, that is, of course, also the same in both. But Rhetoric proceeds farther than the mere process of reasoning. It has to invent arguments; to find out those that are most suitable for the matter in hand; to arrange them in their proper order; and so to state and enforce them, as shall be most likely either to illuminate the understanding, please the imagination, influence the will, or move the passions. It is evident, then, although these two branches of study are intimately connected, that the one advances much farther than the other. As an acquaintance with Grammar is necessary before we can properly enter on the study of Logic, so a knowledge of Rhetoric is essential to the successful application of the Science to practical purposes. These three branches of study, therefore, naturally follow each other in the order we have specified, and tend mutually to aid and perfect each other.
It appears, then, from what has now been advanced, that Method, although generally brought forward as a distinct part of Logic, and dignified with the name of a logical instrument, belongs more properly to Rhetoric than to Logic. By method, as it is explained, we are to understand the arrangement of our thoughts in such a manner as shall best aid the mind in the acquisition or communication of knowledge. It includes more than mere order. It is such a disposition of our mental stores as may lead to their increase, or to their most efficient application; it is such an arrangement of our thoughts, on any particular subject, as may lead us most easily, and speedily, and safely, from one branch of it to another, till we ultimately obtain a clear and adequate acquaintance with the whole.

The utility of such an instrument no one will deny. It will preserve the mind from confusion and mistake, and greatly facilitate our attempts both to acquire and impart information. We are far, then, from depreciating the rules that have been laid down on this subject, and which are generally given in works on Logic, as a fourth part of the system. But as method is perfectly distinct from the reasoning process, and is subservient more especially to the art of communication, we prefer assigning it to Rhetoric, to which it seems more properly to belong. This will more evidently appear if we glance for a moment at the two principal divisions of method, the Analytic and the Synthetic.

By the Analytic Method we arrive at the know-
ledge of a subject by taking it as a whole, and resolving it into its component parts. The procedure in this case is from generals to particulars; from a whole to its parts, from effects to their causes. This method is employed, not so much in the arrangement and classification of known truths, as in the search after those that are not yet clearly ascertained. It has therefore been called the method of invention, because it observes the order in which our minds are employed in the invention or discovery of truth. The Synthetic method is just the reverse of this. We here begin with the elementary parts of a subject, and trace them up till we ascertain what it is as a whole. In this case the process is from the simple to the compound, from the parts to the whole, from causes to effects. This has been called the method of instruction, because it is most commonly employed in explaining and communicating knowledge to others. These two methods, then, have evidently a special reference to the business of the Rhetorician. By the one he invents his argument; by the other he arranges them so that he may most effectually instruct, persuade, or excite those whom he addresses. The rules that have been laid down respecting method, and those relating to the writing of themes, and the conducting of disputations, which are generally given in connection with it, we therefore hand over to the Rhetorician, since they belong more properly to his Art, than to the Science of Reasoning.