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Sketches Of The History Of Man

In Two Volumes

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Book III. Progress of Sciences.

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SKETCHES

OF THE

HISTORY OF MAN.

BOOK III.

Progreſs of SCIENCES.

PREFACE.

MOrality, theology, and the art of reaſoning, are three great branches of a learned education; and are juſtly held to be ſo, becauſe they are our only ſure guides in paſſing through the intricate paths of life. They are indeed not eſſential to thoſe termed men of the world: *the moſt profound philoſopher makes but an inſipid figure in faſhionable company; would be ſomewhat ridiculous at a court-ball; and an abſolute abſurdity among the gameſters at Arthur's, or jockeys at*

Newmarket. But, these cogent objections notwithstanding, I venture to pronounce such studies to be not altogether unsuitable to a gentleman. Man is a creature full of curiosity; and to gratify that appetite, many roam through the world, submitting to heat and cold, nay to hunger and thirst, without a sigh. Could indeed that troublesome guest be expelled, we might hug ourselves in ignorance; and, like true men of the world, undervalue knowledge, that can neither procure money, nor a new sensual pleasure. But, alas! the expulsion is not in the power of every one; and those who have not that power, will probably think it not amiss, to employ their curiosity upon studies that make them good members of society, and endear them to every person of virtue.

And were we even men of the world in such perfection, as to regard nothing but our own interest; yet does not ignorance lay us open to the crafty and designing? and does not the art of reasoning guard many an honest man from being misled by subtle sophisms? With respect to right and wrong, not even passion is more dangerous than error. And as to religion, better it were to settle in a conviction that there is no God, than to be in a state of wavering and fluctuation; sometimes indulging every loose desire, as if we were not accountable beings; and sometimes yielding to superstitious fears, as if there were no god but the devil. To a well-disposed mind, the existence of a supreme benevolent Deity, appears highly probable: and if happily the study of theology lead us to a conviction that there really is such a being; the conviction will be a source of constant enjoyment, which I boldly set above the titillating pleasures of external sense. Possibly there may be less present amusement in abstract studies, than in news-papers, in party-pamphlets, or in Hoyl upon Whist: but let us for a moment anticipate futurity, and imagine that we are reviewing past transactions, — how pleasant the retrospect of those who have maintained the dignity of their nature, and employ'd their talents to the best purposes!

Contradictory opinions that have influence on practice, will be regretted by every person of a sound heart; and as erroneous opinions are commonly

monly the reſult of imperfect education, I would gladly hope, that a remedy is not altogether out of reach. At the rivival of arts and ſciences, the learned languages were our ſole ſtudy, becauſe in them were locked up all the treaſures of uſeful knowledge. This ſtudy has long ago ceaſed to be the chief object of education; and yet the original plan is handed down to us with very little variation. Wiſhing to contribute to a more perfect ſyſtem of education, I preſent to the public the following ſketches. The books that have been publiſhed upon morality, theology, and the art of reaſoning, are not eminent either for ſimplicity, or for clear ideas. To introduce theſe into the ſubjects mentioned, is my aim; with what ſucceſs, is chearfully ſubmitted to the judgement of others. The hiſtorical part, hitherto much neglected, is neceſſary as a branch of my general plan; and I am hopeful, that beſide inſtruction, it will contribute to recreation, which, in abſtract ſtudies, is no leſs neceſſary than pleaſant.

SKETCH

SKETCH I.

Principles and Progreſs of REASON.

SECTION I.

PRINCIPLES OF REASON.

EVery affirmation, whatever be the ſubject, is termed a *propoſition.*

Truth and error are qualities of propoſitions. A propoſition that ſays a thing is what it is in reality, is termed a *true propoſition.* A propoſition that ſays a thing is what it is not in reality, is termed an *erroneous propoſition.*

Our knowledge of what is agreeable and diſagreeable in objects is derived from the ſenſe of beauty, handled in Elements of Criticiſm. Our knowledge of right and wrong in actions, is derived from the moral ſenſe, to be handled in the ſketch immediately following. Our knowledge of truth and error is derived from various ſources.

Our external ſenſes are one ſource of knowledge: they lay open to us external ſubjects, their qualities, their actions, with events produced by theſe actions. The internal ſenſes are another ſource of knowledge: they lay open to us things paſſing in the mind; thinking,

thinking, for example, deliberating, inclining, reſolving, willing, conſenting, and other actions; and they alſo lay open to us our emotions and paſſions. There is a ſenſe by which we perceive the truth of many propoſitions; ſuch as, That every thing which begins to exiſt, muſt have a cauſe; That every effect adapted to ſome end or purpoſe, proceeds from a deſigning cauſe; and, That every effect adapted to a good end or purpoſe, proceeds from a deſigning and benevolent cauſe. A multitude of axioms in every ſcience, particularly in mathematics, are perceived to be equally true. By a peculiar ſenſe, of which afterward, we know that there us a Deity. By another ſenſe we know, that the external ſigns of paſſion are the ſame in all men; that animals of the ſame external appearance, are of the ſame ſpecies; and that animals of the ſame ſpecies, have the ſame properties (*a*). By another ſenſe we ſee into futurity: we know that the ſun will riſe to-morrow; that the earth will perform its wonted courſe round the ſun; that winter and ſummer will follow each other in ſucceſſion; that a ſtone dropt from the hand will fall to the ground; and a thouſand other ſuch propoſitions.

There are many propoſitions, the truth of which is not ſo apparent: a proceſs of reaſoning is neceſſary, of which afterward.

Human teſtimony is another ſource of knowledge. So framed are we by nature, as to rely on human teſtimony; by which we are informed of beings, attributes, and events, that never came under any of our ſenſes.

The knowledge that is derived from the ſources mentioned, is of different kinds. In ſome caſes, our knowledge includes abſolute certainty, and produces the higheſt degree of conviction: in other caſes, probability comes in place of certainty, and the conviction is inferior in degree. Knowledge of the latter kind is diſtinguiſhed

(*a*) Book 1. ſketch 2.

into

into belief, which concerns facts; and opinion, which concerns relations, and other things that fall not under the denomination of facts. In contradiſtinction to opinion and belief, that ſort of knowledge which includes abſolute certainty, and produces the higheſt degree of conviction, retains its proper name. To explain what is here ſaid, I enter into particulars.

The ſenſe of ſeeing, with very few exceptions, affords knowledge in its proper ſenſe. It is not in our power to doubt of the exiſtence of a perſon we ſee, touch, and converſe with; and when ſuch is our conſtitution, it is a vain attempt to call in queſtion the authority of our ſenſe of ſeeing, as ſome writers pretend to do. No one ever called in queſtion the exiſtence of internal actions and paſſions, laid open to us by internal ſenſe; and there is as little ground for doubting of what we ſee. The ſenſe of ſeeing, it is true, is not always correct: through different mediums the ſame object is ſeen differently: to a jaundic'd eye every thing appears yellow; and to one intoxicated with liquor, two candles ſometimes appear four. But we are never left without remedy in ſuch a caſe: it is the province of the reaſoning faculty, to correct every error of that kind.

An object of ſight, when recalled to mind by the power of memory, is termed an *idea* or ſecondary perception. An original perception, as ſaid above, affords knowledge in its proper ſenſe; but a ſecondary perception affords belief only. And Nature in this, as in all other inſtances, is faithful to truth; for it is evident, that we cannot be ſo certain of the exiſtence of an object in its abſence, as when preſent.

With reſpect to many abſtract propoſitions, of which inſtances are above given, we have an abſolute certainty and conviction of their truth, derived to us from various ſenſes. We can, for example, entertain as little doubt, that every thing which begins to exiſt, muſt have a cauſe, as that the ſun is in the firmament; and

as

as little doubt that he will riſe to-morrow, as that he is now ſet. There are many other propoſitions, the truth of which is probable only, not abſolutely certain; as, for example, that things will continue in their ordinary ſtate. That natural operations are performed in the ſimpleſt manner, is an axiom of natural philoſophy: it may be probable, but is far from being certain *.

In every one of the inſtances given, conviction ariſes from a ſingle act of perception: for which reaſon, knowledge acquired by means of that perception, not only knowledge in its proper ſenſe, but alſo opinion and belief, are termed *intuitive knowledge*. But there are many things, the knowledge of which is not obtained with ſo much facility. Propoſitions for the moſt part require a proceſs or operation in the mind, termed *reaſoning*; leading, by certain intermediate ſteps, to the propoſition that is to be demonſtrated or made evident; which, in oppoſition to intuitive knowledge, is termed *diſcurſive knowledge*. This proceſs or operation muſt be explained, in order to underſtand the nature of reaſoning. And as reaſoning is moſtly employ'd in diſcovering relations, I ſhall draw my examples from them. Every propoſition concerning relations, is an affirmation of a certain relation between two ſubjects. If the relation affirmed appear not intuitively, we muſt ſearch for a third ſubject, that appears intuitively to be connected with each of the others, by the relation affirmed: and if ſuch a ſubject be found, the propoſition is demonſtrated; for it is

* I have given this propoſition a place, becauſe it is aſſumed as an axiom by all writers on natural philoſophy. And yet there appears ſome room for doubting, whether the conviction we have of it do not proceed from a bias in our nature, rather than from an original ſenſe. Our taſte for ſimplicity, which undoubtedly is natural, renders ſimple operations more agreeable than what are complex, and conſequently makes them appear more natural. It deſerves a moſt ſerious diſcuſſion, whether the operations of nature be always carried on with the greateſt ſimplicity, or whether we be not miſled by our taſte for ſimplicity, to be of that opinion.

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intuitively certain, that two ſubjects, connected with a third by any particular relation, muſt be connected together by the ſame relation. The longeſt chain of reaſoning may be linked together in this manner. Running over ſuch a chain, every one of the ſubjects muſt appear intuitively to be connected with that immediately preceding, and with that immediately ſubſequent, by the relation affirmed in the propoſition; and from the whole united, the propoſition, as above mentioned, muſt appear intuitively certain. The laſt ſtep of the proceſs is termed *a concluſion*, being the laſt or concluding perception.

No ſort of reaſoning affords ſo clear a notion of the foregoing proceſs, as that which is mathematical. Equality is the only mathematical relation; and compariſon therefore is the only means by which mathematical propoſitions are aſcertained. To that ſcience belong a ſet of intuitive propoſitions, termed *axioms*, which are all founded on equality. For example: Divide two equal lines, each of them, into a thouſand equal parts, a ſingle part of the one line muſt be equal to a ſingle part of the other. Second: Take ten of theſe parts from the one line, and as many from the other, and the remaining parts muſt be equal: which is more ſhortly expreſſed thus: From two equal lines take equal parts, and the remainders will be equal; or add equal parts, and the ſums will be equal. Third: If two things be, in the ſame reſpect, equal to a third, the one is equal to the other in the ſame reſpect. I proceed to ſhow the uſe of theſe axioms. Two things may be equal without being intuitively ſo; which is the caſe of the equality between the three angles of a triangle and two right angles. To demonſtrate that truth, it is neceſſary to ſearch for ſome other angles, which appear by intuition to be equal to both. If this property cannot be diſcovered in any one ſet of angles, we muſt go more leiſurely to work, by trying to find angles that are equal to the three angles of a triangle. Theſe being diſcovered, we next try to find other angles equal to the angles

angles now discovered; and so on in the comparison, till at last we discover a set of angles, equal not only to those thus introduced, but also to two right angles. We thus connect the two parts of the original proposition, by a number of intermediate equalities; and by that means perceive, that these two parts are equal among themselves; it being an intuitive proposition, as mentioned above, That two things are equal, each of which, in the same respect, is equal to a third.

I proceed to a different example, which concerns the relation between cause and effect. The proposition to be demonstrated is, "That there exists a good and intelligent Being, who is the cause "of all the wise and benevolent effects that are produced in the "government of this world." That there are such effects, is in the present example the fundamental proposition, which is taken for granted, because it is verified by experience. In order to discover the cause of these effects, I begin with an intuitive proposition mentioned above, "That every effect adapted to a good end "or purpose, proceeds from a designing and benevolent cause." The next step is, to examine whether man can be the cause: he is provided indeed with some share of wisdom and benevolence; but the effects mentioned are far above his power, and no less above his wisdom. Neither can this earth be the cause, nor the sun, the moon, the stars; for, far from being wise and benevolent, they are not even sensible. If these be excluded, we are unavoidably led to an invisible being, endowed with boundless power, goodness, and intelligence; and that invisible being is termed *God*.

Reasoning requires two mental powers, namely, the powers of invention, and of perceiving relations. By the former are discovered intermediate propositions, equally related to the fundamental proposition, and to the conclusion: and by the latter we perceive, that the different links which compose the chain of reasoning, are all connected together by the same relation.

We can reaſon about matters of opinion and belief, as well as about matters of knowledge, properly ſo termed. Hence reaſoning is diſtinguiſhed into two kinds; demonſtrative, and probable. Demonſtrative reaſoning is alſo of two kinds: in the firſt, the concluſion is drawn from the nature and inherent properties of the ſubject: in the other, the concluſion is drawn from ſome principle, of which we are certain by intuition. With reſpect to the firſt, we have no ſuch knowledge of the nature or inherent properties of any being, material or immaterial, as to draw concluſions from it with certainty. I except not even figure conſidered as a quality of matter, tho' it is the object of mathematical reaſoning. As we have no ſtandard for determining with preciſion the figure of any portion of matter, we cannot with preciſion reaſon upon it: what appears to us a ſtraight line may be a curve, and what appears a rectilinear angle may be curvilinear. How then comes mathematical reaſoning to be demonſtrative? This queſtion may appear at firſt ſight puzzling; and I know not that it has any where been diſtinctly explained. Perhaps what follows may be ſatisfactory.

The ſubjects of arithmetical reaſoning are numbers. The ſubjects of mathematical reaſoning are figures. But what figures are ſubjects of mathematical reaſoning? Not ſuch as I ſee; but ſuch as I form an idea of, abſtracting from every imperfection. I explain myſelf. There is a power in man to form images of things that never exiſted; a golden mountain, for example, or a river running upward. This power operates upon figures. There is perhaps no figure exiſting the ſides of which are ſtraight lines. But it is eaſy to form an idea of a line, that has no waving or crookedneſs in it; and it is eaſy to form an idea of a figure bounded by ſuch lines. Such ideal figures are the ſubjects of mathematical reaſoning; and theſe being perfectly clear and diſtinct, are proper ſubjects for demonſtrative reaſoning of the firſt kind. Mathematical

thematical reaſoning however is not merely a mental entertainment: it is of real uſe in life, by directing the powers and properties of matter. There poſſibly may not be found any where a perfect globe, to anſwer the idea we form of that figure: but a globe may be made ſo near perfection, as that the properties demonſtrated to belong to the idea of a perfect globe will be nearly applicable to that figure. In a word, tho' ideas are, properly ſpeaking, the ſubject of mathematical evidence; yet the end and purpoſe of that evidence is, to direct us with reſpect to figures as they really exiſt; and the nearer any real figure approaches to the idea we form of it, with the greater accuracy will the mathematical truth be applicable.

The component parts of figures, viz. lines and angles, are extremely ſimple, requiring no definition. Place before a child a crooked line, and one that has no appearance of being crooked; call the former a *crooked line*, the latter a *ſtraight line*; and the child will uſe theſe terms familiarly, without hazard of a miſtake. Draw a perpendicular upon paper; let the child advert, that the upward line leans neither to the right nor the left, and for that reaſon is termed *a perpendicular*: the child will apply that term familiarily to a tree, to the wall of a houſe, or to any other perpendicular. In the ſame manner, place before the child two lines diverging from each other, and two that have no appearance of diverging: call the latter *parallel lines*, and the child will have no difficulty of applying the ſame term to the ſides of a door or of a window. Yet ſo accuſtomed are we to definitions, that even theſe ſimple ideas are not ſuffered to eſcape. A ſtraight line, for example, is defined to be the ſhorteſt that can be drawn between two given points. The fact is certain; but ſo far from a definition, that it is an inference drawn from the idea of a ſtraight line: and had I not beforehand a clear idea of a ſtraight line, I could not infer that it is the ſhorteſt between two given points.

D'Alembert

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D'Alembert ſtrains hard, but without ſucceſs, for a definition of a ſtraight line, and of the others mentioned. It is difficult to avoid ſmiling at his definition of parallel lines. Draw, ſays he, a ſtraight line: erect upon it two perpendiculars of the ſame length: upon their two extremities draw another ſtraight line; and that line is ſaid to be parallel to the firſt mentioned: as if, to underſtand what is meant by the expreſſion *two parallel lines*, we muſt firſt underſtand what is meant by a ſtraight line, by a perpendicular, and by two lines equal in length. A very ſlight reflection upon the operations of his own mind, would have taught this author, that he could form the idea of parallel lines without running through ſo many intermediate ſteps: ſight alone is ſufficient to explain the term to a boy, and even to a girl. At any rate, where is the neceſſity of introducing the line laſt mentioned? If the idea of parallels cannot be obtained from the two perpendiculars alone, the additional line drawn through their extremities will certainly not make it more clear.

Mathematical figures being in their nature complex, are capable of being defined; and from the foregoing ſimple ideas, it is eaſy to define every one of them. For example, a circle is a figure having a point within it, named the *centre*, through which all the ſtraight lines that can be drawn, and extended to the circumference, are equal; a ſurface bounded by four equal ſtraight lines, and having four right angles, is termed a *ſquare*; and a cube is a ſolid, of which all the ſix ſurfaces are ſquares.

In the inveſtigation of mathematical truths, we aſſiſt the imagination, by drawing figures upon paper that reſemble our ideas. There is no neceſſity for a perfect reſemblance: a black ſpot, which in reality is a ſmall round ſurface, ſerves to repreſent a mathematical point; and a black line, which in reality is a long narrow ſurface, ſerves to repreſent a mathematical line. When we reaſon about the figures compoſed of ſuch lines, it is ſufficient that

that theſe figures have ſome appearance of regularity: leſs or more is of no importance; becauſe our reaſoning is not founded upon them, but upon our ideas. Thus, to demonſtrate that the three angles of a triangle are equal to two right angles, a triangle is drawn upon paper, in order to keep the mind ſteady to its object, and to prevent wandering. After tracing the ſteps that lead to the concluſion, we are ſatisfied that the propoſition is true; being conſcious that the reaſoning is built upon the ideal figure, not upon that which is drawn upon the paper. And being alſo conſcious that the enquiry is carried on independent of any particular length of the ſides, we are ſatisfied of the univerſality of the propoſition, and of its being applicable to all triangles whatever.

Numbers conſidered by themſelves, abſtractedly from things, make the ſubject of arithmetic. And with reſpect both to mathematical and arithmetical reaſonings, which frequently conſiſt of many ſteps, the proceſs is ſhortened by the invention of ſigns, which, by a ſingle daſh of the pen, expreſs clearly what would require many words. By that means, a very long chain of reaſoning is expreſſed by a few ſymbols; a method that contributes greatly to readineſs of comprehenſion. If in ſuch reaſonings words were neceſſary, the mind, embarraſſed with their multiplicity, would have great difficulty to follow any long chain of reaſoning. A line drawn upon paper repreſents an ideal line, and a few ſimple characters repreſent the abſtract ideas of number.

Arithmetical reaſoning, like mathematical, depends entirely upon the relation of equality, which can be aſcertained with the greateſt certainty among many ideas. Hence, reaſonings upon ſuch ideas afford the higheſt degree of conviction. I do not ſay, however, that this is always the caſe; for a man who is conſcious of his own fallibility, is ſeldom without ſome degree of diffidence,

where

where the reaſoning conſiſts of many ſteps. And tho' on a review no error is diſcovered, yet he is conſcious that there may be errors, tho' they have eſcaped him.

As to the other kind of demonſtrative reaſoning, founded on ſome propoſition of which we are intuitively certain; I juſtly call it *demonſtrative*, becauſe it affords the ſame conviction that ariſes from mathematical reaſoning. In both, the means of conviction are the ſame, viz. a clear perception of the relation between two ideas: and there are many relations of which we have ideas no leſs clear than of equality; witneſs ſubſtance and quality, the whole and its parts, cauſe and effect, and many others. From the intuitive propoſition, for example, That nothing which begins to exiſt can exiſt without a cauſe, I can conclude, that ſome one being muſt have exiſted from all eternity, with no leſs certainty, than that the three angles of a triangle are equal to two right angles.

What falls next in order, is that inferior kind of knowledge which is termed *opinion;* and which, like knowledge properly ſo termed, is founded in ſome inſtances upon intuition, and in ſome upon reaſoning. But it differs from knowledge in the following particular, that it produces different degrees of conviction, ſometimes approaching to certainty, and ſometimes ſinking toward the verge of improbability. The conſtancy and uniformity of natural operations, is a fit ſubject for illuſtrating that difference. The future ſucceſſive changes of day and night, of winter and ſummer, and of other ſucceſſions which have hitherto been regular and uniform, fall under intuitive knowledge, becauſe of theſe we have the higheſt conviction. As the conviction is inferior of ſucceſſions that hitherto have been varied in any degree, theſe fall under intuitive opinion. We expect ſummer after winter with the utmoſt confidence; but we have not the ſame confidence in expecting a hot ſummer or a cold winter. And yet the probability

lity approaches much nearer to certainty, than the intuitive opinion we have, that the operations of nature are extremely ſimple, a propoſition that is very little rely'd on.

As to opinion founded on reaſoning, it is obvious, that the conviction produced by the reaſoning, can never riſe above what is produced by the intuitive propoſition upon which the reaſoning is founded. And that it may be weaker, will appear from conſidering, that even where the fundamental propoſition is certain, it may lead to the concluſive opinion by intermediate propoſitions, that are probable only, not certain. In a word, it holds in general with reſpect to every ſort of reaſoning, that the concluſive propoſition can never riſe higher in point of conviction, than the very loweſt of the intuitive propoſitions employ'd as ſteps in the reaſoning.

The perception we have of the contingency of future events, opens a wide field to our reaſoning about probabilities. That perception involves more or leſs doubt according to its ſubject. In ſome inſtances, the event is perceived to be extremely doubtful; in others it is perceived to be leſs doubtful. It appears altogether doubtful, in throwing a dye, which of the ſix ſides will turn up; and for that reaſon, we cannot juſtly conclude for one rather than another. If one only of the ſix ſides be marked with a figure, we conclude, that a blank will turn up; and five to one is an equal wager that ſuch will be the effect. In judging of the future behaviour of a man who has hitherto been governed by intereſt, we may conclude with a probability approaching to certainty, that intereſt will continue to prevail.

Belief comes laſt in order, which, as defined above, is knowledge of the truth of facts that falls below certainty, and involves in its nature ſome degree of doubt. It is alſo of two kinds; one founded upon intuition, and one upon reaſoning. Thus, knowledge, opinion, belief, are all of them equally diſtinguiſhable in-

to intuitive and diſcurſive. Of intuitive belief, I diſcover three different ſources or cauſes. Firſt, A preſent object. Secondly, An object formerly preſent. Thirdly, The teſtimony of others.

To have a clear conception of the firſt cauſe, it muſt be obſerved, that among the ſimple perceptions that compoſe the complex perception of a preſent object, a perception of real and preſent exiſtence is one. This perception riſes commonly to certainty; in which caſe it is a branch of knowledge properly ſo termed; and is handled as ſuch above. But this perception falls below certainty in ſome inſtances; as when an object, ſeen at a great diſtance, or in a fog, is perceived to be a horſe, but ſo indiſtinctly as to make it a probability only. The perception in ſuch a caſe is termed *belief*. Both perceptions are fundamentally of the ſame nature; being ſimple perceptions of real exiſtence. They differ only in point of accuracy: the perception of reality that makes a branch of knowledge, is ſo clear and diſtinct as to exclude all doubt or heſitation: the perception of reality that occaſions belief, being leſs clear and diſtinct, makes not the exiſtence of the object certain to us, but only probable.

With reſpect to the ſecond cauſe; the exiſtence of an abſent object, formerly ſeen, amounts not to a certainty; and therefore is the ſubject of belief only, not of knowledge. Things are in a continual flux from production to diſſolution; and our ſenſes are accommodated to that variable ſcene: a preſent object admits no doubt of its exiſtence; but after it is removed, its exiſtence becomes leſs certain, and in time ſinks down to a ſlight degree of probability.

Human teſtimony, the third cauſe, produces belief, more or leſs ſtrong, according to circumſtances. In general, nature leads us to rely upon the veracity of each other; and commonly the degree of reliance is proportioned to the degree of veracity. Sometimes belief approaches to certainty, as when it is founded on the evidence

evidence of perſons above all exception. Sometimes it ſinks to the loweſt degree of probability, as when a fact is told by one who has no great reputation for truth. The nature of the fact, common or uncommon, has likewiſe an influence: an ordinary incident gains credit upon very ſlight evidence; but it requires the ſtrongeſt evidence to overcome the improbability of an event that deviates from the ordinary courſe of nature. At the ſame time, it muſt be obſerved, that belief is not always founded upon rational principles. There are biaſſes and weakneſſes in human nature that ſometimes diſturb the operation, and produce belief without ſufficient or proper evidence: we are diſpoſed to believe on very ſlight evidence, an intereſting event, however rare or ſingular, that alarms and agitates the mind; becauſe the mind, in agitation, is remarkably ſuſceptible of impreſſions: for which reaſon, ſtories of ghoſts and apparitions paſs current with the vulgar. Eloquence alſo has great power over the mind; and, by making deep impreſſions, enforces the belief of facts upon evidence that would not be regarded in a cool moment.

The dependence that our perception of real exiſtence, and conſequently belief, hath upon oral evidence, enlivens ſocial intercourſe, and promotes ſociety. But the perception of real exiſtence has a ſtill more extenſive influence; for from that perception is derived a great part of the entertainment we find in hiſtory, and in hiſtorical fables (*a*). At the ſame time, a perception that may be raiſed by fiction as well as by truth, would often miſlead, were we abandoned to its impulſe: but the God of nature hath provided a remedy for that evil, by erecting within the mind a tribunal, to which there lies an appeal from the raſh impreſſions of ſenſe. When the deluſion of eloquence or of dread

(*a*) Elements of Criticiſm, ch. 2. part 1. § 7.

ſubſides, the perplexed mind is uncertain what to believe. A regular proceſs commences, counſel is heard, evidence produced, and a final judgement pronounced, ſometimes confirming, ſometimes varying, the belief impreſſed upon us by the lively perception of reality. Thus, by a wiſe appointment of nature, intuitive belief is ſubjected to rational diſcuſſion: when confirmed by reaſon, it turns more vigorous and authoritative: when contradicted by reaſon, it diſappears among ſenſible people. In ſome inſtances, it is too headſtrong for reaſon; as in the caſe of hobgoblins and apparitions, which paſs current among the vulgar in ſpite of reaſon.

We proceed to the other kind of belief, viz. that which is founded on reaſoning, to which, when intuition fails us, we muſt have recourſe for aſcertaining certain facts. Thus, from known effects, we infer the exiſtence of unknown cauſes. That an effect muſt have a cauſe, is an intuitive propoſition; but to aſcertain what particular thing is the cauſe, requires commonly a proceſs of reaſoning. This is one of the means by which the Deity, the primary cauſe, is made known to us, as mentioned above. Reaſon, in tracing cauſes from known effects, produces different degrees of conviction. It ſometimes produces certainty, as in proving the exiſtence of the Deity; which on that account is handled above, under the head of knowledge. For the moſt part it produces belief only, which, according to the ſtrength of the reaſoning, ſometimes approaches to certainty, and ſometimes is ſo weak as barely to turn the ſcale on the ſide of probability. Take the following examples of different degrees of belief founded on probable reaſoning. When Inigo Jones flouriſhed, and was the only architect of note in England, let it be ſuppoſed that his model of the palace of Whitehall had been preſented to a ſtranger, without mentioning the author. The ſtranger, in the firſt place, would have been intuitively certain, that this was the work of

ſome

ſome being intelligent and ſkilful. Secondly, He would have had a conviction approaching to certainty, that the operator was a man. And, thirdly, He would have had a conviction that the man was Inigo Jones; but leſs firm than the former. Let us next ſuppoſe another Engliſh architect little inferior in reputation to Jones: the ſtranger would ſtill have pronounced in favour of the latter; but his belief would have been in the loweſt degree.

When we inveſtigate the cauſes of certain effects, the reaſoning is often founded upon the known nature of man. In the high country, for example, between Edinburgh and Glaſgow, the people lay their coals at the end of their houſes, without any fence to ſecure them from theft: whence it is rationally inferred, that coals are there in plenty. In the weſt of Scotland, the corn-ſtacks are covered with great care and nicety: whence it is inferred, that the climate is rainy. Placentia is the capital town of Biſcay; and the only town in Newfoundland bears the ſame name; from which circumſtance it is conjectured, that the Biſcayners were the firſt Europeans who made a ſettlement in that iſland.

Analogical reaſoning, founded upon the uniformity of nature, is frequently employ'd in the inveſtigation of facts; and we infer, that facts of which we are uncertain, muſt reſemble thoſe of the ſame kind that are known. The bulk of the reaſonings in natural philoſophy are of that kind. Take the following examples. We learn from experience, that proceeding from the humbleſt vegetable to man, there are numberleſs claſſes of beings riſing one above another, by differences ſcarce perceptible, and leaving no where a ſingle gap or interval: and from conviction of the uniformity of nature, we infer, that the line is not broken off here, but is carried on in other worlds, till it end in the Deity. I proceed to another example. Every man is conſcious of a ſelf-motive power in himſelf; and from the uniformity of nature, we infer

infer the ſame power in every one of our own ſpecies. The argument here from analogy carries great weight, becauſe we entertain no doubt of the uniformity of nature with reſpect to beings of our own kind. We apply the ſame argument to other animals, tho' their reſemblance to man appears not ſo certain, as that of one man to another. But why not alſo apply the ſame argument to infer a ſelf-motive power in matter? When we ſee matter in motion without an external mover, we naturally infer, that, like us, it moves itſelf. Another example is borrow'd from Maupertuis. "As there is no known ſpace of the earth covered with "water ſo large as the *Terra Auſtralis incognita*, we may reaſon-"ably infer, that ſo great a part of the earth is not altogether "ſea, but that there muſt be ſome proportion of land." The uniformity of nature with reſpect to the intermixture of ſea and land, is an argument that affords but a very ſlender degree of conviction. The following argument of the ſame kind, tho' it cannot be much rely'd on, ſeems however better founded. "The "inhabitants of the northern hemiſphere, have, in arts and ſcien-"ces, excelled ſuch of the ſouthern as we have any knowledge of: "and therefore, if inhabitants be found in the *Terra Auſtralis in-"cognita*, we ought not to expect among them many arts, nor "much cultivation."

After a fatiguing inveſtigation of numberleſs particulars which divide and ſcatter the thought, it may not be unpleaſant to bring all under one view by a ſuccinct recapitulation.

We have two means for diſcovering truth, and acquiring knowledge, viz. intuition and reaſoning. By intuition we diſcover ſubjects, and their attributes, paſſions, internal action, and in ſhort every thing that is matter of fact. By intuition we alſo diſcover ſeveral relations. There are ſome facts, and many relations, that cannot be diſcovered by a ſingle act of intuition, but

but require ſeveral ſuch acts linked together in a chain of reaſoning.

Knowledge acquired by intuition, includes for the moſt part certainty: in ſome inſtances it includes probability only. Knowledge acquired by reaſoning, frequently includes certainty; but more frequently includes probability only.

Probable knowledge, whether founded on intuition or on reaſoning, is termed *opinion* when it concerns relations; and is termed *belief* when it concerns facts. When knowledge includes certainty, it retains its proper name.

Reaſoning that produces certainty, is termed *demonſtrative*; and is termed *probable*, when it only produces probability.

Demonſtrative reaſoning is of two kinds. The firſt is, where the concluſion is derived from the nature and inherent properties of the ſubject: mathematical reaſoning is of that kind; and perhaps the only inſtance. The ſecond is, where the concluſion is derived from ſome propoſition, of which we are certain by intuition.

Probable reaſoning is endleſs in its varieties; and affords different degrees of conviction, depending on the nature of the ſubject upon which it is employ'd.

SECT.

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SECT. II.

Progress of Reason.

A Progreſs from infancy to maturity in the mind of man, ſimilar to that in his body, has been often mentioned. The external ſenſes, being early neceſſary for ſelf-preſervation, arrive quickly at maturity. The internal ſenſes are of a ſlower growth, as well as every other mental power: their maturity would be of little or no uſe while the body is weak, and unfit for action. Reaſoning, as obſerved in the firſt ſection, requires two mental powers, viz. the power of invention, and that of perceiving relations. By the former power are diſcovered intermediate propoſitions, equally related to the fundamental propoſition and to the concluſion; and that relation is verified by the latter power. Both powers are neceſſary to the perſon who frames an argument, or a chain of reaſoning: the latter only to the perſon who judges of it. Savages are miſerably deficient in both. With reſpect to the former, a ſavage may have a pregnant talent for invention; but it will ſtand him in little ſtead without a ſtock of ideas enabling him to ſelect what may anſwer the purpoſe; and what opportunity has a ſavage to acquire ſuch a ſtock? With reſpect to the latter, he knows little of relations: and how ſhould he know, when both ſtudy and practice are neceſſary for diſtinguiſhing between relations, and for preventing the being impoſed on by the ſhadow of a relation inſtead of the ſubſtance? The underſtanding, at the ſame time, among the illiterate, is obſequious to paſſion and prepoſſeſſion;

poſſeſſion; and among them the imagination acts without control, forming concluſions often no better than mere dreams. In ſhort, conſidering the many cauſes that miſlead from juſt reaſoning, in days eſpecially of ignorance, the erroneous and abſurd opinions that have prevailed in the world, and that continue in ſome meaſure to prevail, are far from being ſurpriſing. Were reaſon our only guide in the conduct of life, we ſhould have cauſe to complain; but our Maker has provided us with the moral ſenſe, a guide little ſubject to error in matters of importance. In the ſciences, reaſon is eſſential; but in the conduct of life, which is our chief concern, reaſon may be an uſeful aſſiſtant; but to be our director is not its province.

The national progreſs of reaſon has been ſlower in Europe, than that of any other art. Statuary, painting, architecture, and other fine arts, approach nearer perfection, as well as morality and natural hiſtory. Manners, it is true, and every art that appears externally, may in part be acquired by imitation and example: in reaſoning there is nothing external to be laid hold of. But there is beſide a particular cauſe that regards Europe, which is the blind deference that for many ages was paid to Ariſtotle; who has kept the reaſoning faculty in chains more than two thouſand years. In his logics, the plain and ſimple mode of reaſoning is rejected, that which Nature dictates; and in its ſtead is introduced an artificial mode, ſhowy but unſubſtantial: it is of no uſe in diſcovering truth, but nobly contrived for wrangling and diſputation. Conſidering that reaſon for ſo many ages has been locked up in the enchanted caſtle of ſyllogiſm, where empty phantoms paſs for realities, the ſlow progreſs of reaſon toward maturity is far from being ſurpriſing. The taking of Conſtantinople, ann. 1453, opened a new ſcene, which in time relieved the world from the uſurpation of Ariſtotle, and reſtored reaſon to her privileges. All the knowledge of Europe was centred in Con-

ſtantinople; and the learned men of that city, abhorring the Turks and their government, took refuge in Italy. The Greek language was introduced among the weſtern nations of Europe; and the ſtudy of Greek and Roman claſſics became faſhionable. Men, having acquired new ideas, began to think for themſelves: they exerted their native faculty of reaſon: the futility of Ariſtotle's logics became apparent to the penetrating; and is now apparent to all. Yet ſo late as the year 1621, ſeveral perſons were baniſhed from Paris for contradicting that philoſopher, about matter and form, and about the number of the elements. And ſhortly after, the parliament of Paris prohibited, under pain of death, any thing to be taught contrary to the doctrines of Ariſtotle. Julius II. and Leo X. Roman Pontiffs, contributed zealouſly to the reformation of letters; but they did not foreſee that they were alſo contributing to the reformation of religion, and of every ſcience that depends on reaſoning. Tho' the fetters of ſyllogiſm have many years ago been ſhaken off, yet, like a limb long kept from motion, the reaſoning faculty has ſcarcely to this day attained its free and natural exerciſe. Mathematics is the only ſcience that never has been cramped by ſyllogiſm, and we find reaſoning there in great perfection at an early period. The very ſlow progreſs of reaſoning in other matters, will appear from the following induction.

To exemplify erroneous and abſurd reaſonings of every ſort, would be endleſs. The reader, I preſume, will be ſatisfied with a few inſtances; and I ſhall endeavour to ſelect what are amuſing. For the ſake of order, I divide them into three heads. Firſt, Inſtances ſhowing the imbecility of human reaſon during its nonage. Second, Erroneous reaſoning occaſioned by natural biaſſes. Third, Erroneous reaſoning occaſioned by acquired biaſſes. With reſpect to the firſt, inſtances are endleſs of reaſonings founded on erroneous premiſſes. It was an Epicurean doctrine, That the gods have

have all of them a human figure; moved by the following argument, that no being of any other figure has the uſe of reaſon. Plato, taking for granted the following erroneous propoſition, That every being which moves itſelf, muſt have a ſoul, concludes that the world muſt have a ſoul, becauſe it moves itſelf (*a*). Ariſtotle taking it for granted, without the leaſt evidence, and contrary to truth, that all heavy bodies tend to the centre of the univerſe, proves the earth to be the centre of the univerſe by the following argument. "Heavy bodies naturally tend to the centre "of the univerſe: we know by experience that heavy bodies "tend to the centre of the earth: therefore the centre of the earth "is the centre of the univerſe." Appion ridicules the Jews for adhering ſo literally to the precept of reſting on their ſabbath, as to ſuffer Jeruſalem to be taken that day by Ptolomy ſon of Lagus. Mark the anſwer of Joſephus: "Whoever paſſes a ſober judge-"ment on this matter, will find our practice agreeable to honour "and virtue; for what can be more honourable and virtuous, "than to poſtpone our country, and even life itſelf, to the ſer-"vice of God, and of his holy religion?" A ſtrange idea of religion, to put it in direct oppoſition to every moral principle! A ſuperſtitious and abſurd doctrine, That God will interpoſe by a miracle, to declare what is right in every matter of controverſy, has occaſioned much erroneous reaſoning and abſurd practice. The practice of determining controverſies by ſingle combat, commenced about the ſeventh century, when religion had degenerated into ſuperſtition, and courage was eſteemed the only moral virtue. The parliament of Paris, in the reign of Charles VI. appointed a ſingle combat between two gentlemen, in order to have the judgement of God, whether the one had committed a rape on

(*a*) Cicero, De natura Deorum, lib. 2. § 12.

the other's wife. In the 1454, John Picard being accuſed by his ſon-in-law for too great familiarity with his wife, a duel between them was appointed by the ſame parliament. Voltaire juſtly obſerves, that the parliament decreed a parricide to be committed, in order to try an accuſation of inceſt, which poſſibly was not committed. The trials by water and by fire, reſt on the ſame erroneous foundation. In the former, if the perſon accuſed ſunk to the bottom, it was a judgement pronounced by God, that he was innocent: if he kept above, it was a judgement that he was guilty. Fleury (*a*) remarks, that if ever the perſon accuſed was found guilty, it was his own fault. In Sicily, a woman accuſed of adultery, was compelled to ſwear to her innocence: the oath, taken down in writing, was laid on water; and if it did not ſink, the woman was innocent. We find the ſame practice in Japan, and in Malabar. One of the articles inſiſted on by the reformers in Scotland, was, That public prayers be made and the ſacraments adminiſtered in the vulgar tongue. The anſwer of a provincial council was in the following words: "That to conceive public "prayers, or adminiſter the ſacraments, in any language but La- "tin, is contrary to the traditions and practice of the Catholic "church for many ages paſt; and that the demand cannot be "granted, without impiety to God, and diſobedience to the "church." Here it is taken for granted, that the practice of the church is always right; which is building an argument on a very rotten foundation. The Caribbeans abſtain from ſwines fleſh; taking it erroneouſly for granted, that ſuch food would make them have ſmall eyes, held by them a great deformity. They alſo abſtain from eating turtle; which they think would infect them with the lazineſs and ſtupidity of that animal. Upon the ſame er-

(*a*) Hiſtoire Eccleſiaſtique.

roneous

roneous notion, the Braſilians abſtain from the fleſh of ducks, and of every creature that moves ſlowly.

A talent for writing ſeems in Germany to be eſtimated by weight, as beauty is ſaid to be in Holland. Cocceius, for writing three weighty folio volumes on law, has obtained among his countrymen the epithet of *Great*. This author, handling the rules of ſucceſſion in land-eſtates, has with moſt profound erudition founded all of them upon a very ſimple propoſition, viz. That in a competition, that deſcendent is entitled to be preferred who has the greateſt quantity of the predeceſſor's blood in his veins. *Quæritur*, has a man any of his predeceſſor's blood in his veins, otherwiſe than metaphorically? Strange! to build an argument in law upon a pure metaphor.

Next of reaſonings where the concluſion follows not from the premiſſes, or fundamental propoſition. Plato endeavours to prove, that the world is endowed with wiſdom, by the following argument. "The world is greater than any of its parts: therefore it "is endowed with wiſdom; for otherwiſe a man who is endowed "with wiſdom would be greater than the world (*a*)." The concluſion here does not follow; for tho' man is endowed with wiſdom, it follows not, that he is greater than the world in point of ſize. Zeno endeavours to prove, that the world has the uſe of reaſon, by an argument of the ſame kind. Pope Gregory, writing in favour of the four councils, viz. Nice, Conſtantinople, Epheſus, and Calcedon, reaſons thus: "That as there are four e-"vangeliſts, there ought alſo to be four councils." What would he have ſaid, if he had lived 100 years later, when there were many more than four? In adminiſtering the ſacrament of the Lord's ſupper, it was ordered, that the hoſt ſhould be covered with a clean linen cloth; becauſe, ſays the Canon law, the body

(*a*) Cicero, De natura Deorum, lib. 2. § 12.

of

of our Lord Jeſus Chriſt was buried in a clean linen cloth. Joſephus, in his anſwer to Appion, urges the following argument for the temple of Jeruſalem: "As there is but one God, and one "world, it holds in analogy, that there ſhould be but one tem-"ple." At that rate, there ſhould be but one worſhipper. And why ſhould that one temple be at Jeruſalem rather than at Rome or at Pekin? The Syrians and Greeks did not for a long time eat fiſh. Two reaſons are aſſigned: one is, That fiſh is not ſacrificed to the gods; the other, That being immerſed in the ſea, they look not up to heaven (*a*). The firſt would afford a more plauſible argument for eating fiſh. And if the other have any weight, it would be an argument for ſacrificing men, and neither fiſh nor cattle. In juſtification of the Salic law, which prohibits female ſucceſſion, it was long held a concluſive argument, That in the ſcripture the lilies are ſaid neither to work nor to ſpin. Vieira, termed by his countrymen *the Luſitanian Cicero*, publiſhed ſermons, one of which begins thus, "Were the Supreme Being to ſhow himſelf "viſibly, he would chuſe the circle rather than the triangle, the "ſquare, the pentagon, the duodecagon, or any other figure." But why appear in any of theſe figures? And if he were obliged to appear in ſo mean a ſhape, a globe is undoubtedly more beautiful than a circle. Peter Hantz of Horn, who lived in the laſt century, imagined that Noah's ark is the true conſtruction of a ſhip; "which," ſaid he, "is the workmanſhip of God, and "therefore perfect;" as if a veſſel made merely for floating on the water, were the beſt alſo for ſailing. Sixty or ſeventy years ago, the faſhion prevailed, in imitation of birds, to ſwallow ſmall ſtones for the ſake of digeſtion; as if what is proper for birds, were equally proper for men. The Spaniards, who laid waſte a great part of the Weſt Indies, endeavoured to excuſe their cruel-

(*a*) Sir John Marſham, p. 221.

ties,

ties, by maintaining, that the natives were not men, but a ſpecies of the Ouran Outang; for no better reaſon, than that they were of a copper colour, ſpoke an unknown language, and had no beard. The Pope iſſued a bull, declaring, that it pleaſed him and the Holy Ghoſt to acknowledge the Americans to be of the human race. This bull was not received cordially. In the council of Lima, ann. 1583, it was violently diſputed, whether the Americans had ſo much underſtanding as to be admitted to the ſacraments of the church. In the 1440, the Portugueſe ſolicited the Pope's permiſſion to double the Cape of Good Hope, and to reduce to perpetual ſervitude the negroes, becauſe they had the colour of the damned, and never went to church. In the Frederician Code, a propoſition is laid down, That by the law of nature no man can make a teſtament. And in ſupport of that propoſition the following argument is urged, which is ſaid to be a demonſtration: "No deed can be a teſtament while a man is alive, becauſe "it is not neceſſarily his *ultima voluntas*; and no man can make "a teſtament after his death." Both premiſſes are true, but the negative concluſion does not follow. It is true a man's deed is not his *ultima voluntas*, while he is alive: but does it not become his *ultima voluntas*, when he dies without altering the deed?

Many reaſonings have paſſed current in the world as good coin, where premiſſes and concluſion are both of them falſe. Ariſtotle, who wrote a book upon mechanics, was much puzzled about the equilibrium of a balance, when unequal weights are hung upon it at different diſtances from the centre. Having obſerved, that the arms of the balance deſcribe portions of a circle, he accounted for the equilibrium by a notable argument: "All the "properties of the circle are wonderful: the equilibrium of the "two weights that deſcribe portions of a circle is wonderful. "*Ergo*, the equilibrium muſt be one of the properties of the "circle." What are we to think of Ariſtotle's logics, when we find

find him capable of ſuch childiſh reaſoning? And yet that work has been the admiration of all the world for centuries upon centuries. Nay, that fooliſh argument has been eſpouſed and commented upon by his diſciples, for the ſame length of time. To proceed to another inſtance: Marriage within the fourth degree of conſanguinity, as well as of affinity, is prohibited by the Lateran council; and the reaſon given is, That the body being made up of the four elements, has four different humours in it *. The Roman Catholics began with beheading heretics, hanging them, or ſtoning them to death. But ſuch puniſhments were diſcovered to be too ſlight, in matters of faith. It was demonſtrated, that heretics ought to be burnt in a ſlow fire: it was taken for granted, that God puniſhes them in the other world with a ſlow fire; and hence it was inferred, "That as every prince and every magiſtrate is the image of God in this world, they ought to follow his example." Here is a double error in reaſoning: firſt, the taking for granted the fundamental propoſition, which is ſurely not ſelf-evident; and next, the drawing a concluſion from it without any connection.

It once was a general opinion among thoſe who dwelt near the ſea, that people never die but during the ebb of the tide. And there were not wanting plauſible reaſons. The ſea, in flowing, carries with it vivifying particles that recruit the ſick. The ſea is ſalt, and ſalt preſerves from rottenneſs. When the ſea ſinks in

* The original is curious: "Quaternarius enim numerus bene congruit prohibitioni conjugii corporalis; de quo dicit Apoſtolus, Quod vir non habet poteſtam ſui corporis, ſed mulier; neque mulier habet poteſtatem ſui corporis, ſed vir; quia quatuor ſunt humores in corpore, quod conſtat ex quatuor elementis." Were men who could be guilty of ſuch nonſenſe, qualified to be our leaders in the moſt important of all concerns, that of eternal ſalvation?

ebbing,

ebbing, every thing ſinks with it: nature languiſhes: the ſick are not vivifyed: they die.

What ſhall be ſaid of a reaſoning where the concluſion is a flat contradiction to the premiſſes? If a man ſhooting at a wild pigeon happen unfortunately to kill his neighbour, it is in the Engliſh law excuſable homicide; becauſe the ſhooting an animal that is no man's property is a lawful act. If the aim be at a tame fowl for amuſement, which is a treſpaſs on the property of another, the death of the man will be manſlaughter. If the tame fowl be ſhot at in order to be ſtollen, it will be murder, by reaſon of the felonious intent. From this laſt the following conſequence is drawn, that if a man, endeavouring to kill another, miſſes his blow, and happeneth to kill himſelf, he is in judgement of law guilty *of wilful and deliberate ſelf-murder* (*a*). Strange reaſoning! to conſtrue an act to be wilful and deliberate ſelf-murder, contrary to the very thing that is ſuppoſed.

A plentiful ſource of inconcluſive reaſoning, which prevails greatly during the infancy of the rational faculty, is the making of no proper diſtinction between ſtrong and weak relations. Minutius Felix, in his apology for the Chriſtians, endeavours to prove the unity of the Deity from a moſt diſtant analogy or relation, viz. That there is but one king of the bees, and that more than one chief magiſtrate would breed confuſion. It is a proſtitution of reaſon to offer ſuch an argument for the unity of the Deity. But any argument paſſes current, in ſupport of a propoſition that we know beforehand to be true. Plutarch ſays, "that "it ſeemed to have happened by the peculiar direction of the "gods, that Numa was born on the 21ſt of April, the very day "in which Rome was founded by Romulus;" a very childiſh inference from a mere accident. Suppoſing Italy to have been tole-

(*a*) Hale, Pleas of the Crown, cap. 1. 413.

rably populous, as undoubtedly it was at that period, the 21ſt of April, or any day of April, might have given birth to thouſands. In many countries, the ſurgeons and barbers are claſſed together, as members of the ſame trade, from a very ſlight relation, that both of them operate upon the human body. The Jews enjoy'd the reputation for centuries, of being ſkilful phyſicians. Francis I. of France, having long laboured under a diſeaſe that eluded the art of his own phyſicians, apply'd to the Emperor Charles V. for a Jewiſh phyſician from Spain. Finding that the perſon ſent had been converted to Chriſtianity, the King refuſed to employ him; as if a Jew were to loſe his ſkill upon being converted to Chriſtianity. Why did not the King order one of his own phyſicians to be converted to Judaiſm? The following childiſh argument is built upon an extreme ſlight relation, that between our Saviour, and the wooden croſs he ſuffered on. "Believe me," ſays Julius Firmicus, "that the devil omits nothing to deſtroy "miſerable mortals; converting himſelf into every different form, "and employing every ſort of artifice. He appoints wood to be "uſed in ſacrificing to him, knowing that our Saviour, fixed to "the croſs, would beſtow immortality upon all his followers. A "pine-tree is cut down, and uſed in ſacrificing to the mother of "the gods. A wooden image of Oſiris is buried in ſacrificing to "Iſis. A wooden image of Proſerpina is bemoaned for forty "nights, and then thrown into the flames. Deluded mortals, "theſe flames can do you no ſervice. On the contrary, the fire "that is deſtined for your puniſhment rages without end. Learn "from me to know that divine wood which will ſet you free. A "wooden ark ſaved the human race from the univerſal deluge. "Abraham put wood upon the ſhoulders of his ſon Iſaac. The "wooden rod ſtretched out by Aaron brought the children of Iſ-"rael out of the land of Egypt. Wood ſweetened the bitter wa-"ters of Marah, and comforted the children of Iſrael after wan-

"dering

" dering three days without water. A wooden rod ſtruck water " out of the rock. The rod of God in the hand of Moſes over- " came Amalek. The patriarch dreamed, that he ſaw angels de- " ſcending and aſcending upon a wooden ladder: and the law of " God was incloſed in a wooden ark. Theſe things were exhi- " bited, that, as if it were by certain ſteps, we might aſcend to " the wood of the croſs, which is our ſalvation. The wood of the " croſs ſuſtains the heavenly machine, ſupports the foundations " of the earth, and leads men to eternal life. The wood of the devil " burns and periſhes, and its aſhes carries down ſinners to the " loweſt pit of hell." The very ſlighteſt relations make an impreſſion on a weak underſtanding. It was a fancy of Antoninus Geta, in ordering his table, to have ſervices compoſed of diſhes beginning with the ſame letter; ſuch as lamb and lobſter; broth, beef, blood-pudding; pork, plumbcake, pigeons, potatoes. The name of John King of Scotland was changed into *Robert*, for no better reaſon, than that the Johns of France and of England had been unfortunate.

In reaſoning, inſtances are not rare, of miſtaking the cauſe for the effect, and the effect for the cauſe. When a ſtone is thrown from the hand, the continuance of its motion in the air, was once univerſally accounted for as follows: " That the air follows the " ſtone at the heels, and puſhes it on." The effect here is miſtaken for the cauſe: the air indeed follows the ſtone at the heels; but it only fills the vacuity made by the ſtone, and does not puſh it on. It has been ſlyly urged againſt the art of phyſic, that phyſicians are rare among temperate people, ſuch as have no wants but thoſe of nature; and that where phyſicians abound, diſeaſes abound. This is miſtaking the cauſe for the effect, and the effect for the cauſe: people in health have no occaſion for a phyſician; but indolence and luxury beget diſeaſes, and diſeaſes beget phyſicians.

During the nonage of reaſon, men are ſatisfied with words merely, inſtead of an argument. A ſea-proſpect bounded is charming; but we ſoon tire of an unbounded proſpect. It would not give ſatisfaction to ſay, that it is too extenſive; for why ſhould not a proſpect be reliſhed, however extenſive? But employ a foreign term and ſay, that it is *trop vaſte*, we enquire no farther: a term that is not familiar, makes an impreſſion, and captivates weak reaſon. This obſervation accounts for a mode of writing formerly in common uſe, that of ſtuffing our language with Latin words and phraſes. Theſe are now laid aſide as uſeleſs; becauſe a proper emphaſis in reading, makes an impreſſion deeper than any foreign term can do.

There is one proof of the imbecility of human reaſon in dark times, which would ſcarce be believed, were not the fact ſupported by inconteſtable evidence. Inſtead of explaining any natural appearance by ſearching for a cauſe, it has been common to account for it by inventing a fable, which gave ſatisfaction without enquiring farther. For example, inſtead of giving the true cauſe of the ſucceſſion of day and night, the ſacred book of the Scandinavians, termed *Edda*, accounts for that ſucceſſion by a tale: "The giant Nor had a daughter named "*Night*, of a dark complexion. She was wedded to Daglingar, "of the family of the gods. They had a male child, which "they named *Day*, beautiful and ſhining like all of his father's "family. The univerſal father took Night and Day, placed them "in heaven, and gave them two horſes and two cars, that they "might travel round the world, the one after the other. Night "goes firſt upon her horſe named *Rimfaxe*, [Froſty Mane], who "moiſtens the earth with the foam that drops from his bit, which "is the dew. The horſe belonging to Day is named *Skinfaxe*, "[Shining Mane], who by his radiant mane illuminates the air

"and

" and the earth." It is obſerved by the tranſlator of the Edda, that this way of accounting for things is well ſuited to the turn of the human mind, which is endowed with curioſity that is extremely keen, but eaſily ſatisfied, often with words inſtead of ideas. Zoroaſter, by a ſimilar fable, accounts for the growth of evil in this world. He invents a good and an evil principle named *Oromazes* and *Arimanes*, who are in continual conflict for preference. At the laſt day, Oromazes will be reunited to the ſupreme God, from whom he iſſued. Arimanes will be ſubdued, darkneſs deſtroyed; and the world, purified by an univerſal conflagration, will become a luminous and ſhining abode, from which evil will be excluded. I return to the Edda, which is ſtored with fables of this kind. The higheſt notion ſavages can form of the gods, is that of men endowed with extraordinary power and knowledge. The only puzzling circumſtance is, how they differ ſo much from man as to be immortal. The Edda accounts for this by the following fable. " The gods prevented the effect of old age and " decay, by continuing to eat certain apples, truſted to the care " of *Iduna*. *Loke*, the Momus of the Scandinavians, craftily con- " vey'd away *Iduna*, and concealed her in a wood, under the cu- " ſtody of a giant. The gods beginning to wax old and gray, " detected the author of the theft; and, by terrible menaces, " compelled him to employ his utmoſt cunning, for regaining I- " duna and her apples, in which he was ſucceſsful." The origin of poetry is thus accounted for in the ſame work: " The gods " formed *Cuaſer*, who traverſed the earth, teaching wiſdom to " men. He was treacherouſly ſlain by two dwarfs, who, mix- " ing honey with his blood, compoſed a liquor that renders all " who drink of it poets. Theſe dwarfs having incurred the re- " ſentment of a certain giant, were expoſed by him upon a rock, " ſurrounded on all ſides with the ſea. They gave for their ran-

" ſom

" ſom the ſaid liquor, which the giant delivered to his daughter " *Gunloda*. The precious potion was eagerly ſought for by the " gods; but how were they to come at it? *Odin*, in the ſhape " of a worm, crept through a crevice into the cavern where the " liquor was concealed. Then reſuming his natural ſhape, and " obtaining Gunloda's conſent to take three draughts, he ſucked " up the whole; and, transforming himſelf into an eagle, flew " away to *Aſgard*. The giant, who was a magician, flew with " all ſpeed after Odin, and came up with him near the gate of " *Aſgard*. The gods iſſued out of their palaces to aſſiſt their ma- " ſter; and preſented to him all the pitchers they could lay hands " on, which he inſtantly filled with the precious liquor. But in " the hurry of diſcharging his load, Odin poured only part of the " liquor through his beak, the reſt being emitted through a leſs " pure vent. The former is beſtow'd by the gods upon good " poets, to inſpire them with divine enthuſiaſm. The latter, " which is in much greater plenty, is beſtow'd liberally on all " who apply for it; by which means the world is peſtered with " an endleſs quantity of wretched verſes." Ignorance is equally credulous in all ages. Albert, ſurnamed *the Great*, flouriſhed in the thirteenth century, and was a man of real knowledge. During the courſe of his education he was remarkably dull; and ſome years before he died became a ſort of changeling. That ſingularity produced the following hiſtory: That the holy Virgin, appearing to him, demanded, whether he would excel in philoſophy or in theology; that upon his chuſing the former, ſhe promiſed, that he ſhould become an incomparable philoſopher; but added, that to puniſh him for not preferring theology, he ſhould become ſtupid again as at firſt.

Upon a ſlight view, it may appear unaccountable, that even the groſſeſt ſavages ſhould take a childiſh tale for a ſolid reaſon. But nature aids the deception: where things are related in a live-

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ly manner, and every circumſtance appears as paſſing in our ſight, we take all for granted as true (*a*). Can an ignorant ruſtic doubt of inſpiration, when he ſees as it were the poet ſipping the pure celeſtial liquor? And how can that poet fail to produce bad verſes, who feeds on the excrements that drop from the fundament even of a deity?

In accounting for natural appearances, even good writers have betray'd a weakneſs in reaſoning, little inferior to that above mentioned. They do not indeed put off their diſciples with a tale; but they put them off with a mere ſuppoſition, not more real than the tale. Deſcartes aſcribes the motion of the planets to a vortex of ether whirling round and round. He thought not of enquiring whether there really be ſuch a vortex, nor what makes it move. M. Buffon forms the earth out of a ſplinter of the ſun, ſtruck off by a comet. May not one be permitted humbly to enquire at that eminent philoſopher, what formed the comet? This paſſes for ſolid reaſoning; and yet we laugh at the poor Indian, who ſupports the earth from falling by an elephant, and the elephant by a tortoiſe.

It is ſtill more ridiculous to reaſon upon what is acknowledged to be a fiction, as if it were real. Such are the fictions admitted in the Roman law. A Roman taken captive in war, loſt his privilege of being a Roman citizen; for freedom was held eſſential to that privilege. But what if he made his eſcape, after perhaps an hour's detention? The hardſhip in that caſe ought to have ſuggeſted an alteration of the law, which was, to ſuſpend the privilege no longer than the captivity ſubſiſted. But the ancient Romans were not ſo ingenious. They remedied the hardſhip by a fiction, that the man never had been a captive. The Frederician code baniſhes from the law of Pruſſia an endleſs number of

(*a*) Elements of Criticiſm, vol. 1. p. 100. edit. 5.

fictions

fictions that are found in the Roman law (Preface, ſect. 28.). Yet afterward, treating of perſonal rights, it is laid down as a rule, That a child in the womb is feigned or ſuppoſed to be born when the fiction is for its advantage (part 1. b. 1. tit. 4. ſect. 4.). To a weak reaſoner a fiction is a happy contrivance for reſolving intricate queſtions. Such is the conſtitution of England, that the Engliſh law-courts are merely territorial; and that no fact happening abroad comes under their cogniſance. An Engliſhman, after murdering his fellow-traveller in France, returns to his native country. What is to be done? for guilt ought not to paſs unpuniſhed. The crime is feigned to have been committed in England.

Ancient hiſtories are full of incredible facts that paſſed current during the infancy of reaſon, which at preſent would be rejected with contempt. Every man who is converſant in the hiſtory of ancient nations, can recall inſtances without end. Does any one believe at preſent, tho' gravely reported by hiſtorians, that in old Rome there was a law, for cutting into pieces the body of a bankrupt, and diſtributing the parts among his creditors? The ſtory of Porſenna and Scevola is highly romantic; and the ſtory of Vampires in Hungary, ſhamefully abſurd. There is no reaſon to believe, that there ever was ſuch a ſtate as that of the Amazons; and the ſtory of Thaleſtris and Alexander the Great is undoubtedly a fiction. Scotch hiſtorians deſcribe gravely and circumſtantially the battle of Luncarty, as if they had been eye-witneſſes. A country-man and his two ſons, it is ſaid, were ploughing in an adjacent field, during the heat of the action. Enraged at their countrymen for turning their backs, they broke the plough in pieces; and each laying hold of a part, ruſhed into the midſt of the battle, and obtained a complete victory over the Danes. This ſtory has every mark of fiction: A man following out unconcernedly his ordinary occupation of ploughing, in

ſight

ſight of a battle, on which depended his wife and children, his goods, and perhaps his own life. More, Three men, without rank or figure, with only a ſtick in the hand of each, ſtemming the tide of victory, and turning the fate of battle. I mention not that a plough was unknown in Scotland for a century or two after that battle; for that circumſtance could not create a doubt in the hiſtorian, if he was ignorant of it.

Reaſon, with reſpect to its progreſs, is ſingular. Morals, manners, and every thing that appears externally, may in part be acquired by imitation and example, which have not the ſlighteſt influence upon the reaſoning faculty. The only means for advancing that faculty to maturity, are indefatigable ſtudy and practice; and even theſe will not carry a man one ſtep beyond the ſubjects he is converſant about: examples are not rare of men extremely expert in one ſcience, and groſsly deficient in others. Many able mathematicians are novices in politics, and even in the common arts of life: ſtudy and practice have ripened them in every relation of equality, while they remain ignorant, like the vulgar, about other relations. A man, in like manner, who has beſtow'd much time and thought in political matters, may be a child as to other branches of knowledge *.

I proceed to the ſecond article, containing erroneous reaſoning

* Paſcal, the celebrated author of *Lettres Provinciales*, in order to explain the infinity and indiviſibility of the Deity, has the following words. "I will ſhow "you a thing both infinite and indiviſible. It is a point moving with infinite cele- "rity: that point is in all places at once, and entire in every place." What an abſurdity, ſays Voltaire, to aſcribe motion to a mathematical point, that has no exiſtence but in the mind of the geometer! that it can be every where at the ſame inſtant, and that it can move with infinite celerity! as if infinite celerity could actually exiſt. Every word, adds he, is big with abſurdity; and yet he was a great man who uttered that ſtuff.

occaſioned by natural biaſſes. The firſt bias I ſhall mention has an extenſive influence. What is ſeen, makes a deeper impreſſion, than what is heard by report, or diſcovered by reflection. Hence it is, that in judging of right and wrong, the external act only draws the attention of the ignorant and illiterate, who cannot penetrate into will or intention; and hence it is, that in religion great weight is laid upon forms and ceremonies, without much regarding their purpoſe. Theſe particulars come in afterward, in the progreſs of morality and religion. What belongs to the preſent ſketch is to obſerve, that in judging of covenants, laws, vows, and other acts that are completed by words, the whole weight in days of ignorance is laid upon the external expreſſion, with no regard to the meaning of the ſpeaker or writer. The bleſſing beſtow'd by Iſaac upon his ſon Jacob, miſtaking him for Eſau, is an illuſtrious inſtance. Not only was the bleſſing intended for Eſau, but Jacob, by deceiving his father, had rendered himſelf unworthy of it (*a*); yet Iſaac had pronounced the ſounds, and it was not in his power to unſay them: *Neſcit vox emiſſa reverti.* Joſhuah, groſsly impoſed on by the Gibeonites denying that they were Canaanites, made a covenant with them; and yet, tho' he found them to be Canaanites, he held himſelf to be bound. Led by the ſame bias, people think it ſufficient to fulfil the words of a vow, however ſhort of intention. The Duke of Lancaſter, vexed at the obſtinate reſiſtance of Rennes, a town in Britany, vowed in wrath not to raiſe the ſiege till he had planted the Engliſh colours upon one of the gates. This proved a raſh vow. He found it neceſſary to raiſe the ſiege, but his vow ſtood in the way. The governor relieved him from his ſcruple, permitting him to plant his colours upon one of the gates; and he was ſatisfied that his vow was fulfilled. The following is an example of an abſurd

(*a*) Geneſis, chap. 27.

concluſion

concluſion deduced from a precept taken literally, againſt common ſenſe. We are ordered by the Apoſtle, to pray always; from which Jerom, one of the fathers, argues thus: "Conjugal enjoy-" ment is inconſiſtent with praying; *ergo*, conjugal enjoyment is " a ſin." By the ſame argument it may be proved, that eating and drinking are ſins; and that ſleeping is a great ſin, being a great interruption to praying. With reſpect to another text, viz. " That a biſhop muſt be blameleſs, the huſband of one wife," taken literally, a very different concluſion is drawn in Abyſſinia, viz. That no man can be ordained a preſbyter till he be married. Prohibitions have been interpreted in the ſame ſhallow manner. Clarendon gives two inſtances, both of them relative to the great fire of London. The mayor propoſing to pull down a houſe in order to ſtop the progreſs of the fire, was oppoſed by the lawyers, who declared the act to be unlawful; and the houſe was burnt without being pulled down. About the ſame time it was propoſed to break open ſome houſes in the temple for ſaving the furniture, the poſſeſſors being in the country; but it was declared burglary to force open a door without conſent of the poſſeſſor. Such literal interpretation, contrary to common ſenſe, has been extended even to inflict puniſhment. Iſadas was bathing when the alarm was given in Lacedemon, that Epaminondas was at hand with a numerous army. Naked as he was, he ruſhed againſt the enemy with a ſpear in one hand and a ſword in the other, bearing down all before him. The Ephori fined him for going to battle unarmed; but honoured him with a garland for his gallant behaviour. How abſurd to think that the law was intended for ſuch a caſe! and how much more abſurd to think, that the ſame act ought to be both puniſhed and rewarded! The King of Caſtile being carried off his horſe by a hunted hart, was ſaved by a perſon at hand, who cut his belt. The judges thought a pardon abſolutely requiſite, to relieve from capital puniſhment a

man who had lifted a ſword againſt his ſovereign *. It is a ſalutary regulation, that a man who is abſent cannot be tried for his life. Pope Formoſus died ſuddenly without ſuffering any puniſhment for his crimes. But this did not ſave his goods from confiſcation: he was dug out of his grave, dreſſed in his pontifical habit; and in that ſhape a criminal proceſs went on againſt him. Could it ſeriouſly be thought, that a rotten carcaſe brought into court was ſufficient to fulfil the law? The ſame abſurd farce was played in Scotland, upon the body of Logan of Reſtalrig, ſeveral years after his interment. The body of Tancred King of Sicily was raiſed from the grave, and the head cut off for ſuppoſed rebellion. Henry IV. of Caſtile was depoſed in abſence; but, for a colour of juſtice, the following ridiculous ſcene was acted. A wooden ſtatue dreſſed in a royal habit, was placed on a theatre; and the ſentence of depoſition was ſolemnly read to it, as if it had been the King himſelf. The Archbiſhop of Toledo ſeized the crown, another the ſceptre, a third the ſword; and the ceremony was concluded with proclaiming another king. How humbling are ſuch ſcenes to man, who values himſelf upon the faculty of reaſon as his prime attribute! An expedient of that kind would now be rejected with diſdain, as fit only to amuſe children; and yet it grieves me to obſerve that law-proceedings are not yet totally purged of ſuch droſs. By a law in Holland, the criminal's confeſſion is eſſential to a capital puniſhment, no meaner evidence being held ſufficient: and yet if he inſiſt on his innocence, he is tortured till he pronounce the words of confeſſion; as if ſounds merely were ſufficient, without will or intention. The practice of England in a ſimilar caſe, is no leſs abſurd. Confeſ-

* A perſon unacquainted with the hiſtory of law, will imagine that Swift has carried beyond all bounds his ſatire againſt lawyers, in ſaying, that Gulliver had incurred a capital puniſhment, for ſaving the Emperor's palace by piſſing out the fire; it being capital in any perſon of what quality ſoever, to make water within the precincts of the palace.

ſion

ſion is not there required; but it is required, that the perſon accuſed ſhould plead, and ſay whether he is innocent or guilty. But what if he ſtand mute? He is preſſed down by weights till he plead; and if he continue mute, he is preſſed till he give up the ghoſt, a torture known by the name of *Peine forte et dure* *. Further, law copying religion, has exalted ceremonies above the ſubſtantial part. In England, ſo ſtrictly has form been adhered to, as to make the moſt trivial defect in words fatal, however certain the meaning may be. *Murdredavit* for *murdravit*, *feloniter* for *felonice*, have been adjudged to vitiate an indictment. *Burgariter* for *burglariter* hath been a fatal objection; but *burgulariter* hath been holden good. Webſter being indicted for murder, and the the ſtroke being laid "ſiniſtro *bracio*" inſtead of "*brachio*," he was diſmiſſed. *A. B. alias dictus A. C. Butcher*, was found to vitiate the indictment; becauſe it ought to have been *A. B. Butcher, alias dictus A. C. Butcher.* So *gladium in dextra ſua*, without *manu*.

There is no bias in human nature more prevalent than an appetite to anticipate futurity, by being made acquainted beforehand with what will happen. That appetite was indulged without reſerve in dark times; and hence omens, auguries, dreams, judicial aſtrology, oracles, and prophecies, without end. It ſhows ſtrange weakneſs in the rational faculty, not to ſee, that ſuch foreknowledge would be a gift more pernicious to man than Pandora's box: it would deprive him of every motive to action; and leave no place for ſagacity, nor for contriving means to bring about a deſired event. Life is an enchanted caſtle, that gives play to paſſions, and exerciſe to reaſon: remove the veil that hides futurity—behold the enchanted caſtle gone, and in its ſtead a

* Since the above was written, an act of parliament has been paſſed, by which the legiſlature, ſenſible of the abſurdity of the old law, has enacted, That perſons arraigned for felony or piracy, who ſtand mute, or refuſe to anſwer directly to the indictment, ſhall be held as confeſſing, and judgement ſhall paſs againſt them, as if they had been convicted by verdict or confeſſion.

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barren and inſipid proſpect. Anxiety about futurity rouſes our ſagacity to prepare for what may happen; but an appetite to know what ſagacity cannot diſcover, is a weakneſs in nature inconſiſtent with every rational principle *.

An appetite for things rare and wonderful, is a natural bias no leſs univerſal than the former. Any ſtrange or unaccountable event rouſes the attention, and enflames the mind: we ſuck it in greedily, wiſh it to be true, and believe it to be true upon the ſlighteſt evidence; becauſe ſuch belief gratifies the appetite. A hart taken in the foreſt of Senlis by Charles VI. of France, bore a collar upon which was inſcribed, *Cæſar hoc me donavit* †. The appetite for wonder made every one believe, that a Roman Emperor was meant, and that the beaſt muſt have lived at leaſt a thouſand years; overlooking that the Emperor of Germany is alſo ſtyled *Cæſar*, and that it was not neceſſary to go back fifty years. This appetite diſplays itſelf even in childhood: ſtories of ghoſts and apparitions are anxiouſly liſtened to; and firmly believed, by means of the terror they occaſion: and the vulgar accordingly have been captivated with ſuch ſtories, upon evidence that would not be ſufficient to aſcertain the ſimpleſt fact (*a*). The abſurd and childiſh prodigies that are every where ſcattered through the hiſtory of Titus Livius, not to mention other ancient hiſtorians, would be unaccountable in a writer of ſenſe and gravity, were it not for the appetite mentioned. But human belief is not left at the mercy of every irregular bias. Our maker has ſubjected belief to the correction of the rational faculty; and accordingly, in proportion as reaſon advances toward maturity, wonders, prodi-

* Foreknowledge of future events, differs widely from a conviction, that all events are fixed and immutable: the latter leaves us free to activity; the former annihilates all activity.

† "Cæſar gave me this."

(*a*) Elements of Criticiſm, ch. 2. part 5.

gies,

gies, apparitions, incantations, witchcraft, and ſuch ſtuff, loſe their influence. That reformation however has been exceedingly ſlow, becauſe the appetite is exceedingly ſtrong. Such abſurdities found credit among wiſe men, even as late as the laſt age. I am ready to verify the charge, by introducing two men of the firſt rank for underſtanding: were a greater number neceſſary, there would be no difficulty of making a very bulky liſt. The celebrated Grotius ſhall lead the van. Procopius, in his Vandal hiſtory, relates, that ſome orthodox Chriſtians, whoſe tongues were cut out by the Arians, continued miraculouſly to ſpeak as formerly. And to vouch the fact, he appeals to ſome of thoſe miraculous perſons, alive in Conſtantinople at the time of his writing. In the dark ages of Chriſtianity, when different ſects were violently enflamed againſt each other, it is not ſurpriſing, that groſs abſurdities were ſwallowed as real miracles: but is it not ſurpriſing, and equally mortifying, to find Grotius, the greateſt genius of the age he lived in, adopting ſuch abſurdities? For the truth of the foregoing miracle, he appeals not only to Procopius, but to ſeveral other writers (*a*); as if the hearſay of a few writers were ſufficient to make us believe an impoſſibility. Could it ſeriouſly be his opinion, that the great God, who governs by general laws, permitting the ſun to ſhine alike upon men of every religion, would miraculouſly ſuſpend the laws of nature, in order to teſtify his diſpleaſure at an honeſt ſect of Chriſtians, however erroneous their tenets may be? Did he alſo believe what Procopius adds, that two of theſe orthodox Chriſtians were again deprived of ſpeech, as a puniſhment inflicted by the Almighty for cohabiting with proſtitutes?

I proceed to our famous hiſtorian, the Earl of Clarendon, the other perſon I had in view. A man long in public buſineſs, a

(*a*) Prolegomena to his Hiſtory of the Goths.

conſummate

conſummate politician, and well ſtored with knowledge from books as well as from experience, might be fortified againſt fooliſh miracles, if any man can be fortified: and yet behold his ſuperſtitious credulity in childiſh ſtories; no leſs weak in that particular, than was his cotemporary Grotius. He gravely relates an incident regarding the aſſaſſination of the Duke of Buckingham, the ſum of which follows. "There were many ſtories ſcattered a-"broad at that time, of prophecies and predictions of the Duke's "untimely and violent death; one of which was upon a better "foundation of credit, than uſually ſuch diſcourſes are founded "upon. There was an officer in the King's wardrobe in Wind-"ſor caſtle, of reputation for honeſty and diſcretion, and at that "time about the age of fifty. About ſix months before the mi-"ſerable end of the Duke, this man being in bed, and in good "health, there appeared to him at midnight a man of a venerable "aſpect, who drawing the curtains, and fixing his eye upon him, "ſaid, Do you know me, Sir. The poor man, half dead with "fear, anſwered, That he thought him to be Sir George Villiers, "father to the Duke. Upon which he was ordered by the appa-"rition, to go to the Duke, and tell him, that if he did not ſome-"what to ingratiate himſelf with the people, he would be ſuffered "to live but a ſhort time. The ſame perſon appeared to him a ſecond "and a third time, reproaching him bitterly for not performing "his promiſe. The poor man pluck'd up as much courage as to "excuſe himſelf, that it was difficult to find acceſs to the Duke, "and that he would be thought a madman. The apparition im-"parted to him ſome ſecrets, which he ſaid would be his cre-"dentials to the Duke. The officer, introduced to the Duke by "Sir Ralph Freeman, was received courteouſly. They walked "together near an hour; and the Duke ſometimes ſpoke with "great commotion, tho' his ſervants, with Sir Ralph, were at "ſuch a diſtance that they could not hear a word. The officer,

"returning

" returning from the Duke, told Sir Ralph, that when he men-
" tioned the particulars that were to gain him credit, the Duke's
" colour changed; and he ſwore the officer could come to that
" knowledge only by the devil; for that theſe particulars were
" known only to himſelf, and to one perſon more, of whoſe fide-
" lity he was ſecure. The Duke, who went to accompany the
" King at hunting, was obſerved to ride all the morning in deep
" thought; and before the morning was ſpent, left the field, and
" alighted at his mother's houſe, with whom he was ſhut up for
" two or three hours. When the Duke left her, his countenance
" appeared full of trouble, with a mixture of anger, which never
" appeared before in converſing with her: and ſhe was found o-
" verwhelmed with tears, and in great agony. Whatever there
" was of all this, it is a notorious truth, that when ſhe heard of
" the Duke's murder, ſhe ſeemed not in the leaſt ſurpriſed, nor
" did expreſs much ſorrow."

The name of Lord Clarendon calls for more attention to the foregoing incident than otherwiſe it would deſerve. It is no article of the Chriſtian faith, that the dead preſerve their connection with the living, or are ever ſuffered to return to this world: we have no ſolid evidence for ſuch a fact; nor ever hear of it, except in tales for amuſing or terrifying children. Secondly, The ſtory is inconſiſtent with the courſe of Providence, which, for the beſt purpoſes, has drawn an impenetrable veil between us and futurity. Thirdly, This apparition, tho' ſuppoſed to be endowed with a miraculous knowledge of future events, is however deficient in the ſagacity that belongs to a perſon of ordinary underſtanding. It appears twice to the officer, without thinking of giving him proper credentials; nor does it at all think of them till ſuggeſted by the officer. Fourthly, Why did not the apparition go directly to the Duke himſelf; where could be the neceſſity of employing a third perſon? The Duke muſt have been much more affected

with an apparition to himſelf, than by hearing it at ſecond hand. The officer was afraid of being taken for a madman; and the Duke had ſome reaſon to think him ſuch. Laſtly, The apparition happened above three months before the Duke's death; and yet we hear not of a ſingle ſtep taken by him, in purſuance of the advice given him. The authority of the hiſtorian, and the regard we owe him, have drawn from me the foregoing reflections; which with reſpect to the ſtory itſelf are very little neceſſary; for the evidence is really not ſuch as to verify any ordinary occurrence. His Lordſhip acknowledges, that he had no evidence but common report, ſaying, that it was one of the many ſtories ſcattered about at that time. He does not ſay, that the ſtory was related to him by the officer, whoſe name he does not even mention, or by Sir Ralph Freeman, or by the Duke's mother, or by the Duke himſelf. If ever any thing happened like the ſtory in queſtion, it may with good reaſon be ſuppoſed, that the officer was crazy, or enthuſiaſtically mad: nor have we any evidence beyond common report, that he communicated any ſecrets to the Duke. I ſhall only add upon this article, that here are two remarkable inſtances of an obſervation made above, that a man may be high in one ſcience and very low in another. Had Grotius, or had Clarendon, ſtudied the fundamentals of reaſon and religion coolly and impartially, as they did other ſciences, they would never have given faith to reports ſo ill vouched, and ſo contradictory to every ſound principle of theology.

Another ſource of erroneous reaſoning is, a ſingular tendency in the mind of man to myſteries and hidden meanings. The buſy mind is ſeldom ſatisfied with the ſimple and obvious intendment, where the object makes a deep impreſſion: invention is rouſed to allegorize, and to pierce into hidden views and purpoſes. I have a notable example at hand, with reſpect to forms and ceremonies

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in religious worſhip. Joſephus (*a*), talking of the tabernacle, has the following paſſage. " Let any man conſider the ſtructure of " the tabernacle, the ſacerdotal veſtments, the veſſels dedicated to " the ſervice of the altar; and he muſt of neceſſity be convinced, " that our lawgiver was a pious man, and that all the clamours " againſt us and our profeſſion, are mere calumny. For what " are all of theſe but the image of the whole world? This will " appear to any man who ſoberly and impartially examines the " matter. The tabernacle of thirty cubits is divided into three " parts; two for the prieſts in general, and as free to them as the " earth and the ſea; the third, where no mortal muſt be admit- " ted, is as the heaven, reſerved for God himſelf. The twelve " loaves of ſhew-bread ſignify the twelve months of the year. " The candleſtick, compoſed of ſeven branches, refers to the " twelve ſigns of the zodiac, through which the ſeven planets " ſhape their courſe; and the ſeven lamps on the top of the ſeven " branches bear an analogy to the planets themſelves. The cur- " tains of four colours repreſent the four elements. The fine li- " nen ſignifies the earth, as flax is raiſed there. By the purple is " underſtood the ſea, from the blood of the murex, which dies " that colour. The violet colour is a ſymbol of the air; and the " ſcarlet of the fire. By the linen garment of the high-prieſt, is " deſigned the whole body of the earth: by the violet colour the " heavens. The pomegranates ſignify lightning: the bells toll- " ing ſignify thunder. The four-coloured ephod bears a reſem- " blance to the very nature of the univerſe, and the interweaving " it with gold has a regard to the rays of light. The girdle about " the body of the prieſt is as the ſea about the globe of the earth. " The two ſardonyx ſtones are a kind of figure of the ſun and " moon; and the twelve other ſtones may be underſtood, either

(*a*) Jewiſh Antiquities, book 3.

" of the twelve months, or of the twelve ſigns in the zodiac. The " violet-coloured tiara is a reſemblance of heaven; and it would " be irreverent to have written the ſacred name of God upon any " other colour. The triple crown and plate of gold give us to " underſtand the glory and majeſty of Almighty God. This is a " plain illuſtration of theſe matters; and I would not loſe any " opportunity of doing juſtice to the honour and wiſdom of our " incomparable lawgiver." How much wire-drawn, and how remote from any appearance of truth, are the foregoing alluſions and imagined reſemblances! But religious forms and ceremonies, however arbitrary, are never held to be ſo. If an uſeful purpoſe do not appear, it is taken for granted, that there muſt be a hidden meaning; and any meaning, however childiſh, will ſerve at a pinch. Such propenſity there is in dark ages for allegorizing, that even our Saviour's miracles have not eſcaped. Where-ever any ſeeming difficulty occurs in the plain ſenſe, the fathers of the church, Origen, Auguſtine, and Hilary, are never at a loſs for a myſtic meaning. " Sacrifice to the celeſtial gods with an odd " number, and to the terreſtrial gods with an even number," is a precept of Pythagoras. Another is, " Turn round in adoring the " gods, and ſit down when thou haſt worſhipped." The learned make a ſtrange buſtle about the hidden meaning of theſe precepts. But, after all, have they any hidden meaning? Forms and ceremonies are uſeful in external worſhip, for occupying the vulgar; and it is of no importance what they are, provided they prevent the mind from wandering. Why ſuch partiality to ancient ceremonies, when no hidden meaning is ſuppoſed in thoſe of Chriſtians, ſuch as bowing to the eaſt, or the prieſt performing the liturgy, partly in a black upper garment, partly in a white. No ideas are more ſimple than of numbers, nor leſs ſuſceptible of any hidden meaning; and yet the profound Pythagoras has imagined many ſuch meanings. The number *one*, ſays he, having

no

no parts, repreſents the Deity: it repreſents alſo order, peace, and tranquillity, which reſult from unity of ſentiment. The number *two* repreſents diſorder, confuſion, and change. He diſcovered in the number *three* the moſt ſublime myſteries: all things are compoſed, ſays he, of three ſubſtances. The number *four* is holy in its nature, and conſtitutes the divine eſſence, which conſiſts in unity, power, benevolence, and wiſdom. Would one believe, that the great philoſopher, who demonſtrated the 47th propoſition of the firſt book of Euclid, was the inventor of ſuch childiſh conceits? Perhaps Pythagoras meant only to divert himſelf with them. Whether ſo or not, it ſeems difficult to be explained, how ſuch trifles were preſerved in memory, and handed down to us through ſo many generations. All that can be ſaid is, that during the infancy of knowledge, every novelty makes a figure, and that it requires a long courſe of time to ſeparate the corn from the chaff *. A certain writer, ſmitten with the conceit of hidden meanings, has applied his talent to the conſtellations of the zodiac. The *lion* typifies the force or heat of the ſun in the month of July, when he enters that conſtellation. The conſtellation where the ſun is in the month of Auguſt is termed the *virgin*, ſignifying the time of harveſt. He enters the *balance* in September, denoting the equality of day and night. The *ſcorpion*, where he is found in October, is an emblem of the diſeaſes that are frequent during that month, &c. The *balance*, I acknowledge, is well hit

* The following precepts of the ſame philoſopher, tho' now only fit for the *Child's Guide*, were originally cheriſhed, and preſerved in memory, as emanations of ſuperior wiſdom. "Do not enter a temple for worſhip, but with a decent air. "Render not life painful by undertaking too many affairs. Be always ready for "what may happen. Never bind yourſelf by a vow, nor by an oath. Irritate "not a man who is angry." The ſeven wiſe men of Greece made a figure in their time; but it would be unreaſonable to expect, that what they taught during the infancy of knowledge, ſhould make a figure in its maturity.

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off; but I ſee not clearly the reſemblance of the force of a lion to the heat of the ſun; and ſtill leſs that of harveſt to a virgin: the ſpring would be more happily repreſented by a virgin, and the harveſt by a woman in the act of delivery.

The tendency in the mind of man to myſteries and allegories, diſplays itſelf with great vigour upon our forefathers, and upon the ancients in general, by means of the great veneration that is paid them. Before writing was known, ancient hiſtory is made up of traditional fables. A Trojan Brutus peopled England; and the Scots are deſcended from Scota, daughter to an Egyptian king. What reaſon have we to doubt but that hiſtories of the heathen gods are equally involved in fable? We pretend not to draw any hidden meaning from the former: why ſhould we ſuſpect any ſuch meaning in the latter? Allegory is a ſpecies of writing too refined for a ſavage or barbarian: it is the fruit of a cultivated imagination; and was a late invention even in Greece. The allegories of Eſop are of the ſimpleſt kind, and yet they were compoſed after learning began to flouriſh; and Cebes, whoſe allegory about the life of man is juſtly celebrated, was a diſciple of Socrates. Prepoſſeſſion however in favour of the ancients makes us conclude, that there muſt be ſome hidden meaning or allegory in their hiſtorical fables; for no better reaſon than that they are deſtitute of common ſenſe. In the Greek mythology, there are numberleſs fables related as hiſtorical facts merely; witneſs the fable of gods mixing with women, and procreating giants, like what we find in the fabulous hiſtories of many other nations; theſe giants attempting to dethrone Jupiter; Apollo keeping the ſheep of Admetus; Minerva ſpringing from the head of Jove *; Bacchus

* However eaſy it may be to draw an allegorical meaning out of that fable, I cannot admit any ſuch meaning to have been intended. An allegory is a fable contrived

Bacchus cut out of his thigh; Orpheus going to hell for his wife; Mars and Venus caught by Vulcan in a net; and a thouſand other ſuch childiſh ſtories. But the Greeks, many centuries after the invention of ſuch fooliſh fables, becoming illuſtrious for arts and ſciences, nothing would ſatisfy writers in later times, but to dub them profound philoſophers even in their cradle, when mere ſavages; and hence endleſs attempts to detect myſteries and hidden meanings in their fables. Let other interpreters of that kind paſs; they give me no concern: but I cannot, without the deepeſt concern, behold our illuſtrious philoſopher Bacon employing his talents ſo abſurdly. What imbecility muſt there be in human nature, when ſo great a genius is capable of ſuch puerilities! As a ſubject ſo humbling is far from being agreeable, I confine myſelf to a few inſtances. In an ancient fable, Prometheus formed man out of clay; and kindling a bundle of birch rods at the chariot of the ſun, brought down fire to the earth for the uſe of his creature man. And tho' ungrateful man complained to Jupiter of that theft, yet the god, pleaſed with the ingenuity of Prometheus, not only confirmed to man the uſe of fire, but conferred on him a gift much more conſiderable: the gift was perpetual youth, which was laid upon an aſs to be carried to the earth. The aſs, wanting to drink at a brook, was oppoſed by a ſerpent, who inſiſted to have the burden, without which, no drink for the poor aſs. And thus, for a draught of plain water, was perpetual youth transferred from man to the ſerpent. This fable has a ſtriking reſemblance to many in the Edda; and, in the

trived to illuſtrate ſome acknowledged truth, by making a deeper impreſſion than the truth would make in plain words; of which we have ſeveral beautiful inſtances in the Spectator (Elements of Criticiſm, chap. 20. § 6.). But the fable here was underſtood to be a matter of fact, Minerva being worſhipped by the Greeks as a real goddeſs, the daughter of Jupiter without a mother.

manner

manner of the Edda, accounts for the invention of fire, and for the mortality of man. Nor is there in all the Edda one more childiſh, or more diſtant from any appearance of a rational meaning. It is handled however by our philoſopher, with much ſolemn gravity, as if every ſource of wiſdom were locked up in it. The explanation he gives, being too long to be copied here, ſhall be reduced to a few particulars. After an elogium upon fire, his Lordſhip proceeds thus. "The manner wherein Prometheus "ſtole his fire, is properly deſcribed from the nature of the "thing; he being ſaid to have done it by applying a rod of "birch to the chariot of the ſun: for birch is uſed in ſtriking "and beating; which clearly denotes fire to proceed from vio-"lent percuſſions and colliſions of bodies, whereby the matters "ſtruck are ſubtilized, rarefied, put into motion, and ſo prepa-"red to receive the heat of the celeſtial bodies. And according-"ly they, in a clandeſtine and ſecret manner, ſnatch fire, as it "were by ſtealth, from the chariot of the ſun." He goes on as follows. "The next is a remarkable part of the fable; which "repreſents, that men, inſtead of gratitude, accuſed both Pro-"metheus and his fire to Jupiter: and yet the accuſation proved "ſo pleaſant to Jupiter, that he not only indulged mankind the "uſe of fire, but conferred upon them perpetual youth. Here it "may ſeem ſtrange, that the ſin of ingratitude ſhould meet with "approbation or reward. But the allegory has another view; "and denotes, that the accuſation both of human nature and hu-"man art, proceeds from a noble and laudable temper of mind, "viz. modeſty; and alſo tends to a very good purpoſe, viz. to "ſtir up freſh induſtry and new diſcoveries." Can any thing be more wire-drawn?

Vulcan, attempting the chaſtity of Minerva, had recourſe to force. In the ſtruggle, his *ſemen*, falling upon the ground, produced Ericthonius; whoſe body from the middle upward was comely

comely and well proportioned, his thighs and legs ſmall and deformed like an eel. Conſcious of that defect, he was the inventer of chariots; which ſhowed the graceful part of his body, and concealed what was deformed. Liſten to the explanation of this ridiculous fable. "Art, by the various uſes it makes of fire, is "here repreſented by Vulcan: and Nature is repreſented by Mi-"nerva, becauſe of the induſtry employ'd in her works. Art, "when it offers violence to Nature in order to bend her to its "purpoſe, ſeldom attains the end propoſed. Yet, upon great "ſtruggle and application, there proceed certain imperfect births, "or lame abortive works; which however, with great pomp and "deceitful appearances, are triumphantly carried about, and "ſhown by impoſtors." I admit the ingenuity of that forc'd meaning; but had the inventer of that fable any latent meaning? If he had, why did he conceal it? The ingenious meaning would have merited praiſe; the fable itſelf none at all.

I ſhall add but one other inſtance, for they grow tireſome. Sphinx was a monſter, having the face and voice of a virgin, the wings of a bird, and the talons of a gryphin. She reſided on the ſummit of a mountain, near the city Thebes. Her manner was, to lie in ambuſh for travellers, to propoſe dark riddles which ſhe received from the Muſes, and to tear thoſe to pieces who could not ſolve them. The Thebans having offered their kingdom to the man who ſhould interpret theſe riddles, Oedipus preſented himſelf before the monſter, and he was required to explain the following riddle, viz. What creature is that, which being born four-footed, becomes afterwards two-footed, then three-footed, and laſtly four-footed again. Oedipus anſwered, It was man, who in his infancy crawls upon his hands and feet, then walks upright upon his two feet, walks in old age with a ſtick, and at laſt lies four-footed in bed. Oedipus having thus obtained the victory, ſlew the monſter; and laying the carcaſe upon an aſs,

carried it off in triumph. Now for the explanation. " This is " an elegant and inſtructive fable, invented to repreſent ſcience: " for Science may be called a monſter, being ſtrangely gazed at " and admired by the ignorant. Her figure and form is various, " by reaſon of the vaſt variety of ſubjects that ſcience conſiders. " Her voice and countenance are repreſented female, by reaſon " of her gay appearance, and volubility of ſpeech. Wings are " added, becauſe the ſciences and their inventions fly about in " a moment; for knowledge, like light communicated from " torch to torch, is preſently catched, and copiouſly diffuſed. " Sharp and hooked talons are elegantly attributed to her; be- " cauſe the axioms and arguments of ſcience fix down the " mind, and keep it from moving or ſlipping away." Again: " All ſcience ſeems placed on high, as it were on the tops of " mountains that are hard to climb; for ſcience is juſtly imagi- " ned a ſublime and lofty thing, looking down upon ignorance, " and at the ſame time taking an extenſive view on all ſides, as " is uſual on the tops of mountains. Sphinx is ſaid to propoſe " difficult queſtions and riddles, which ſhe received from the " Muſes. Theſe queſtions, while they remain with the Muſes, " may be pleaſant, as contemplation and enquiry are when know- " ledge is their only aim: but after they are delivered to Sphinx, " that is, to practice, which impels to action, choice, and deter- " mination; then it is that they become ſevere and torturing; " and unleſs ſolved, ſtrangely perplex the human mind, and tear " it to pieces. It is with the utmoſt elegance added in the fable, " that the carcaſs of Sphinx was laid upon an aſs; for there is " nothing ſo ſubtile and abſtruſe, but after being made plain, may " be conceived by the ſloweſt capacity." According to ſuch latitude of interpretation, there is nothing more eaſy than to make *quidlibet ex qualibet*.

" Who

" Who would not laugh if ſuch a man there be?
" Who would not weep if Atticus were he?"

I will detain the reader but a moment longer, to hear what our author ſays in juſtification of ſuch myſterious meaning. Out of many reaſons, I ſelect the two following. " It may paſs for a " farther indication of a concealed and ſecret meaning, that ſome " of theſe fables are ſo abſurd and idle in their narration, as to " proclaim an allegory even afar off. A fable that carries proba- " bility with it, may be ſuppoſed invented for pleaſure, or in " imitation of hiſtory; but what could never be conceived or re- " lated in this way, muſt ſurely have a different uſe. For ex- " ample, what a monſtrous fiction is this, That Jupiter ſhould " take *Metis* to wife; and as ſoon as he found her pregnant eat " her up; whereby he alſo conceived, and out of his head brought " forth *Pallas* armed! Certainly no mortal could, but for the " ſake of the moral it couches, invent ſuch an abſurd dream as " this, ſo much out of the road of thought." At that rate, the more ridiculous or abſurd a fable is, the more inſtructive it muſt be. This opinion reſembles that of the ancient Germans with reſpect to mad women, who were held to be ſo wiſe, as that every thing they uttered was prophetic. Did it never once occur to our author, that in the infancy of the reaſoning faculty, the imagination is ſuffered to range without control, as in a dream; and that the vulgar in all ages are delighted with wonderful ſtories; the more out of nature, the more to their taſte?

We proceed to the other reaſon. " The argument of moſt " weight with me is, That many of theſe fables appear not to " have been invented by the perſons who relate and divulge " them, whether Homer, Heſiod, or others; for if I were aſſu- " red they firſt flowed from thoſe later times and authors, I ſhould " never expect any thing ſingularly great or noble from ſuch an

" origin. But whoever attentively conſiders the thing, will find, " that theſe fables are delivered down by thoſe writers, not as " matters then firſt invented, but as received and embraced in " earlier ages. And this principally raiſes my eſteem of thoſe " fables; which I receive, not as the product of the age, or in- " vention of the poets, but as ſacred relics, gentle whiſpers, and " the breath of better times, that from the traditions of more " ancient nations, came at length into the flutes and trumpets " of the Greeks." Was it our author's real opinion, that the farther back we trace the hiſtory of man, the more of ſcience and knowledge is found; and conſequently that ſavages are the moſt learned of all men?

The following fable of the ſavage Canadians ought to be myſterious, if either of the reaſons urged above be concluſive. " There " were in the beginning but ſix men in the world, (from whence " ſprung is not ſaid): one of theſe aſcended to heaven in queſt of " a woman named *Atahentſic*, and had carnal knowledge of her. " She being thrown headlong from the height of the empyrean, " was received on the back of a tortoiſe, and delivered of two " children, one of whom ſlew the other." This fable is ſo abſurd, that it muſt have a latent meaning; and one needs but copy our author to pump a deep myſtery out of it, however little intended by the inventer of the fable. And if either abſurdity or antiquity entitle fables to be held ſacred relics, gentle whiſpers, and the breath of better times, the following Japaneſe fables are well entitled to theſe diſtinguiſhing epithets. " Bunſio, in wedlock, having had no children for many years, addreſſed her prayers to the gods, was heard, and was delivered of 500 eggs. Fearing that the eggs might produce monſters, ſhe packed them up in a box, and threw them into the river. An old fiſherman finding the box, hatched the eggs in an oven, every one of which produced a child. The children were fed with boiled rice and mugwort-

leaves;

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leaves; and being at laſt left to ſhift for themſelves, they fell a-robbing on the highway. Hearing of a man famous for great wealth, they told their ſtory at his gate, and begged ſome food. This happening to be the houſe of their mother, ſhe own'd them for her children, and gave a great entertainment to her friends and neighbours. She was afterward inliſted among the goddeſſes by the name of *Benſaiten:* her 500 ſons were appointed to be her attendants; and to this day ſhe is worſhipped in Japan as the goddeſs of riches." Take another fable of the ſame ſtamp. The Japaneſe have a table of lucky and unlucky days, which they believe to have been compoſed by Abino Seimei, a famous aſtrologer, and a ſort of demi-god. They have the following tradition of him. "A young fox, purſued by hunters, fled into a temple, and took ſhelter in the boſom of Abino Jaſſima, ſon and heir to the king of the country. Refuſing to yield the poor creature to the unmerciful hunters, he defended himſelf with great bravery, and ſet the fox at liberty. The hunters, through reſentment againſt the young prince, murdered his royal father; but Jaſſima revenged his father's death, killing the traitors with his own hand. Upon this ſignal victory, a lady of incomparable beauty appeared to him, and made ſuch an impreſſion on his heart, that he took her to wife. Abino Seimei, procreated of that marriage, was endowed with divine wiſdom, and with the precious gift of prophecy. Jaſſima was ignorant that his wife was the very fox whoſe life he had ſaved, till ſhe reſumed by degrees her former ſhape." If there be any hidden myſtery in this tale, I ſhall not deſpair of finding a myſtery in every fairy-tale invented by Madam Gomez.

It is lamentable, how ſlowly human underſtanding, and the faculty of reaſon, creep toward maturity. If this reflection be verified in our celebrated philoſopher Bacon, how much more in the bulk of mankind? It is comfortable, however, that human

underſtanding

underſtanding is in a progreſs toward maturity, however ſlow. The fancy of allegorizing ancient fables, is now out of faſhion: enlightened reaſon has unmaſked theſe fables, and left them in their nakedneſs, as the invention of illiterate ages, when wonder was the prevailing paſſion.

Having diſcuſſed the firſt two heads, I proceed to the third, viz. Erroneous reaſoning, occaſioned by acquired biaſſes. And one of theſe that has the greateſt influence in perverting the rational faculty, is blind religious zeal. There is not in nature a ſyſtem more ſimple or perſpicuous than that of pure religion; and yet what a compoſition hath it been rendered of metaphyſical ſubtilties, and unintelligible jargon! That ſubject being too well known to need illuſtration, I ſhall confine myſelf to a few inſtances of the influence that religious ſuperſtition has on other ſubjects.

A hiſtory-painter and a player require the ſame ſort of genius. The one by colours, the other by looks and geſtures, expreſſes various modifications of paſſion, even what are beyond the reach of words; and to accompliſh theſe ends, great ſenſibility is requiſite, as well as judgement. Why then is not a player equally reſpected with a hiſtory-painter? It was thought by zealots, that a play is an entertainment too ſplendid for a mortified Chriſtian; upon which account players fell under church-cenſure, and were held unworthy of Chriſtian burial. A hiſtory-painter, on the contrary, being employ'd in painting for the church, was always in high eſteem. It is only among Proteſtants that players are beginning to be reſtored to their privileges as free citizens; and there perhaps never exiſted a hiſtory-painter more juſtly eſteemed, than Garrick, a player, is in Great Britain. Ariſtarchus having taught, that the earth moves round the ſun, was accuſed by the Heathen prieſts, for troubling the repoſe of their houſehold-gods. Copernicus, for the ſame doctrine, was accuſed by Chriſtian prieſts, as contradicting the

the ſcriptures, which talk of the ſun's moving. And Galileo, for adhering to Copernicus, was condemned to priſon and penance: he found it neceſſary to recant upon his knees in a ſolemn manner. A bias acquired from Ariſtotle, kept reaſon in chains for centuries. Scholaſtic divinity in particular, founded on the philoſophy of that author, was more hurtful to the reaſoning faculty than the Goths and Huns. Tycho Brahé ſuffered great perſecution for maintaining, that the heavens were ſo far empty of matter as to give free courſe to the comets; contrary to Ariſtotle, who taught, that the heavens are harder than a diamond: it was extremely ill taken, that a ſimple mortal ſhould pretend to give Ariſtotle the lie. During the infancy of reaſon, authority is the prevailing argument *.

Reaſon is extremely apt to be warped by habit. In the diſputes among the Athenians, about adjuſting the form of their government, it is obſervable, that thoſe who lived in the high country were for democracy; that the inhabitants of the plains were for oligarchy; and the ſeamen for monarchy. Shepherds are all equal: in a corn-country, there are a few maſters and many ſervants: on ſhipboard, there is one commander, and all the reſt ſubjects. Habit was their adviſer: none of them thought of conſulting reaſon in order to judge what was the beſt form upon the whole. Habit of a different kind has an influence no leſs powerful. Perſons who are in the habit of reaſoning, require demon-

* Ariſtotle, it would appear, was leſs regarded by his cotemporaries than by the moderns. Some perſons having travelled from Macedon all the way to Perſia with complaints againſt Antipater, Alexander obſerved, that they would not have made ſo long a journey had they received no injury. And Caſſander, ſon of Antipater, replying, that their long journey was an argument againſt them, truſting that witneſſes would not be brought from ſuch a diſtance to give evidence of their calumny; Alexander, ſmiling, ſaid, "Your argument is one of Ariſtotle's ſo-"phiſms, which will ſerve either ſide equally."

ſtration

ſtration for every thing: even a ſelf-evident propoſition is not ſuffered to eſcape. Theſe ſuperfluous proofs occur more than once in the Elements of Euclid. Nor has Ariſtotle, with all his ſkill in logics, entirely avoided them. Can any thing be more ſelf-evident, than the difference between pleaſure and motion? Yet Ariſtotle attempts to demonſtrate, that they are different. "No motion," ſays he, "except circular motion, is perfect in any one point of time: there is always ſomething wanting during its courſe, and it is not perfected till it arrive at its end. But pleaſure is perfect in every point of time; being the ſame from the beginning to the end." The difference is clear from perception merely; but is far from being clear from this demonſtration. Plato alſo attempts to demonſtrate a ſelf-evident propoſition, viz. That a quality is not a body. "Every body," ſays he, "is a ſubject: quality is not a ſubject, but an accident; *ergo*, quality is not a body. Again, A body cannot be in a ſubject: every quality is in a ſubject; *ergo*, quality is not a body." But Deſcartes affords the moſt illuſtrious inſtance of the kind. He was the greateſt geometer of the age he lived in, and one of the greateſt of any age; which inſenſibly led him to overlook intuitive knowledge, and to admit no propoſition but what is demonſtrated or proved in the regular form of ſyllogiſm. He took a fancy to doubt even of his own exiſtence, till he was convinced of it by the following argument. *Cogito, ergo ſum: I think, therefore I exiſt.* And what ſort of a demonſtration is this after all? In the very fundamental propoſition he acknowledges his exiſtence by the term *I*; and how abſurd is it, to imagine a proof neceſſary of what is admitted to be true in the fundamental propoſition? In the next place, How does our author know that he thinks? If nothing is to be taken for granted, an argument is no leſs neceſſary to prove that he thinks, than to prove that he exiſts. It is true, that he has intuitive knowledge of his thinking; but has he not the ſame of his

his exiſting? Would not a man deſerve to be laughed at, who, after warming himſelf at a fire, ſhould imagine the following argument neceſſary to prove its exiſtence, "The fire burns, *ergo* it "exiſts?" Liſten to an author of high reputation attempting to demonſtrate a ſelf-evident propoſition. "The *labour* of B, can-"not be the labour of C; becauſe it is the application of the or-"gans and powers of B, not of C, to the effecting of ſomething; "and therefore the labour is as much B's, as the *limbs* and *facul-"ties* made uſe of are his. Again, the *effect* or *produce* of the la-"bour of B, is not the effect of the labour of C: and therefore "this effect or produce is B's, not C's; as much B's, as the *labour* "was B's, and not C's: Becauſe, what the labour of B cauſes or "produces, B produces by his labour; or it is the product of B "by his labour: that is, it is B's product, not C's, or any other's. "And if C ſhould pretend to any *property* in that which B can "truly call *his*, he would act contrary to truth (*a*)."

In every ſubject of reaſoning, to define terms is neceſſary in order to avoid miſtakes. But there muſt be words that admit not of a definition, otherwiſe definitions would follow definitions without end: and ſuch words are what ſignify ſimple ideas, which have no parts nor compoſition. The habit however of defining is ſo inveterate in ſome men, as to make them attempt to define words ſignifying ſimple ideas. Is there any neceſſity to define motion: do not children underſtand the meaning of the word? And how is it poſſible to define it, when there are not words more ſimple to define it by? Yet Worſter (*b*) attempts that bold taſk. "A continual change of place," ſays he, "or "leaving one place for another, without remaining for any ſpace "of time in the ſame place, is called *motion*." That every body

(*a*) Religion of Nature delineated, ſect. 6. paragr. 2.

(*b*) Natural Philoſophy, p. 31.

in motion is continually changing place, is true: but change of place is not motion; it is the effect of motion. Graveſend (*a*) defines motion thus, "Motus eſt tranſlatio de loco in lo-"cum, ſive continua loci mutatio *;" which is the ſame with the former. Yet this very author admits *locus* or *place* to ſignify a ſimple idea, incapable of a definition. Is it more ſimple or more intelligible than motion? But, of all, the moſt remarkable definition of motion is that of Ariſtotle, famous for its impenetrability, or rather abſurdity, viz. "Actus entis in potentia, quatenus in "potentia †."

Extenſion enters into the conception of every particle of matter; becauſe every particle of matter has length, breadth, and thickneſs. Figure in the ſame manner enters into the conception of every particle of matter; becauſe every particle of matter is bounded. By the power of abſtraction, figure may be conceived independent of the body that is figured; and extenſion may be conceived independent of the body that is extended. Theſe particulars are abundantly plain and obvious; and yet obſerve what a heap of jargon is employ'd by the followers of Leibnitz, in their fruitleſs endeavours to define extenſion. In order to that end, they begin with *ſimple exiſtences*, which they ſay are unextended, and without parts. According to that definition, ſimple exiſtences cannot belong to matter, becauſe the ſmalleſt particle of matter has both parts and extenſion. But to let that paſs, they endeavour to ſhow as follows, how the idea of extenſion ariſes from theſe ſimple exiſtences. "We may look upon ſimple exiſtences, as having mutual

(*a*) Elements of Phyſics, p. 28.

* "Motion is, the removing from one place to another, or a continual change "of place."

† "The action of a being in power, ſo far as it is in power."

"relations

" relations with reſpect to their internal ſtate; relations that form a " certain order in their manner of exiſtence. And this order or ar- " rangement of things, coexiſting and linked together, but ſo as " we do not diſtinctly underſtand how, cauſes in us a confuſed " idea, from whence ariſes the appearance of extenſion." A Peripatetic philoſopher being aſked, What ſort of things the ſenſible ſpecies of Ariſtotle are? anſwered, That they are neither entities nor nonentities, but ſomething intermediate between the two. The famous aſtronomer Iſmael Bulialdus lays down the following propoſition, and attempts a mathematical demonſtration of it, " That " light is a mean-proportional between corporeal ſubſtance and " incorporeal."

I cloſe with a curious ſort of reaſoning, ſo ſingular indeed as not to come under any of the foregoing heads. The firſt editions of the lateſt verſion of the Bible into Engliſh have a preface, in which the tranſlators make the following apology for not keeping cloſe to the words of the original. " Another thing we think good " to admoniſh thee of, gentle reader, that we have not tied our- " ſelves to an uniformity of phraſing, or to an identity of words, " as ſome peradventure would wiſh that we had done, becauſe " they obſerve, that ſome learned men ſomewhere have been as " exact as they could be that way. Truly, that we might not " vary from the ſenſe of that which we have tranſlated before, if " the word ſignified the ſame in both places, (for there be ſome " words that be not of the ſame ſenſe every where), we were e- " ſpecially careful, and made a conſcience according to our duty. " But that we ſhould expreſs the ſame notion in the ſame parti- " cular word; as, for example, if we tranſlate the Hebrew or " Greek word once by *purpoſe*, never to call it *intent*; if one where " *journeying*, never *travelling*; if one where *think*, never *ſuppoſe*; " if one where *pain*, never *ache*; if one where *joy*, never *gladneſs*, " &c.; thus to mince the matter, we thought to ſavour more

" of curiosity than wisdom, and that rather it would breed scorn " in the Atheist, than bring profit to the godly reader. For is the " kingdom of God become words or syllables? Why should we " be in bondage to them, if we may be free; use one precisely, " when we may use another, no less fit, as commodiously? We " might also be charged by scoffers, with some unequal dealing " toward a great number of good English words. For as it is " written by a certain great philosopher, that he should say, that " those logs were happy that were made images to be worship- " ped; for their fellows, as good as they, lay for blocks behind " the fire: so if we should say, as it were, unto certain words, " Stand up higher, have a place in the Bible always; and to o- " thers of like quality, Get ye hence, be banished for ever, we " might be taxed peradventure with St James his words, name- " ly, to be partial in ourselves, and judges of evil thoughts." *Quæritur*, Can this translation be safely rely'd on, as the rule of faith, when such are the translators?

AP-

APPENDIX.

IN reviewing the foregoing ſketch, it occurred, that a fair analyſis of Ariſtotle's logics, would be a valuable addition to the hiſtorical branch. A diſtinct and candid account of a ſyſtem that for many ages governed the reaſoning part of mankind, cannot but be acceptable to the public. Curioſity will be gratified, in ſeeing a phantom delineated, that ſo long faſcinated the learned world; a phantom, which, like the pyramids of Egypt, or hanging gardens of Babylon, is a ſtructure of infinite genius, but abſolutely uſeleſs, unleſs for raiſing wonder. Dr Reid, profeſſor of moral philoſophy in the college of Glaſgow, reliſhed the thought; and his friendſhip to me prevailed on him, after much ſolicitation, to undertake the laborious taſk. No man is better acquainted with Ariſtotle's writings; and, without any enthuſiaſtic attachment, he holds that philoſopher to be a firſt-rate genius.

The logics of Ariſtotle have been on the decline more than a century; and are at preſent relegated to ſchools and colleges. They have occaſionally been criticiſed by different writers; but this is the firſt attempt to draw them out of their obſcurity into day-light. By what follows, one will be enabled to paſs a true judgement on them, and to determine, whether they ought, or ought not, to make a branch of education. The Doctor's eſſay, as a capital article in the progreſs and hiſtory of the ſciences, will, I hope, be made welcome, even with the fatigue of ſqueezing through many thorny paths, before a proper view can be obtained of that ancient and ſtupendous fabric.

It

It will at the ſame time ſhow the hurt that Ariſtotle has done to the reaſoning faculty, by drawing it out of its natural courſe into devious paths. His artificial mode of reaſoning, is no leſs ſuperficial than intricate. I ſay, ſuperficial; for in none of his logical works, is a ſingle truth attempted to be proved by ſyllogiſm that requires a proof: the propoſitions he undertakes to prove by ſyllogiſm, are all of them ſelf-evident. Take for inſtance the following propoſition, That man has a power of ſelf-motion. To prove this, he aſſumes the following axiom, upon which indeed every one of his ſyllogiſms are founded, viz. That whatever is true of a number of particulars joined together, holds true of every one ſeparately; which is thus expreſſed in logical terms, Whatever is true of the genus, holds true of every ſpecies. Founding upon that axiom, he reaſons thus: "All animals have a power "of ſelf-motion: man is an animal: *ergo*, man has a power "of ſelf-motion." Now if all animals have a power of ſelf-motion, it requires no argument to prove, that man, an animal, has that power: and therefore, what he gives as a concluſion or conſequence, is not really ſo; it is not *inferred* from the fundamental propoſition, but is *included* in it. At the ſame time, the ſelf-motive power of man, is a fact that cannot be known but from experience. I add, that the ſelf-motive power of man, is more clearly aſcertained by experience, than that of any other animal: and in attempting to prove man to be a ſelf-motive animal, is it not abſurd, to found the argument on a propoſition leſs certain than that undertaken to be demonſtrated? What is here obſerved, will be found applicable to the bulk, if not the whole, of his ſyllogiſms.

It appears ſingular, that Ariſtotle himſelf never attempts to apply his ſyllogiſtic mode of reaſoning, to any ſubject handled by him: on ethics, on rhetoric, and on poetry, he argues like a rational being, without once putting in practice any of his own rules.

But

But how is it poſſible, that a man of his capacity could long remain ignorant, how inſufficient a ſyllogiſm is for diſcovering any latent truth? He certainly intended his ſyſtem of logics, chiefly, if not ſolely, for diſputation: and if ſuch was his purpoſe, he has been wonderfully ſucceſsful; for nothing can be better contrived than that ſyſtem, for wrangling and diſputing without end. He indeed in a manner profeſſes this to be his aim, in his books *De Sophiſticis elenchis*.

Some ages hence, when the goodly fabric of the Romiſh ſpiritual power ſhall be laid low in the duſt, and ſcarce a veſtige remain, it will among antiquaries be a curious enquiry, What was the nature and extent of a tyranny, more oppreſſive to the minds of men, than the tyranny of ancient Rome was to their perſons. During every ſtep of the enquiry, poſterity will rejoice over mental liberty, no leſs precious in their eyes than perſonal liberty. The deſpotiſm of Ariſtotle with reſpect to the faculty of reaſon, was no leſs complete, than that of the Biſhop of Rome with reſpect to religion; and it has now become a proper ſubject of curioſity, to enquire into the nature and extent of that deſpotiſm, from which men are at laſt ſet happily free. One cannot peruſe the following ſheets, without ſympathetic pain for the weakneſs of man with reſpect to his nobleſt faculty; but that pain will redouble his ſatisfaction, in now being left free to the dictates of reaſon and common ſenſe.

In my reveries, I have more than once compared Ariſtotle's logics to a bubble made of ſoap-water for amuſing children; a beautiful figure with ſplendid colours; fair on the outſide, empty within. It has for more than two thouſand years been the hard fate of Ariſtotle's followers, Ixion like, to embrace a cloud for a goddeſs.—But this is more than ſufficient for a preface: and I had almoſt forgot, that I am detaining my readers from better entertainment, in liſtening to Dr Reid.

A Brief Account of ARISTOTLE'S LOGIC. With REMARKS.

CHAP. I.

Of the First Three Treatises.

SECT. I. *Of the Author.*

ARistotle had very uncommon advantages: born in an age when the philoſophical ſpirit in Greece had long flouriſhed, and was in its greateſt vigour; brought up in the court of Macedon, where his father was the King's phyſician; twenty years a favourite ſcholar of Plato, and tutor to Alexander the Great; who both honoured him with his friendſhip, and ſupplied him with every thing neceſſary for the proſecution of his enquiries.

Theſe advantages he improved by indefatigable ſtudy, and immenſe reading. He was the firſt we know, ſays Strabo, who compoſed a library. And in this the Egyptian and Pergamenian kings, copied his example. As to his genius, it would be diſreſpectful to mankind, not to allow an uncommon ſhare to a man who governed the opinions of the moſt enlightened part of the ſpecies near two thouſand years.

If his talents had been laid out ſolely for the diſcovery of truth, and the good of mankind, his laurels would have remained for ever freſh: but he ſeems to have had a greater paſſion for fame than

than for truth, and to have wanted rather to be admired as the prince of philoſophers, than to be uſeful: ſo that it is dubious whether there be in his character moſt of the philoſopher, or of the ſophiſt. The opinion of Lord Bacon is not without probability, That his ambition was as boundleſs as that of his royal pupil, the one aſpiring at univerſal monarchy over the bodies and fortunes of men, the other over their opinions. If this was the caſe, it cannot be ſaid, that the philoſopher purſued his aim with leſs induſtry, leſs ability, or leſs ſucceſs, than the hero.

His writings carry too evident marks of that philoſophical pride, vanity, and envy, which have often ſullied the character of the learned. He determines boldly things above all human knowledge; and enters upon the moſt difficult queſtions, as his pupil entered on a battle, with full aſſurance of ſucceſs. He delivers his deciſions oracularly, and without any fear of miſtake. Rather than confeſs his ignorance, he hides it under hard words and ambiguous expreſſions, of which his interpreters can make what pleaſes them. There is even reaſon to ſuſpect, that he wrote often with affected obſcurity, either that the air of myſtery might procure greater veneration, or that his books might be underſtood only by the adepts who had been initiated in his philoſophy.

His conduct towards the writers that went before him has been much cenſured. After the manner of the Ottoman princes, ſays Lord Verulam, he thought his throne could not be ſecure unleſs he killed all his brethren. Ludovicus Vives charges him with detracting from all philoſophers, that he might derive that glory to himſelf, of which he robbed them. He rarely quotes an author but with a view to cenſure, and is not very fair in repreſenting the opinions which he cenſures.

The faults we have mentioned are ſuch as might be expected in a man, who had the daring ambition to be tranſmitted to all future ages, as the prince of philoſophers, as one who had carried

every branch of human knowledge to its utmoſt limit; and who was not very ſcrupulous about the means he took to obtain his end.

We ought, however, to do him the juſtice to obſerve, that although the pride and vanity of the ſophiſt appear too much in his writings in abſtract philoſophy, yet in natural hiſtory the fidelity of his narrations ſeems to be equal to his induſtry; and he always diſtinguiſhes between what he knew and what he had by report. And even in abſtract philoſophy, it would be unfair to impute to Ariſtotle all the faults, all the obſcurities, and all the contradictions that are to be found in his writings. The greateſt part, and perhaps the beſt part, of his writings is loſt. There is reaſon to doubt whether ſome of thoſe we aſcribe to him be really his; and whether what are his be not much vitiated and interpolated. Theſe ſuſpicions are juſtified by the fate of Ariſtotle's writings, which is judiciouſly related, from the beſt authorities, in Bayle's dictionary, under the article *Tyrannion*, to which I refer.

His books in logic which remain, are, 1. One book of the Categories. 2. One of Interpretation. 3. Firſt Analytics, two books. 4. Laſt Analytics, two books. 5. Topics, eight books. 6. Of Sophiſms, one book. Diogenes Laertius mentions many others that are loſt. Thoſe I have mentioned have commonly been publiſhed together, under the name of *Ariſtotle's Organon*, or *his Logic*; and for many ages, Porphyry's Introduction to the Categories has been prefixed to them.

Sect. 2. *Of Porphyry's Introduction.*

In this Introduction, which is addreſſed to Chryſoarius, the author obſerves, That in order to underſtand Ariſtotle's doctrine concerning the categories, it is neceſſary to know what a *genus* is,

is, what a *ſpecies*, what a *ſpecific difference*, what a *property*, and what an *accident*; that the knowledge of theſe is alſo very uſeful in definition, in diviſion, and even in demonſtration: therefore he propoſes, in this little tract, to deliver ſhortly and ſimply the doctrine of the ancients, and chiefly of the Peripatetics, concerning theſe five *predicables*; avoiding the more intricate queſtions concerning them; ſuch as, Whether *genera* and *ſpecies* do really exiſt in nature? or, Whether they are only conceptions of the human mind? If they exiſt in nature, Whether they are corporeal or incorporeal? and, Whether they are inherent in the objects of ſenſe, or disjoined from them? Theſe, he ſays, are very difficult queſtions, and require accurate diſcuſſion; but that he is not to meddle with them.

After this preface, he explains very minutely each of the five words above mentioned, divides and ſubdivides each of them, and then purſues all the agreements and differences between one and another through ſixteen chapters.

SECT. 3. *Of the Categories.*

The book begins with an explication of what is meant by univocal words, what by equivocal, and what by denominative. Then it is obſerved, that what we ſay is either ſimple, without compoſition or ſtructure, as *man*, *horſe*; or, it has compoſition and ſtructure, as, *a man fights*, *the horſe runs*. Next comes a diſtinction between a ſubject of predication; that is, a ſubject of which any thing is affirmed or denied, and a ſubject of inheſion. Theſe things are ſaid to be inherent in a ſubject, which although they are not a part of the ſubject, cannot poſſibly exiſt without it, as figure in the thing figured. Of things that are, ſays Ariſtotle, ſome may be predicated of a ſubject, but are in no ſubject; as,

man may be predicated of James or John, but is not in any ſubject. Some again are in a ſubject, but can be predicated of no ſubject. Thus, my knowledge in grammar is in me as its ſubject, but it can be predicated of no ſubject; becauſe it is an individual thing. Some are both in a ſubject, and may be predicated of a ſubject, as ſcience; which is in the mind as its ſubject, and may be predicated of geometry. Laſtly, Some things can neither be in a ſubject, nor be predicated of any ſubject. Such are all individual ſubſtances, which cannot be predicated, becauſe they are individuals; and cannot be in a ſubject, becauſe they are ſubſtances. After ſome other ſubtilties about predicates and ſubjects, we come to the categories themſelves; the things above mentioned being called by the ſchoolmen the *anteprædicamenta*. It may be obſerved, however, that notwithſtanding the diſtinction now explained, the *being in a ſubject*, and the *being predicated truly of a ſubject*, are in the Analytics uſed as ſynonymous phraſes; and this variation of ſtyle has led ſome perſons to think that the Categories were not wrote by Ariſtotle.

Things which may be expreſſed without compoſition or ſtructure, are, ſays the author, reducible to the following heads. They are either *ſubſtance*, or *quantity*, or *quality*, or *relatives*, or *place*, or *time*, or *having*, or *doing*, or *ſuffering*. Theſe are the predicaments or categories. The firſt four are largely treated of in four chapters; the others are ſlightly paſſed over, as ſufficiently clear of themſelves. As a ſpecimen, I ſhall give a ſummary of what he ſays on the category of ſubſtance.

Subſtances are either primary, to wit, individual ſubſtances, or ſecondary, to wit, the genera and ſpecies of ſubſtances. Primary ſubſtances neither are in a ſubject, nor can be predicated of a ſubject; but all other things that exiſt, either are in primary ſubſtances, or may be predicated of them. For whatever can be predicated of that which is in a ſubject, may alſo be predicated of the

ſubject

ſubject itſelf. Primary ſubſtances are more ſubſtances than the ſecondary; and of the ſecondary, the ſpecies is more a ſubſtance than the genus. If there were no primary, there could be no ſecondary ſubſtances.

The properties of ſubſtance are theſe: 1. No ſubſtance is capable of intenſion or remiſſion. 2. No ſubſtance can be in any other thing as its ſubject of inheſion. 3. No ſubſtance has a contrary; for one ſubſtance cannot be contrary to another; nor can there be contrariety between a ſubſtance and that which is no ſubſtance. 4. The moſt remarkable property of ſubſtance, is, that one and the ſame ſubſtance may, by ſome change in itſelf, become the ſubject of things that are contrary. Thus, the ſame body may be at one time hot, at another cold.

Let this ſerve as a ſpecimen of Ariſtotle's manner of treating the categories. After them, we have ſome chapters, which the ſchoolmen call *poſtprædicamenta*; wherein, firſt, the four kinds of oppoſition of terms are explained; to wit, *relative*, *privative*, of *contrariety*, and of *contradiction*. This is repeated in all ſyſtems of logic. Laſt of all we have diſtinctions of the four Greek words which anſwer to the Latin ones, *prius*, *ſimul*, *motus*, and *habere*.

SECT. 4. *Of the book concerning Interpretation.*

We are to conſider, ſays Ariſtotle, what a noun is, what a verb, what affirmation, what negation, what ſpeech. Words are the ſigns of what paſſeth in the mind; writing is the ſign of words. The ſigns both of writing and of words are different in different nations, but the operations of mind ſignified by them are the ſame. There are ſome operations of thought which are neither true nor falſe. Theſe are expreſſed by nouns or verbs ſingly, and without compoſition.

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A noun is a ſound which by compact ſignifies ſomething without reſpect to time, and of which no part has ſignification by itſelf. The cries of beaſts may have a natural ſignification, but they are not nouns. We give that name only to ſounds which have their ſignification by compact. The caſes of a noun, as the genitive, dative, are not nouns. *Non homo* is not a noun, but, for diſtinction's ſake, may be called a *nomen infinitum*.

A verb ſignifies ſomething by compact with relation to time. Thus, *valet* is a verb; but *valetudo* is a noun, becauſe its ſignification has no relation to time. It is only the preſent tenſe of the indicative that is properly called a verb; the other tenſes and moods are variations of the verb. *Non valet* may be called a *verbum infinitum*.

Speech is ſound ſignificant by compact, of which ſome part is alſo ſignificant. And it is either enunciative, or not enunciative. Enunciative ſpeech is that which affirms or denies. As to ſpeech which is not enunciative, ſuch as a prayer or wiſh, the conſideration of it belongs to oratory, or poetry. Every enunciative ſpeech muſt have a verb, or ſome variation of a verb. Affirmation is the enunciation of one thing concerning another. Negation is the enunciation of one thing from another. Contradiction is an affirmation and negation that are oppoſite. This is a ſummary of the firſt ſix chapters.

The ſeventh and eighth treat of the various kinds of enunciations or propoſitions, univerſal, particular, indefinite, and ſingular; and of the various kinds of oppoſition in propoſitions, and the axioms concerning them. Theſe things are repeated in every ſyſtem of logic. In the ninth chapter he endeavours to prove, by a long metaphyſical reaſoning, that propoſitions reſpecting future contingencies are not, determinately, either true or falſe; and that if they were, it would follow, that all things happen neceſſarily,

ſarily, and could not have been otherwiſe than as they are. The remaining chapters contain many minute obſervations concerning the equipollency of propoſitions both pure and modal.

CHAP. II.

Remarks.

SECT. I. *On the Five Predicables.*

THE writers on logic have borrowed their materials almoſt entirely from Ariſtotle's Organon, and Porphyry's Introduction. The Organon however was not wrote by Ariſtotle as one work. It comprehends various tracts, wrote without the view of making them parts of one whole, and afterwards thrown together by his editors under one name on account of their affinity. Many of his books that are loſt would have made a part of the Organon, if they had been ſaved.

The three treatiſes of which we have given a brief account, are unconnected with each other, and with thoſe that follow. And although the firſt was undoubtedly compiled by Porphyry, and the two laſt probably by Ariſtotle, yet I conſider them as the venerable remains of a philoſophy more ancient than Ariſtotle. Archytas of Tarentum, an eminent mathematician and philoſopher of the Pythagorean ſchool, is ſaid to have wrote upon the ten categories. And the five predicables probably had their origin in the ſame ſchool. Ariſtotle, tho' abundantly careful to do juſtice to himſelf, does not claim the invention of either. And Porphyry, without

without aſcribing the latter to Ariſtotle, profeſſes only to deliver the doctrine of the ancients, and chiefly of the Peripatetics, concerning them.

The writers on logic having divided that ſcience into three parts; the firſt treating of ſimple apprehenſion, and of terms; the ſecond, of judgement, and of propoſitions; and the third, of reaſoning, and of ſyllogiſms. The materials of the firſt part are taken from Porphyry's Introduction, and the Categories; and thoſe of the ſecond from the book of Interpretation.

A predicable, according to the grammatical form of the word, might ſeem to ſignify, whatever may be predicated, that is, affirmed or denied, of ſome ſubject. And in this ſenſe every predicate would be a predicable. But the logicians give a different meaning to the word. They divide propoſitions into certain claſſes, according to the relation which the predicate of the propoſition bears to the ſubject. The firſt claſs is that wherein the predicate is the *genus* of the ſubject; as when we ſay, *This is a triangle, Jupiter is a planet.* In the ſecond claſs, the predicate is a *ſpecies* of the ſubject; as when we ſay, *This triangle is right-angled.* A third claſs is when the predicate is the ſpecific difference of the ſubject; as when we ſay, *Every triangle has three ſides and three angles.* A fourth when the predicate is a property of the ſubject; as when we ſay, *The angles of every triangle are equal to two right angles.* And a fifth claſs is when the predicate is ſomething accidental to the ſubject; as when we ſay, *This triangle is neatly drawn.*

Each of theſe claſſes comprehends a great variety of propoſitions, having different ſubjects, and different predicates; but in each claſs the relation between the predicate and the ſubject is the ſame. Now it is to this relation that logicians have given the name of *a predicable.* Hence it is, that altho' the number of predicates be infinite, yet the number of predicables can be no greater than

that

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that of the different relations which may be in propoſitions between the predicate and the ſubject. And if all propoſitions belong to one or other of the five claſſes above mentioned, there can be but five predicables, to wit, *genus*, *ſpecies*, *differentia*, *proprium*, and *accidens*. Theſe might, with more propriety perhaps, have been called *the five claſſes of predicates*; but uſe has determined them to be called *the five predicables*.

It may alſo be obſerved, that as ſome objects of thought are individuals, ſuch as, *Julius Cæſar*, *the city Rome*; ſo others are common to many individuals, as *good*, *great*, *virtuous*, *vicious*. Of this laſt kind are all things expreſſed by adjectives. Things common to many individuals were by the ancients called *univerſals*. All predicates are univerſals, for they all have the nature of adjectives; and, on the other hand, all univerſals may be predicates. On this account univerſals may be divided into the ſame claſſes as predicates; and as the five claſſes of predicates above mentioned have been called the five predicables, ſo by the ſame kind of phraſeology they have been called *the five univerſals*; altho' they may more properly be called *the five claſſes of univerſals*.

The doctrine of the five univerſals or predicables makes an eſſential part of every ſyſtem of logic, and has been handed down without any change to this day. The very name of *predicables* ſhews, that the author of this diviſion, whoever he was, intended it as a complete enumeration of all the kinds of things that can be affirmed of any ſubject; and ſo it has always been underſtood. So that it is implied in this diviſion, that all that can be affirmed of any thing whatſoever, is either the *genus* of the thing, or its *ſpecies*, or its *ſpecific difference*, or ſome *property* or *accident* belonging to it.

Burgerſdick, a very acute writer in logic, ſeems to have been aware, that ſtrong objections might be made to the five predicables, conſidered as a complete enumeration; but unwilling to al-

low any imperfection in this ancient diviſion, he endeavours to reſtrain the meaning of the word *predicable*, ſo as to obviate objections. Thoſe things only, ſays he, are to be accounted predicables, which may be affirmed of *many individuals*, *truly*, *properly*, and *immediately*. The conſequence of putting ſuch limitations upon the word *predicable* is, that in many propoſitions, perhaps in moſt, the predicate is not a predicable. But admitting all his limitations, the enumeration will ſtill be very incomplete: for of many things we may affirm truly, properly, and immediately, their exiſtence, their end, their cauſe, their effect, and various relations which they bear to other things. Theſe, and perhaps many more, are predicables in the ſtrict ſenſe of the word, no leſs than the five which have been ſo long famous.

Altho' Porphyry, and all ſubſequent writers, make the predicables to be, in number, five; yet Ariſtotle himſelf, in the beginning of the Topics, reduces them to four; and demonſtrates, that they can be no more. We ſhall give his demonſtration when we come to the Topics; and ſhall only here obſerve, that as Burgerſdick juſtifies the fivefold diviſion, by reſtraining the meaning of the word *predicable*; ſo Ariſtotle juſtifies the fourfold diviſion, by enlarging the meaning of the words *property* and *accident*.

After all, I apprehend, that this ancient diviſion of predicables, with all its imperfections, will bear a compariſon with thoſe which have been ſubſtituted in its ſtead by the moſt celebrated modern philoſophers.

Locke, in his Eſſay on the Human Underſtanding, having laid it down as a principle, That all our knowledge conſiſts in perceiving certain agreements and diſagreements between our ideas, reduces theſe agreements and diſagreements to four heads: to wit, 1. Identity and Diverſity; 2. Relation; 3. Coexiſtence; 4. Real Exiſtence (*a*). Here are four predicables given as a complete e-

(*a*) Book 4, chap. 1.

numeration,

numeration, and yet not one of the ancient predicables is included in the number.

The author of the Treatiſe of Human Nature, proceeding upon the ſame principle, That all our knowledge is only a perception of the relations of our ideas, obſerves, " That it may perhaps be " eſteemed an endleſs taſk, to enumerate all thoſe qualities which " admit of compariſon, and by which the ideas of philoſophical " relation are produced: but if we diligently conſider them, we " ſhall find, that without difficulty they may be compriſed under " ſeven general heads: 1. Reſemblance; 2. Identity; 3. Rela- " tions of Space and Time; 4. Relations of Quantity and Num- " ber; 5. Degrees of Quality; 6. Contrariety; 7. Cauſation (*a*)." Here again are ſeven predicables given as a complete enumeration, wherein all the predicables of the ancients, as well as two of Locke's, are left out.

The ancients in their diviſion attended only to categorical propoſitions which have one ſubject and one predicate; and of theſe, only to ſuch as have a general term for their ſubject. The moderns, by their definition of knowledge, have been led to attend only to relative propoſitions, which expreſs a relation between two ſubjects, and thoſe ſubjects they ſuppoſe to be always ideas.

SECT. 2. *On the Ten Categories, and on Diviſions in general.*

The intention of the categories or predicaments is, to muſter every object of human apprehenſion under ten heads: for the categories are given as a complete enumeration of every thing which can be expreſſed without *compoſition* and *ſtructure*; that is,

(*a*) Vol. 1. p. 33 and 125.

of every thing which can be either the ſubject or the predicate of a propoſition. So that as every ſoldier belongs to ſome company, and every company to ſome regiment; in like manner every thing that can be the object of human thought, has its place in one or other of the ten categories; and by dividing and ſubdividing properly the ſeveral categories, all the notions that enter into the human mind may be muſtered in rank and file, like an army in the day of battle.

The perfection of the diviſion of categories into ten heads, has been ſtrenuouſly defended by the followers of Ariſtotle, as well as that of the five predicables. They are indeed of kin to each other. They breathe the ſame ſpirit, and probably had the ſame origin. By the one we are taught to marſhal every term that can enter into a propoſition, either as ſubject or predicate; and by the other, we are taught all the poſſible relations which the ſubject can have to the predicate. Thus, the whole furniture of the human mind is preſented to us at one view, and contracted, as it were, into a nut-ſhell. To attempt, in ſo early a period, a methodical delineation of the vaſt region of human knowledge, actual and poſſible, and to point out the limits of every diſtrict, was indeed magnanimous in a high degree, and deſerves our admiration, while we lament that the human powers are unequal to ſo bold a flight.

A regular diſtribution of things under proper claſſes or heads, is, without doubt, a great help both to memory and judgement. And as the philoſopher's province includes all things human and divine that can be objects of enquiry, he is naturally led to attempt ſome general diviſion, like that of the categories. And the invention of a diviſion of this kind, which the ſpeculative part of mankind acquieſced in for two thouſand years, marks a ſuperiority of genius in the inventer, whoever he was. Nor does it appear, that the general diviſions which, ſince the decline of the Peripatetic

tic philoſophy, have been ſubſtituted in place of the ten categories, are more perfect.

Locke has reduced all things to three categories; to wit, ſubſtances, modes, and relations. In this diviſion, time, ſpace, and number, three great objects of human thought, are omitted.

The author of the Treatiſe of Human Nature has reduced all things to two categories; to wit, ideas, and impreſſions: a diviſion which is very well adapted to his ſyſtem; and which puts me in mind of another made by an excellent mathematician in a printed theſis I have ſeen. In it the author, after a ſevere cenſure of the ten categories of the Peripatetics, maintains, that there neither are nor can be more than two categories of things; to wit, *data*, and *quæſita*.

There are two ends that may be propoſed by ſuch diviſions. The firſt is, to methodize or digeſt in order what a man actually knows. This is neither unimportant nor impracticable; and in proportion to the ſolidity and accuracy of a man's judgement, his diviſions of things which he knows, will be elegant and uſeful. The ſame ſubject may admit, and even require, various diviſions, according to the different points of view from which we contemplate it: nor does it follow, that becauſe one diviſion is good, therefore another is naught. To be acquainted with the diviſions of the logicians and metaphyſicians, without a ſuperſtitious attachment to them, may be of uſe in dividing the ſame ſubjects, or even thoſe of a different nature. Thus, Quintilian borrows from the ten categories his diviſion of the topics of rhetorical argumentation. Of all methods of arrangement, the moſt antiphiloſophical ſeems to be the invention of this age; I mean, the arranging the arts and ſciences by the letters of the alphabet, in dictionaries and encyclopedies. With theſe authors the categories are, A, B, C, &c.

Another end commonly propoſed by ſuch diviſions, but very rarely

rarely attained, is, to exhauſt the ſubject divided; ſo that nothing that belongs to it ſhall be omitted. It is one of the general rules of diviſion in all ſyſtems of logic, That the diviſion ſhould be adequate to the ſubject divided: a good rule, without doubt; but very often beyond the reach of human power. To make a perfect diviſion, a man muſt have a perfect comprehenſion of the whole ſubject at one view. When our knowledge of the ſubject is imperfect, any diviſion we can make of it, muſt be like the firſt ſketch of a painter, to be extended, contracted, or mended, as the ſubject ſhall be found to require. Yet nothing is more common, not only among the ancient, but even among modern philoſophers, than to draw, from their incomplete diviſions, concluſions which ſuppoſe them to be perfect.

A diviſion is a repoſitory which the philoſopher frames for holding his ware in convenient order. The philoſopher maintains, that ſuch or ſuch a thing is not good ware, becauſe there is no place in his ware-room that fits it. We are apt to yield to this argument in philoſophy, but it would appear ridiculous in any other traffic.

Peter Ramus, who had the ſpirit of a reformer in philoſophy, and who had a force of genius ſufficient to ſhake the Ariſtotelian fabric in many parts, but inſufficient to erect any thing more ſolid in its place, tried to remedy the imperfection of philoſophical diviſions, by introducing a new manner of dividing. His diviſions always conſiſted of two members, one of which was contradictory of the other; as if one ſhould divide England into Middleſex and what is not Middleſex. It is evident that theſe two members comprehend all England: for the logicians obſerve, that a term, along with its contradictory, comprehend all things. In the ſame manner, we may divide what is not Middleſex into Kent and what is not Kent. Thus one may go on by diviſions and ſubdiviſions that are abſolutely complete. This example may

ſerve

ſerve to give an idea of the ſpirit of Ramean diviſions, which were in no ſmall reputation about two hundred years ago.

Ariſtotle was not ignorant of this kind of diviſion. But he uſed it only as a touchſtone to prove by induction the perfection of ſome other diviſion, which indeed is the beſt uſe that can be made of it; when applied to the common purpoſe of diviſion, it is both inelegant, and burdenſome to the memory; and, after it has put one out of breath by endleſs ſubdiviſions, there is ſtill a negative term left behind, which ſhows that you are no nearer the end of your journey than when you began.

Until ſome more effectual remedy be found for the imperfection of diviſions, I beg leave to propoſe one more ſimple than that of Ramus. It is this: When you meet with a diviſion of any ſubject imperfectly comprehended, add to the laſt member an *et cætera*. That this *et cætera* makes the diviſion complete, is undeniable; and therefore it ought to hold its place as a member, and to be always underſtood, whether expreſſed or not, until clear and poſitive proof be brought, that the diviſion is complete without it. And this ſame *et cætera* ſhall be the repoſitory of all members that ſhall in any future time ſhew a good and valid right to a property in the ſubject.

Sect. 3. *On Diſtinctions.*

Having ſaid ſo much of logical diviſions, we ſhall next make ſome remarks upon diſtinctions.

Since the philoſophy of Ariſtotle fell into diſrepute, it has been a common topic of wit and raillery, to enveigh againſt metaphyſical diſtinctions. Indeed the abuſe of them in the ſcholaſtic ages, ſeems to juſtify a general prejudice againſt them: and ſhallow thinkers and writers have good reaſon to be jealous of diſtinctions,

tinctions, becauſe they make ſad work when applied to their ſlimſy compoſitions. But every man of true judgement, while he condemns diſtinctions that have no foundation in the nature of things, muſt perceive, that indiſcriminately to decry diſtinctions, is, to renounce all pretenſions to juſt reaſoning: for as falſe reaſoning commonly proceeds from confounding things that are different, ſo without diſtinguiſhing ſuch things, it is impoſſible to avoid error, or detect ſophiſtry. The authority of Aquinas, or Suarez, or even of Ariſtotle, can neither ſtamp a real value upon diſtinctions of baſe metal, nor ought it to hinder the currency of thoſe that have intrinſic value.

Some diſtinctions are verbal, others are real. The firſt kind diſtinguiſh the various meanings of a word; ſome of which may be proper, others metaphorical. Diſtinctions of this kind make a part of the grammar of a language, and are often abſurd when tranſlated into another language. Real diſtinctions are equally good in all languages, and ſuffer no hurt by tranſlation. They diſtinguiſh the different ſpecies contained under ſome general notion, or the different parts contained in one whole.

Many of Ariſtotle's diſtinctions are verbal merely; and therefore more proper materials for a dictionary of the Greek language than for a philoſophical treatiſe. At leaſt, they ought never to have been tranſlated into other languages, when the idiom of the language will not juſtify them: for this is to adulterate the language, to introduce foreign idioms into it without neceſſity or uſe, and to make it ambiguous where it was not. The diſtinctions in the end of the Categories of the four words *prius*, *ſimul*, *motus*, and *habere*, are all verbal.

The modes or ſpecies of *prius*, according to Ariſtotle, are five. One thing may be prior to another; firſt, in point of time; ſecondly, in point of dignity; thirdly, in point of order; and ſo forth. The modes of *ſimul* are only three. It ſeems this word was not

not uſed in the Greek with ſo great latitude as the other, although they are relative terms.

The modes or ſpecies of motion he makes to be ſix, to wit, generation, corruption, increaſe, decreaſe, alteration, and change of place.

The modes or ſpecies of *having* are eight. 1. Having a quality or habit, as having wiſdom. 2. Having quantity or magnitude. 3. Having things adjacent, as having a ſword. 4. Having things as parts, as having hands or feet. 5. Having in a part or on a part, as having a ring on one's finger. 6. Containing, as a caſk is ſaid to have wine. 7. Poſſeſſing, as having lands or houſes. 8. Having a wife.

Another diſtinction of this kind is Ariſtotle's diſtinction of cauſes; of which he makes four kinds, efficient, material, formal, and final. Theſe diſtinctions may deſerve a place in a dictionary of the Greek language; but in Engliſh or Latin they adulterate the language. Yet ſo fond were the ſchoolmen of diſtinctions of this kind, that they added to Ariſtotle's enumeration, an impulſive cauſe, an exemplary cauſe, and I don't know how many more. We ſeem to have adopted into Engliſh a final cauſe; but it is merely a term of art, borrowed from the Peripatetic philoſophy, without neceſſity or uſe: for the Engliſh word *end* is as good as *final cauſe*, though not ſo long nor ſo learned.

SECT. 4. *On Definitions.*

It remains that we make ſome remarks on Ariſtotle's definitions, which have expoſed him to much cenſure and ridicule. Yet I think it muſt be allowed, that in things which need definition, and admit of it, his definitions are commonly judicious and accurate; and had he attempted to define ſuch things only, his ene-

mies had wanted great matter of triumph. I believe it may likewiſe be ſaid in his favour, that until Locke's eſſay was wrote, there was nothing of importance delivered by philoſophers with regard to definition, beyond what Ariſtotle has ſaid upon that ſubject.

He conſiders a definition as a ſpeech declaring what a thing is. Every thing eſſential to the thing defined, and nothing more, muſt be contained in the definition. Now the eſſence of a thing conſiſts of theſe two parts: Firſt, What is common to it with other things of the ſame kind; and, ſecondly, What diſtinguiſhes it from other things of the ſame kind. The firſt is called the *genus* of the thing, the ſecond its *ſpecific difference*. The definition therefore conſiſts of theſe two parts. And for finding them, we muſt have recourſe to the ten categories; in one or other of which every thing in nature is to be found. Each category is a *genus*, and is divided into ſo many ſpecies, which are diſtinguiſhed by their ſpecific differences. Each of theſe ſpecies is again ſubdivided into ſo many ſpecies, with regard to which it is a genus. This diviſion and ſubdiviſion continues until we come to the loweſt ſpecies, which can only be divided into individuals, diſtinguiſhed from one another, not by any ſpecific difference, but by accidental differences of time, place, and other circumſtances.

The category itſelf being the higheſt genus, is in no reſpect a ſpecies, and the loweſt *ſpecies* is in no reſpect a *genus*; but every intermediate order is a genus compared with thoſe that are below it, and a ſpecies compared with thoſe above it. To find the definition of any thing, therefore, you muſt take the genus which is immediately above its place in the category, and the ſpecific *difference*, by which it is diſtinguiſhed from other ſpecies of the ſame *genus*. Theſe two make a perfect definition. This I take to be the ſubſtance of Ariſtotle's ſyſtem; and probably the ſyſtem of the Pythagorean ſchool before Ariſtotle, concerning definition.

But

But notwithſtanding the ſpecious appearance of this ſyſtem, it has its defects. Not to repeat what was before ſaid, of the imperfection of the diviſion of things into ten categories, the ſubdiviſions of each category are no leſs imperfect. Ariſtotle has given ſome ſubdiviſions of a few of them; and as far as he goes, his followers pretty unanimouſly take the ſame road. But when they attempt to go farther, they take very different roads. It is evident, that if the ſeries of each category could be completed, and the diviſion of things into categories could be made perfect, ſtill the higheſt genus in each category could not be defined, becauſe it is not a ſpecies; nor could individuals be defined, becauſe they have no ſpecific difference. There are alſo many ſpecies of things, whoſe ſpecific difference cannot be expreſſed in language, even when it is evident to ſenſe, or to the underſtanding. Thus, green, red, and blue, are very diſtinct ſpecies of colour; but who can expreſs in words wherein green differs from red or blue?

Without borrowing light from the ancient ſyſtem, we may perceive, that every definition muſt conſiſt of words that need no definition; and that to define the common words of a language that have no ambiguity, is trifling, if it could be done; the only uſe of a definition being to give a clear and adequate conception of the meaning of a word.

The logicians indeed diſtinguiſh between the definition of a word, and the definition of a thing; conſidering the former as the mean office of a lexicographer, but the laſt as the grand work of a philoſopher. But what they have ſaid about the definition of a thing, if it has a meaning, is beyond my comprehenſion. All the rules of definition agree to the definition of a word: and if they mean by the definition of a thing, the giving an adequate conception of the nature and eſſence of any thing that exiſts; this is impoſſible, and is the vain boaſt of men unconſcious of the weakneſs of human underſtanding.

The works of God are all imperfectly known by us. We see their outside, or perhaps we discover some of their qualities and relations, by observation and experiment, assisted by reasoning; but we can give no definition of the meanest of them which comprehends its real essence. It is justly observed by Locke, that nominal essences only, which are the creatures of our own minds, are perfectly comprehended by us, or can be properly defined; and even of these there are many too simple in their nature to admit of definition. When we cannot give precision to our notions by a definition, we must endeavour to do it by attentive reflection upon them, by observing minutely their agreements and differences, and especially by a right understanding of the powers of our own minds by which such notions are formed.

The principles laid down by Locke with regard to definition, and with regard to the abuse of words, carry conviction along with them; and I take them to be one of the most important improvements made in logic since the days of Aristotle; not so much because they enlarge our knowledge, as because they make us sensible of our ignorance, and shew that a great part of what speculative men have admired as profound philosophy, is only a darkening of knowledge by words without understanding.

If Aristotle had understood those principles, many of his definitions, which furnish matter of triumph to his enemies, had never seen the light: let us impute them to the times rather than to the man. The sublime Plato, it is said, thought it necessary to have the definition of a man, and could find none better than *Animal implume bipes*; upon which Diogenes sent to his school a cock with his feathers plucked off, desiring to know whether it was a man or not.

SECT. 5. *On the Structure of Speech.*

The few hints contained in the beginning of the book concerning Interpretation, relating to the ſtructure of ſpeech, have been left out in treatiſes of logic, as belonging rather to grammar; yet I apprehend this is a rich field of philoſophical ſpeculation. Language being the expreſs image of human thought, the analyſis of the one muſt correſpond to that of the other. Nouns adjective and ſubſtantive, verbs active and paſſive, with their various moods, tenſes, and perſons, muſt be expreſſive of a like variety in the modes of thought. Things which are diſtinguiſhed in all languages, ſuch as ſubſtance and quality, action and paſſion, cauſe and effect, muſt be diſtinguiſhed by the natural powers of the human mind. The philoſophy of grammar, and that of the human underſtanding, are more nearly allied than is commonly imagined.

The ſtructure of language was purſued to a conſiderable extent, by the ancient commentators upon this book of Ariſtotle. Their ſpeculations upon this ſubject, which are neither the leaſt ingenious nor the leaſt uſeful part of the Peripatetic philoſophy, were neglected for many ages, and lay buried in ancient manuſcripts, or in books little known, till they were lately brought to light by the learned Mr Harris in his Hermes.

The definitions given by Ariſtotle, of a noun, of a verb, and of ſpeech, will hardly bear examination. It is eaſy in practice to diſtinguiſh the various parts of ſpeech; but very difficult, if at all poſſible, to give accurate definitions of them.

He obſerves juſtly, that beſides that kind of ſpeech called *a propoſition*, which is always either true or falſe, there are other kinds which are neither true nor falſe; ſuch as, a prayer, or wiſh; to which

which we may add, a queſtion, a command, a promiſe, a contract, and many others. Theſe Ariſtotle pronounces to have nothing to do with his ſubject, and remits them to oratory, or poetry; and ſo they have remained baniſhed from the regions of philoſophy to this day: yet I apprehend, that an analyſis of ſuch ſpeeches, and of the operations of mind which they expreſs, would be of real uſe, and perhaps would diſcover how imperfect an enumeration the logicians have given of the powers of human underſtanding, when they reduce them to ſimple apprehenſion, judgement, and reaſoning.

Sect. 6. *On Propoſitions.*

Mathematicians uſe the word *propoſition* in a larger ſenſe than logicians. A problem is called a *propoſition* in mathematics, but in logic it is not a propoſition: it is one of thoſe ſpeeches which are not enunciative, and which Ariſtotle remits to oratory or poetry.

A propoſition, according to Ariſtotle, is a ſpeech wherein one thing is affirmed or denied of another. Hence it is eaſy to diſtinguiſh the thing affirmed or denied, which is called *the predicate*, from the thing of which it is affirmed or denied, which is called *the ſubject*; and theſe two are called *the terms of the propoſition*. Hence likewiſe it appears, that propoſitions are either affirmative or negative; and this is called *their quality*. All affirmative propoſitions have the ſame quality, ſo likewiſe have all the negative; but an affirmative and a negative are contrary in their quality.

When the ſubject of a propoſition is a general term, the predicate is affirmed or denied, either of the whole, or of a part. Hence propoſitions are diſtinguiſhed into univerſal and particular. *All men are mortal*, is an univerſal propoſition; *Some men are learned*,

ed, is a particular, and this is called *the quantity of the propoſition*. All univerſal propoſitions agree in quantity, as alſo all particular: while an univerſal and a particular are ſaid to differ in quantity. A propoſition is called *indefinite*, when there is no mark either of univerſality or particularity annexed to the ſubject: thus, *Man is of few days*, is an indefinite propoſition; but it muſt be underſtood either as univerſal or as particular, and therefore is not a third ſpecies, but by interpretation is brought under one of the other two.

There are alſo ſingular propoſitions, which have not a general term but an individual for their ſubject; as, *Alexander was a great conqueror*. Theſe are conſidered by logicians as univerſal, becauſe, the ſubject being indiviſible, the predicate is affirmed or denied of the whole, and not of a part only. Thus all propoſitions, with regard to quality, are either affirmative or negative; and with regard to quantity, are univerſal or particular; and taking in both quantity and quality, they are univerſal affirmatives, or univerſal negatives, or particular affirmatives, or particular negatives. Theſe four kinds, after the days of Ariſtotle, came to be named by the names of the four firſt vowels, A, E, I, O, according to the following diſtich:

Aſſerit A, negat E, ſed univerſaliter ambæ;
Aſſerit I, negat O, ſed particulariter ambo.

When the young logician is thus far inſtructed in the nature of propoſitions, he is apt to think there is no difficulty in analyſing any propoſition, and ſhewing its ſubject and predicate, its quantity and quality; and indeed, unleſs he can do this, he will be unable to apply the rules of logic to uſe. Yet he will find, there are ſome difficulties in this analyſis, which are overlooked by Ariſtotle altogether; and altho' they are ſometimes touched, they are not removed

removed by his followers. For, 1. There are propoſitions in which it is difficult to find a ſubject and a predicate; as in theſe, *It rains*, *It ſnows*. 2. In ſome propoſitions either term may be made the ſubject or the predicate as you like beſt; as in this, *Virtue is the road to happineſs*. 3. The ſame example may ſerve to ſhew, that it is ſometimes difficult to ſay, whether a propoſition be univerſal or particular. 4. The quality of ſome propoſitions is ſo dubious, that logicians have never been able to agree whether they be affirmative or negative; as in this propoſition, *Whatever is inſentient is not an animal*. 5. As there is one claſs of propoſitions which have only two terms, to wit, one ſubject and one predicate, which are called *categorical propoſitions*; ſo there are many claſſes that have more than two terms. What Ariſtotle delivers in this book is applicable only to categorical propoſitions; and to them only the rules concerning the converſion of propoſitions, and concerning the figures and modes of ſyllogiſms, are accommodated. The ſubſequent writers of logic have taken notice of ſome of the many claſſes of complex propoſitions, and have given rules adapted to them; but finding this work endleſs, they have left us to manage the reſt by the rules of common ſenſe.

CHAP.

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CHAP. III.

Account of the Firſt Analytics.

SECT. I. *Of the Converſion of Propoſitions.*

IN attempting to give ſome account of the Analytics and of the Topics of Ariſtotle, ingenuity requires me to confeſs, that tho' I have often purpoſed to read the whole with care, and to underſtand what is intelligible, yet my courage and patience always failed before I had done. Why ſhould I throw away ſo much time and painful attention upon a thing of ſo little real uſe? If I had lived in thoſe ages when the knowledge of Ariſtotle's Organon intitled a man to the higheſt rank in philoſophy, ambition might have induced me to employ upon it ſome years painful ſtudy; and leſs, I conceive, would not be ſufficient. Such reflections as theſe, always got the better of my reſolution, when the firſt ardor began to cool. All I can ſay is, that I have read ſome parts of the different books with care, ſome ſlightly, and ſome perhaps not at all. I have glanced over the whole often, and when any thing attracted my attention, have dipped into it till my appetite was ſatisfied. Of all reading it is the moſt dry and the moſt painful, employing an infinite labour of demonſtration, about things of the moſt abſtract nature, delivered in a laconic ſtyle, and often, I think, with affected obſcurity; and all to prove general propoſitions, which when applied to particular inſtances appear ſelf-evident.

There is probably but little in the Categories, or in the book of Interpretation, which Ariſtotle could claim as his own invention: but the whole theory of ſyllogiſms he claims as his own, and as the fruit of much time and labour. And indeed it is a ſtately fabrick, a monument of a great genius, which we could wiſh to have been more uſefully employed. There muſt be ſomething however adapted to pleaſe the human underſtanding, or to flatter human pride, in a work which occupied men of ſpeculation for more than a thouſand years. Theſe books are called *Analytics*, becauſe the intention of them is to reſolve all reaſoning into its ſimple ingredients.

The firſt book of the Firſt Analytics, conſiſting of forty-ſix chapters, may be divided into four parts; the firſt treating of the converſion of propoſitions; the ſecond, of the ſtructure of ſyllogiſms in all the different figures and modes; the third, of the invention of a middle term; and the laſt, of the reſolution of ſyllogiſms. We ſhall give a brief account of each.

To convert a propoſition, is to infer from it another propoſition, whoſe ſubject is the predicate of the firſt, and whoſe predicate is the ſubject of the firſt. This is reduced by Ariſtotle to three rules. 1. An univerſal negative may be converted into an univerſal negative: thus, *No man is a quadruped*; therefore, *No quadruped is a man.* 2. An univerſal affirmative can be converted only into a particular affirmative: thus, *All men are mortal*; therefore, *Some mortal beings are men.* 3. A particular affirmative may be converted into a particular affirmative: as, *Some men are juſt*; therefore, *Some juſt perſons are men.* When a propoſition may be converted without changing its quantity, this is called *ſimple converſion*; but when the quantity is diminiſhed, as in the univerſal affirmative, it is called converſion *per accidens.*

There is another kind of converſion, omitted in this place by Ariſtotle, but ſupplied by his followers, called *converſion by contra-*

poſition,

poſition, in which the term which is contradictory to the predicate is put for the ſubject, and the quality of the propoſition is changed; as, *All animals are ſentient*; therefore, *What is inſentient is not an animal.* A fourth rule of converſion therefore is, That an univerſal affirmative, and a particular negative, may be converted by contrapoſition.

SECT. 2. *Of the Figures and Modes of pure Syllogiſms.*

A ſyllogiſm is an argument, or reaſoning, conſiſting of three propoſitions, the laſt of which, called *the concluſion*, is inferred from the two preceding, which are called *the premiſes*. The concluſion having two terms, a ſubject and a predicate, its predicate is called the *major* term, and its ſubject the *minor* term. In order to prove the concluſion, each of its terms is in the premiſes compared with a third term, called the *middle* term. By this means one of the premiſes will have for its two terms the major term and the middle term; and this premiſe is called the *major* premiſe, or the *major* propoſition of the ſyllogiſm. The other premiſe muſt have for its two terms the minor term and the middle term, and it is called the *minor* propoſition. Thus the ſyllogiſm conſiſts of three propoſitions, diſtinguiſhed by the names of the *major*, the *minor*, and the *concluſion*: and altho' each of theſe has two terms, a ſubject and a predicate, yet there are only three different terms in all. The major term is always the predicate of the concluſion, and is alſo either the ſubject or predicate of the major propoſition. The minor term is always the ſubject of the concluſion, and is alſo either the ſubject or predicate of the minor propoſition. The middle term never enters into the concluſion, but ſtands in both premiſes, either in the poſition of ſubject or of predicate.

According to the various poſitions which the middle term may

have in the premiſes, ſyllogiſms are ſaid to be of various figures. Now all the poſſible poſitions of the middle term are only four: for, firſt, it may be the ſubject of the major propoſition, and the predicate of the minor, and then the ſyllogiſm is of the firſt figure; or it may be the predicate of both premiſes, and then the ſyllogiſm is of the ſecond figure; or it may be the ſubject of both, which makes a ſyllogiſm of the third figure; or it may be the predicate of the major propoſition, and the ſubject of the minor, which makes the fourth figure. Ariſtotle takes no notice of the fourth figure. It was added by the famous Galen, and is often called *the Galenical figure*.

There is another diviſion of ſyllogiſms according to their modes. The mode of a ſyllogiſm is determined by the quality and quantity of the propoſitions of which it conſiſts. Each of the three propoſitions muſt be either an univerſal affirmative, or an univerſal negative, or a particular affirmative, or a particular negative. Theſe four kinds of propoſitions, as was before obſerved, have been named by the four vowels, A, E, I, O; by which means the mode of a ſyllogiſm is marked by any three of thoſe four vowels. Thus A, A, A, denotes that mode in which the major, minor, and concluſion, are all univerſal affirmatives; E, A, E, denotes that mode in which the major and concluſion are univerſal negatives, and the minor is an univerſal affirmative.

To know all the poſſible modes of ſyllogiſm, we muſt find how many different combinations may be made of three out of the four vowels, and from the art of combination the number is found to be ſixty-four. So many poſſible modes there are in every figure, conſequently in the three figures of Ariſtotle there are one hundred and ninety-two, and in all the four figures two hundred and fifty-ſix.

Now the theory of ſyllogiſm requires, that we ſhew what are the particular modes in each figure, which do, or do not, form a

juſt

juſt and concluſive ſyllogiſm, that ſo the legitimate may be adopted, and the ſpurious rejected. This Ariſtotle has ſhewn in the firſt three figures, examining all the modes one by one, and paſſing ſentence upon each; and from this examination he collects ſome rules which may aid the memory in diſtinguiſhing the falſe from the true, and point out the properties of each figure.

The firſt figure has only four legitimate modes. The major propoſition in this figure muſt be univerſal, and the minor affirmative; and it has this property, that it yields concluſions of all kinds, affirmative and negative, univerſal and particular.

The ſecond figure has alſo four legitimate modes. Its major propoſition muſt be univerſal, and one of the premiſes muſt be negative. It yields concluſions both univerſal and particular, but all negative.

The third figure has ſix legitimate modes. Its minor muſt always be affirmative; and it yields concluſions both affirmative and negative, but all particular.

Beſides the rules that are proper to each figure, Ariſtotle has given ſome that are common to all, by which the legitimacy of ſyllogiſms may be tried. Theſe may, I think, be reduced to five. 1. There muſt be only three terms in a ſyllogiſm. As each term occurs in two of the propoſitions, it muſt be preciſely the ſame in both: if it be not, the ſyllogiſm is ſaid to have four terms, which makes a vitious ſyllogiſm. 2. The middle term muſt be taken univerſally in one of the premiſes. 3. Both premiſes muſt not be particular propoſitions, nor both negative. 4. The concluſion muſt be particular, if either of the premiſes be particular; and negative, if either of the premiſes be negative. 5. No term can be taken univerſally in the concluſion, if it be not taken univerſally in the premiſes.

For underſtanding the ſecond and fifth of theſe rules, it is neceſſary to obſerve, that a term is ſaid to be taken univerſally, not only

only when it is the ſubject of an univerſal propoſition, but when it is the predicate of a negative propoſition; on the other hand, a term is ſaid to be taken particularly, when it is either the ſubject of a particular, or the predicate of an affirmative propoſition.

Sect. 3. *Of the Invention of a Middle Term.*

The third part of this book contains rules general and ſpecial for the invention of a middle term; and this the author conceives to be of great utility. The general rules amount to this, That you are to conſider well both terms of the propoſition to be proved; their definition, their properties, the things which may be affirmed or denied of them, and thoſe of which they may be affirmed or denied: thoſe things collected together, are the materials from which your middle term is to be taken.

The ſpecial rules require you to conſider the quantity and quality of the propoſition to be proved, that you may diſcover in what mode and figure of ſyllogiſm the proof is to proceed. Then from the materials before collected, you muſt ſeek a middle term which has that relation to the ſubject and predicate of the propoſition to be proved, which the nature of the ſyllogiſm requires. Thus, ſuppoſe the propoſition I would prove is an univerſal affirmative, I know by the rules of ſyllogiſms, that there is only one legitimate mode in which an univerſal affirmative propoſition can be proved; and that is the firſt mode of the firſt figure. I know likewiſe, that in this mode both the premiſes muſt be univerſal affirmatives; and that the middle term muſt be the ſubject of the major, and the predicate of the minor. Therefore of the terms collected according to the general rule, I ſeek out one or more which have theſe two properties; firſt, That the predicate of the propoſition to be proved can be univerſally affirmed of it; and, ſecondly,

ſecondly, That it can be univerſally affirmed of the ſubject of the propoſition to be proved. Every term you can find which has thoſe two properties, will ſerve you as a middle term, but no other. In this way, the author gives ſpecial rules for all the various kinds of propoſitions to be proved; points out the various modes in which they may be proved, and the properties which the middle term muſt have to make it fit for anſwering that end. And the rules are illuſtrated, or rather, in my opinion, purpoſely darkened, by putting letters of the alphabet for the ſeveral terms.

SECT. 4. *Of the remaining part of the Firſt Book.*

The reſolution of ſyllogiſms requires no other principles but thoſe before laid down for conſtructing them. However it is treated of largely, and rules laid down for reducing reaſoning to ſyllogiſms, by ſupplying one of the premiſes when it is underſtood, by rectifying inverſions, and putting the propoſitions in the proper order.

Here he ſpeaks alſo of hypothetical ſyllogiſms; which, he acknowledges, cannot be reſolved into any of the figures, although there be many kinds of them which ought diligently to be obſerved; and which he promiſes to handle afterwards. But this promiſe is not fulfilled, as far as I know, in any of his works that are extant.

SECT. 5. *Of the Second Book of the Firſt Analytics.*

The ſecond book treats of the powers of ſyllogiſms, and ſhows, in twenty-ſeven chapters, how we may perform many feats by them,

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them, and what figures and modes are adapted to each. Thus, in ſome ſyllogiſms ſeveral diſtinct concluſions may be drawn from the ſame premiſes: in ſome, true concluſions may be drawn from falſe premiſes: in ſome, by aſſuming the concluſion and one premiſe, you may prove the other; you may turn a direct ſyllogiſm into one leading to an abſurdity.

We have likewiſe precepts given in this book, both to the aſſailant in a ſyllogiſtical diſpute, how to carry on his attack with art, ſo as to obtain the victory; and to the defendant, how to keep the enemy at ſuch a diſtance as that he ſhall never be obliged to yield. From which we learn, that Ariſtotle introduced in his own ſchool, the practice of diſputing ſyllogiſtically, inſtead of the rhetorical diſputations which the ſophiſts were wont to uſe in more ancient times.

CHAP. IV.

Remarks.

SECT. I. *Of the Converſion of Propoſitions.*

WE have given a ſummary view of the theory of pure ſyllogiſms as delivered by Ariſtotle, a theory of which he claims the ſole invention. And I believe it will be difficult, in any ſcience, to find ſo large a ſyſtem of truths of ſo very abſtract and ſo general a nature, all fortified by demonſtration, and all invented and perfected by one man. It ſhows a force of genius, and labour of inveſtigation,

inveſtigation, equal to the moſt arduous attempts. I ſhall now make ſome remarks upon it.

As to the converſion of propoſitions, the writers on logic commonly ſatisfy themſelves with illuſtrating each of the rules by an example, conceiving them to be ſelf-evident when applied to particular caſes. But Ariſtotle has given demonſtrations of the rules he mentions. As a ſpecimen, I ſhall give his demonſtration of the firſt rule. "Let A B be an univerſal negative propoſition; I "ſay, that if A is in no B, it will follow that B is in no A. If "you deny this conſequence, let B be in ſome A, for example, "in C; then the firſt ſuppoſition will not be true; for C is of the "B's." In this demonſtration, if I underſtand it, the third rule of converſion is aſſumed, that if B is in ſome A, then A muſt be in ſome B, which indeed is contrary to the firſt ſuppoſition. If the third rule be aſſumed for proof of the firſt, the proof of all the three goes round in a circle; for the ſecond and third rules are proved by the firſt. This is a fault in reaſoning which Ariſtotle condemns, and which I would be very unwilling to charge him with, if I could find any better meaning in his demonſtration. But it is indeed a fault very difficult to be avoided, when men attempt to prove things that are ſelf-evident.

The rules of converſion cannot be applied to all propoſitions, but only to thoſe that are categorical; and we are left to the direction of common ſenſe in the converſion of other propoſitions. To give an example: Alexander was the ſon of Philip; therefore Philip was the father of Alexander: A is greater than B; therefore B is leſs than A. Theſe are converſions which, as far as I know, do not fall within any rule in logic; nor do we find any loſs for want of a rule in ſuch caſes.

Even in the converſion of categorical propoſitions, it is not enough to tranſpoſe the ſubject and predicate. Both muſt undergo ſome change, in order to fit them for their new ſtation: for in e-

very propoſition the ſubject muſt be a ſubſtantive, or have the force of a ſubſtantive; and the predicate muſt be an adjective, or have the force of an adjective. Hence it follows, that when the ſubject is an individual, the propoſition admits not of converſion. How, for inſtance, ſhall we convert this propoſition, God is omniſcient?

Theſe obſervations ſhow, that the doctrine of the converſion of propoſitions is not ſo complete as it appears. The rules are laid down without any limitation; yet they are fitted only to one claſs of propoſitions, to wit, the categorical; and of theſe only to ſuch as have a general term for their ſubject.

Sect. 2. *On Additions made to Ariſtotle's Theory.*

Although the logicians have enlarged the firſt and ſecond parts of logic, by explaining ſome technical words and diſtinctions which Ariſtotle had omitted, and by giving names to ſome kinds of propoſitions which he overlooks; yet in what concerns the theory of categorical ſyllogiſms, he is more full, more minute and particular, than any of them: ſo that they ſeem to have thought this capital part of the Organon rather redundant than deficient.

It is true, that Galen added a fourth figure to the three mentioned by Ariſtotle. But there is reaſon to think that Ariſtotle omitted the fourth figure, not through ignorance or inattention, but of deſign, as containing only ſome indirect modes, which, when properly expreſſed, fall into the firſt figure.

It is true alſo, that Peter Ramus, a profeſſed enemy of Ariſtotle, introduced ſome new modes that are adapted to ſingular propoſitions; and that Ariſtotle takes no notice of ſingular propoſitions, either in his rules of converſion, or in the modes of ſyllogiſm. But the friends of Ariſtotle have ſhewn, that this improvement

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of Ramus is more ſpecious than uſeful. Singular propoſitions have the force of univerſal propoſitions, and are ſubject to the ſame rules. The definition given by Ariſtotle of an univerſal propoſition applies to them; and therefore he might think, that there was no occaſion to multiply the modes of ſyllogiſm upon their account.

Theſe attempts, therefore, ſhow rather inclination than power, to diſcover any material defect in Ariſtotle's theory.

The moſt valuable addition made to the theory of categorical ſyllogiſms, ſeems to be the invention of thoſe technical names given to the legitimate modes, by which they may be eaſily remembered, and which have been compriſed in theſe barbarous verſes.

Barbara, *Celarent*, *Darii*, *Ferio*, dato primæ;
Ceſare, *Cameſtris*, *Feſtino*, *Baroco*, ſecundæ;
Tertia grande ſonans recitat *Darapti*, *Felapton*;
Adjungens *Diſamis*, *Datiſi*, *Bocardo*, *Feriſon*.

In theſe verſes, every legitimate mode belonging to the three figures has a name given to it, by which it may be diſtinguiſhed and remembered. And this name is ſo contrived as to denote its nature: for the name has three vowels, which denote the kind of each of its propoſitions.

Thus, a ſyllogiſm in *Bocardo* muſt be made up of the propoſitions denoted by the three vowels, O, A, O; that is, its major and concluſion muſt be particular negative propoſitions, and its minor an univerſal affirmative; and being in the third figure, the middle term muſt be the ſubject of both premiſes.

This is the myſtery contained in the vowels of thoſe barbarous words. But there are other myſteries contained in their conſonants: for, by their means, a child may be taught to reduce any

ſyllogiſm of the ſecond or third figure to one of the firſt. So that the four modes of the firſt figure being directly proved to be concluſive, all the modes of the other two are proved at the ſame time, by means of this operation of reduction. For the rules and manner of this reduction, and the different ſpecies of it, called *oſtenſive* and *per impoſſibile*, I refer to the logicians, that I may not diſcloſe all their myſteries.

The invention contained in theſe verſes is ſo ingenious, and ſo great an adminicle to the dextrous management of ſyllogiſms, that I think it very probable that Ariſtotle had ſome contrivance of this kind, which was kept as one of the ſecret doctrines of his ſchool, and handed down by tradition, until ſome body brought it to light. This is offered only as a conjecture, leaving it to thoſe who are better acquainted with the moſt ancient commentators on the Analytics, either to refute or to confirm it.

Sect. 3. *On Examples uſed to illuſtrate this Theory.*

We may obſerve, that Ariſtotle hardly ever gives examples of real ſyllogiſms to illuſtrate his rules. In demonſtrating the legitimate modes, he takes A, B, C, for the terms of the ſyllogiſm. Thus, the firſt mode of the firſt figure is demonſtrated by him in this manner. "For," ſays he, "if A is attributed to every "B, and B to every C, it follows neceſſarily, that A may be at-"tributed to every C." For diſproving the illegitimate modes, he uſes the ſame manner; with this difference, that he commonly for an example gives three real terms, ſuch as, *bonum*, *habitus*, *prudentia*; of which three terms you are to make up a ſyllogiſm of the figure and mode in queſtion, which will appear to be inconcluſive.

The commentators, and ſyſtematical writers in logic, have ſupplied

plied this defect; and given us real examples of every legitimate mode in all the figures. This we must acknowledge to be charitably done, to assist the imagination in the conception of matters so very abstract; but whether it was prudently done for the honour of the art, may be doubted. I am afraid this was to uncover the nakedness of the theory; and has contributed much to bring it into contempt: for when one considers the silly and uninstructive reasonings that have been brought forth by this grand organ of science, he can hardly forbear crying out, *Parturiunt montes, et nascitur ridiculus mus.* Many of the writers of logic are acute and ingenious, and much practised in the syllogistical art; and there must be some reason why the examples they have given of syllogisms are so lean.

We shall speak of the reason afterwards; and shall now give a syllogism in each figure as an example.

No work of God is bad;
The natural passions and appetites of men are the work of God;
Therefore none of them is bad.

In this syllogism, the middle term, *work of God*, is the subject of the major and the predicate of the minor; so that the syllogism is of the first figure. The mode is that called *Celarent;* the major and conclusion being both universal negatives, and the minor an universal affirmative. It agrees to the rules of the figure, as the major is universal, and the minor affirmative; it is also agreeable to all the general rules; so that it maintains its character in every trial. And to show of what ductile materials syllogisms are made, we may, by converting simply the major proposition, reduce it to a good syllogism of the second figure, and of the mode *Cesare*, thus:

Whatever is bad is not the work of God;
All the natural passions and appetites of men are the work of God;
Therefore they are not bad.

Another

Another example:

Every thing virtuous is praiſe-worthy;
Some pleaſures are not praiſe-worthy;
Therefore ſome pleaſures are not virtuous.

Here the middle term *praiſe-worthy* being the predicate of both premiſes, the ſyllogiſm is of the ſecond figure; and ſeeing it is made up of the propoſitions, A, O, O, the mode is *Baroco*. It will be found to agree both with the general and ſpecial rules: and it may be reduced into a good ſyllogiſm of the firſt figure upon converting the major by contrapoſition, thus:

What is not praiſe-worthy is not virtuous;
Some pleaſures are not praiſe-worthy;
Therefore ſome pleaſures are not virtuous.

That this ſyllogiſm is concluſive, common ſenſe pronounces, and all logicians muſt allow; but it is ſomewhat unpliable to rules, and requires a little ſtraining to make it tally with them.

That it is of the firſt figure is beyond diſpute; but to what mode of that figure ſhall we refer it? This is a queſtion of ſome difficulty. For, in the firſt place, the premiſes ſeem to be both negative, which contradicts the third general rule; and moreover, it is contrary to a ſpecial rule of the firſt figure, That the minor ſhould be negative. Theſe are the difficulties to be removed.

Some logicians think, that the two negative particles in the major are equivalent to an affirmative; and that therefore the major propoſition, *What is not praiſe-worthy, is not virtuous*, is to be accounted an affirmative propoſition. This, if granted, ſolves one difficulty; but the other remains. The moſt ingenious ſolution, therefore, is this: Let the middle term be *not praiſe-worthy*. Thus, making the negative particle a part of the middle term, the ſyllogiſm ſtands thus:

Whatever is *not praiſe-worthy* is not virtuous;
Some pleaſures are *not praiſe-worthy*;
Therefore ſome pleaſures are not virtuous.

By

By this analyſis, the major becomes an univerſal negative, the minor a particular affirmative, and the concluſion a particular negative, and ſo we have a juſt ſyllogiſm in *Ferio*.

We ſee, by this example, that the quality of propoſitions is not ſo invariable, but that, when occaſion requires, an affirmative may be degraded into a negative, or a negative exalted to an affirmative. Another example:

All Africans are black;
All Africans are men;
Therefore ſome men are black.

This is of the third figure, and of the mode *Darapti*; and it may be reduced to *Darii* in the firſt figure, by converting the minor.

All Africans are black;
Some men are Africans;
Therefore ſome men are black.

By this time I apprehend the reader has got as many examples of ſyllogiſms as will ſtay his appetite for that kind of entertainment.

SECT. 4. *On the Demonſtration of the Theory.*

Ariſtotle and all his followers have thought it neceſſary, in order to bring this theory of categorical ſyllogiſms to a ſcience, to demonſtrate, both that the fourteen authoriſed modes conclude juſtly, and that none of the reſt do. Let us now ſee how this has been executed.

As to the legitimate modes, Ariſtotle, and thoſe who follow him the moſt cloſely, demonſtrate the four modes of the firſt figure directly from an axiom called the *Dictum de omni et nullo*. The amount of the axiom is, That what is affirmed of a whole *genus*, may

may be affirmed of all the ſpecies and individuals belonging to that *genus*; and that what is denied of the whole genus, may be denied of its ſpecies and individuals. The four modes of the firſt figure are evidently included in this axiom. And as to the legitimate modes of the other figures, they are proved by reducing them to ſome mode of the firſt. Nor is there any other principle aſſumed in theſe reductions but the axioms concerning the converſion of propoſitions, and in ſome caſes the axioms concerning the oppoſition of propoſitions.

As to the illegitimate modes, Ariſtotle has taken the labour to try and condemn them one by one in all the three figures: but this is done in ſuch a manner that it is very painful to follow him. To give a ſpecimen. In order to prove, that thoſe modes of the firſt figure in which the major is particular, do not conclude, he proceeds thus: "If A is or is not in ſome B, and B in every C, "no concluſion follows. Take for the terms in the affirmative "caſe, *good*, *habit*, *prudence*, in the negative, *good*, *habit*, *igno-* "*rance*." This laconic ſtyle, the uſe of ſymbols not familiar, and, in place of giving an example, his leaving us to form one from three aſſigned terms, give ſuch embarraſſment to a reader, that he is like one reading a book of riddles.

Having thus aſcertained the true and falſe modes of a figure, he ſubjoins the particular rules of that figure, which ſeem to be deduced from the particular caſes before determined. The general rules come laſt of all, as a general corollary from what goes before.

I know not whether it is from a diffidence of Ariſtotle's demonſtrations, or from an apprehenſion of their obſcurity, or from a deſire of improving upon his method, that almoſt all the writers in logic I have met with, have inverted his order, beginning where he ends, and ending where he begins. They firſt demonſtrate the general rules, which belong to all the figures, from three

three axioms; then from the general rules and the nature of each figure, they demonſtrate the ſpecial rules of each figure. When this is done, nothing remains but to apply theſe general and ſpecial rules, and to reject every mode which contradicts them.

This method has a very ſcientific appearance; and when we conſider, that by a few rules once demonſtrated, an hundred and ſeventy-eight falſe modes are deſtroyed at one blow, which Ariſtotle had the trouble to put to death one by one, it ſeems to be a great improvement. I have only one objection to the three axioms.

The three axioms are theſe: 1. Things which agree with the ſame third, agree with one another. 2. When one agrees with the third, and the other does not, they do not agree with one another. 3. When neither agrees with the third, you cannot thence conclude, either that they do, or do not agree with one another. If theſe axioms are applied to mathematical quantities, to which they ſeem to relate when taken literally, they have all the evidence which an axiom ought to have: but the logicians apply them in an analogical ſenſe to things of another nature. In order, therefore, to judge whether they are truly axioms, we ought to ſtrip them of their figurative dreſs, and to ſet them down in plain Engliſh, as the logicians underſtand them. They amount therefore to this. 1. If two things be affirmed of a third, or the third be affirmed of them; or if one be affirmed of the third, and the third affirmed of the other; then they may be affirmed one of the other. 2. If one is affirmed of the third, or the third of it, and the other denied of the third, or the third of it, they may be denied one of the other. 3. If both are denied of the third, or the third of them; or if one is denied of the third, and the third denied of the other; nothing can be inferred.

When the three axioms are thus put in plain Engliſh, they ſeem not to have that degree of evidence which axioms ought to have;

and if there is any defect of evidence in the axioms, this defect will be communicated to the whole edifice raiſed upon them.

It may even be ſuſpected, that an attempt, by any method, to demonſtrate, that a ſyllogiſm is concluſive, is an impropriety ſomewhat like that of attempting to demonſtrate an axiom. In a juſt ſyllogiſm, the connection between the premiſes and the concluſion is not only real, but immediate; ſo that no propoſition can come between them to make their connection more apparent. The very intention of a ſyllogiſm is, to leave nothing to be ſupplied that is neceſſary to a complete demonſtration. Therefore a man of common underſtanding, who has a perfect comprehenſion of the premiſes, finds himſelf under a neceſſity of admitting the concluſion, ſuppoſing the premiſes to be true; and the concluſion is connected with the premiſes with all the force of intuitive evidence. In a word, an immediate concluſion is ſeen in the premiſes, by the light of common ſenſe; and where that is wanting, no kind of reaſoning will ſupply its place.

SECT. 5. *On this Theory, conſidered as an Engine of Science.*

The ſlow progreſs of uſeful knowledge, during the many ages in which the ſyllogiſtic art was moſt highly cultivated as the only guide to ſcience, and its quick progreſs ſince that art was diſuſed, ſuggeſt a preſumption againſt it; and this preſumption is ſtrengthened by the puerility of the examples which have always been brought to illuſtrate its rules.

The ancients ſeem to have had too high notions, both of the force of the reaſoning power in man, and of the art of ſyllogiſm as its guide. Mere reaſoning can carry us but a very little way in moſt ſubjects. By obſervation, and experiments properly conducted, the ſtock of human knowledge may be enlarged without end; but the power

of

of reaſoning alone, applied with vigour through a long life, would only carry a man round, like a horſe in a mill, who labours hard, but makes no progreſs. There is indeed an exception to this obſervation in the mathematical ſciences. The relations of quantity are ſo various, and ſo ſuſceptible of exact menſuration, that long trains of accurate reaſoning on that ſubject may be formed, and concluſions drawn very remote from the firſt principles. It is in this ſcience, and thoſe which depend upon it, that the power of reaſoning triumphs: in other matters its trophies are inconſiderable. If any man doubt this, let him produce, in any ſubject unconnected with mathematics, a train of reaſoning of ſome length, leading to a concluſion, which without this train of reaſoning would never have been brought within human ſight. Every man acquainted with mathematics can produce thouſands of ſuch trains of reaſoning. I do not ſay, that none ſuch can be produced in other ſciences; but I believe they are few, and not eaſily found; and that if they are found, it will not be in ſubjects that can be expreſſed by categorical propoſitions, to which alone the theory of figure and mode extends.

In matters to which that theory extends, a man of good ſenſe, who can diſtinguiſh things that differ, and avoid the ſnares of ambiguous words, and is moderately practiſed in ſuch matters, ſees at once all that can be inferred from his premiſes; or finds, that there is but a very ſhort ſtep to the concluſion.

When the power of reaſoning is ſo feeble by nature, eſpecially in ſubjects to which this theory can be applied, it would be unreaſonable to expect great effects from it. And hence we ſee the reaſon why the examples brought to illuſtrate it by the moſt ingenious logicians, have rather tended to bring it into contempt.

If it ſhould be thought, that the ſyllogiſtic art may be an uſeful engine in mathematics, in which pure reaſoning has ample ſcope: Firſt, It may be obſerved, That facts are unfavourable to

this opinion: for it does not appear, that Euclid, or Apollonius, or Archimedes, or Hugens, or Newton, ever made the leaſt uſe of this art; and I am even of opinion, that no uſe can be made of it in mathematics. I would not wiſh to advance this raſhly, ſince Ariſtotle has ſaid, that mathematicians reaſon for the moſt part in the firſt figure. What led him to think ſo was, that the firſt figure only yields concluſions that are univerſal and affirmative, and the concluſions of mathematics are commonly of that kind. But it is to be obſerved, that the propoſitions of mathematics are not categorical propoſitions, conſiſting of one ſubject and one predicate. They expreſs ſome relation which one quantity bears to another, and on that account muſt have three terms. The quantities compared make two, and the relation between them is a third. Now to ſuch propoſitions we can neither apply the rules concerning the converſion of propoſitions, nor can they enter into a ſyllogiſm of any of the figures or modes. We obſerved before, that this converſion, *A is greater than B*, therefore *B is leſs than A*, does not fall within the rules of converſion given by Ariſtotle or the logicians; and we now add, that this ſimple reaſoning, *A is equal to B, and B to C*; therefore *A is equal to C*, cannot be brought into any ſyllogiſm in figure and mode. There are indeed ſyllogiſms into which mathematical propoſitions may enter, and of ſuch we ſhall afterwards ſpeak: but they have nothing to do with the ſyſtem of figure and mode.

When we go without the circle of the mathematical ſciences, I know nothing in which there ſeems to be ſo much demonſtration as in that part of logic which treats of the figures and modes of ſyllogiſm; but the few remarks we have made, ſhew, that it has ſome weak places: and beſides, this ſyſtem cannot be uſed as an engine to rear itſelf.

The compaſs of the ſyllogiſtic ſyſtem as an engine of ſcience, may be diſcerned by a compendious and general view of the concluſion

cluſion drawn, and the argument uſed to prove it, in each of the three figures.

In the firſt figure, the concluſion affirms or denies ſomething, of a certain ſpecies or individual; and the argument to prove this concluſion is, That the ſame thing may be affirmed or denied of the whole genus to which that ſpecies or individual belongs.

In the ſecond figure, the concluſion is, That ſome ſpecies or individual does not belong to ſuch a genus; and the argument is, That ſome attribute common to the whole genus does not belong to that ſpecies or individual.

In the third figure, the concluſion is, That ſuch an attribute belongs to part of a genus; and the argument is, That the attribute in queſtion belongs to a ſpecies or individual which is part of that genus.

I apprehend, that, in this ſhort view, every concluſion that falls within the compaſs of the three figures, as well as the mean of proof, is comprehended. The rules of all the figures might be eaſily deduced from it; and it appears, that there is only one principle of reaſoning in all the three; ſo that it is not ſtrange, that a ſyllogiſm of one figure ſhould be reduced to one of another figure.

The general principle in which the whole terminates, and of which every categorical ſyllogiſm is only a particular application, is this, That what is affirmed or denied of the whole genus, may be affirmed or denied of every ſpecies and individual belonging to it. This is a principle of undoubted certainty indeed, but of no great depth. Ariſtotle and all the logicians aſſume it as an axiom or firſt principle, from which the ſyllogiſtic ſyſtem, as it were, takes its departure: and after a tedious voyage, and great expence of demonſtration, it lands at laſt in this principle as its ultimate concluſion. *O curas hominum! O quantum eſt in rebus inane!*

SECT.

Sect. 6. *On Modal Syllogiſms.*

Categorical propoſitions, beſides their quantity and quality, have another affection, by which they are divided into pure and modal. In a pure propoſition, the predicate is barely affirmed or denied of the ſubject; but in a modal propoſition, the affirmation or negation is modified, by being declared to be neceſſary or contingent, or poſſible or impoſſible. Theſe are the four modes obſerved by Ariſtotle, from which he denominates a propoſition modal. His genuine diſciples maintain, that theſe are all the modes that can affect an affirmation or negation, and that the enumeration is complete. Others maintain, that this enumeration is incomplete; and that when an affirmation or negation is ſaid to be certain or uncertain, probable or improbable, this makes a modal propoſition, no leſs than the four modes of Ariſtotle. We ſhall not enter into this diſpute; but proceed to obſerve, that the epithets of *pure* and *modal* are applied to ſyllogiſms as well as to propoſitions. A pure ſyllogiſm is that in which both premiſes are pure propoſitions. A modal ſyllogiſm is that in which either of the premiſes is a modal propoſition.

The ſyllogiſms of which we have already ſaid ſo much, are thoſe only which are pure as well as categorical. But when we conſider, that through all the figures and modes, a ſyllogiſm may have one premiſe modal of any of the four modes, while the other is pure, or it may have both premiſes modal, and that they may be either of the ſame mode or of different modes; what prodigious variety ariſes from all theſe combinations? Now it is the buſineſs of a logician, to ſhew how the concluſion is affected in all this variety of caſes. Ariſtotle has done this in his Firſt Analytics, with immenſe labour; and it will not be thought ſtrange, that

that when he had employed only four chapters in diſcuſſing one hundred and ninety-two modes, true and falſe, of pure ſyllogiſms, he ſhould employ fifteen upon modal ſyllogiſms.

I am very willing to excuſe myſelf from entering upon this great branch of logic, by the judgement and example of thoſe who cannot be charged either with want of reſpect to Ariſtotle, or with a low eſteem of the ſyllogiſtic art.

Keckerman, a famous Dantzican profeſſor, who ſpent his life in teaching and writing logic, in his huge folio ſyſtem of that ſcience, publiſhed ann. 1600, calls the doctrine of the modals the *crux logicorum*. With regard to the ſcholaſtic doctors, among whom this was a proverb, *De modalibus non guſtabit aſinus*, he thinks it very dubious, whether they tortured moſt the modal ſyllogiſms, or were moſt tortured by them. But thoſe crabbed geniuſes, ſays he, made this doctrine ſo very thorny, that it is fitter to tear a man's wits in pieces than to give them ſolidity. He deſires it to be obſerved, that the doctrine of the modals is adapted to the Greek language. The modal terms were frequently uſed by the Greeks in their diſputations; and, on that account, are ſo fully handled by Ariſtotle: but in the Latin tongue you ſhall hardly ever meet with them. Nor do I remember, in all my experience, ſays he, to have obſerved any man in danger of being foiled in a diſpute, through his ignorance of the modals.

This author, however, out of reſpect to Ariſtotle, treats pretty fully of modal propoſitions, ſhewing how to diſtinguiſh their ſubject and predicate, their quantity and quality. But the modal ſyllogiſms he paſſes over altogether.

Ludovicus Vives, whom I mention, not as a devotee of Ariſtotle, but on account of his own judgement and learning, thinks that the doctrine of modals ought to be baniſhed out of logic, and remitted to grammar; and that if the grammar of the Greek tongue had been brought to a ſyſtem in the time of Ariſtotle, that moſt

moſt acute philoſopher would have ſaved the great labour he has beſtowed on this ſubject.

Burgerſdick, after enumerating five claſſes of modal ſyllogiſms, obſerves, that they require many rules and cautions, which Ariſtotle hath handled diligently; but as the uſe of them is not great, and their rules are very difficult, he thinks it not worth while to enter into the diſcuſſion of them; recommending to thoſe who would underſtand them, the moſt learned paraphraſe of Joannes Monlorius, upon the firſt book of the Firſt Analytics.

All the writers of logic for two hundred years back that have fallen into my hands, have paſſed over the rules of modal ſyllogiſms with as little ceremony. So that this great branch of the doctrine of ſyllogiſm, ſo diligently handled by Ariſtotle, fell into neglect, if not contempt, even while the doctrine of pure ſyllogiſms continued in the higheſt eſteem. Moved by theſe authorities, I ſhall let this doctrine reſt in peace, without giving the leaſt diſturbance to its aſhes.

Sect. 7. *On Syllogiſms that do not belong to Figure and Mode.*

Ariſtotle gives ſome obſervations upon imperfect ſyllogiſms: ſuch as, the Enthimema, in which one of the premiſes is not expreſſed but underſtood: Induction, wherein we collect an univerſal from a full enumeration of particulars: and Examples, which are an imperfect induction. The logicians have copied Ariſtotle upon theſe kinds of reaſoning, without any conſiderable improvement. But to compenſate the modal ſyllogiſms, which they have laid aſide, they have given rules for ſeveral kinds of ſyllogiſm, of which Ariſtotle takes no notice. Theſe may be reduced to two claſſes.

The firſt claſs comprehends the ſyllogiſms into which any exclu-

ſive,

ſive, reſtrictive, exceptive, or reduplicative propoſition enters. Such propoſitions are by ſome called *exponible*, by others *imperfectly modal*. The rules given with regard to theſe are obvious, from a juſt interpretation of the propoſitions.

The ſecond claſs is that of hypothetical ſyllogiſms, which take that denomination from having a hypothetical propoſition for one or both premiſes. Moſt logicians give the name of *hypothetical* to all complex propoſitions which have more terms than one ſubject and one predicate. I uſe the word in this large ſenſe; and mean by hypothetical ſyllogiſms, all thoſe in which either of the premiſes conſiſts of more terms than two. How many various kinds there may be of ſuch ſyllogiſms, has never been aſcertained. The logicians have given names to ſome; ſuch as, the copulative, the conditional, by ſome called hypothetical, and the diſjunctive.

Such ſyllogiſms cannot be tried by the rules of figure and mode. Every kind would require rules peculiar to it. Logicians have given rules for ſome kinds; but there are many that have not ſo much as a name.

The Dilemma is conſidered by moſt logicians as a ſpecies of the disjunctive ſyllogiſm. A remarkable property of this kind is, that it may ſometimes be happily retorted: it is, it ſeems, like a hand-grenade, which, by dextrous management, may be thrown back, ſo as to ſpend its force upon the aſſailant. We ſhall conclude this tedious account of ſyllogiſms, with a dilemma mentioned by *A. Gellius*, and from him by many logicians, as inſoluble in any other way.

" Euathlus, a rich young man, deſirous of learning the art of " pleading, applied to Protagoras, a celebrated ſophiſt, to inſtruct " him, promiſing a great ſum of money as his reward; one half " of which was paid down; the other half he bound himſelf to " pay as ſoon as he ſhould plead a cauſe before the judges, and

" gain it. Protagoras found him a very apt ſcholar; but, after " he had made good progreſs, he was in no haſte to plead cau- " ſes. The maſter, conceiving that he intended by this means to " ſhift off his ſecond payment, took, as he thought, a ſure me- " thod to get the better of his delay. He ſued Euathlus before " the judges; and, having opened his cauſe at the bar, he pleaded " to this purpoſe. O moſt fooliſh young man, do you not ſee, " that, in any event, I muſt gain my point? for if the judges " give ſentence for me, you muſt pay by their ſentence; if a- " gainſt me, the condition of our bargain is fulfilled, and you " have no plea left for your delay, after having pleaded and gained " a cauſe. To which Euathlus anſwered. O moſt wiſe maſter, " I might have avoided the force of your argument, by not " pleading my own cauſe. But, giving up this advantage, do " you not ſee, that whatever ſentence the judges paſs, I am ſafe? " If they give ſentence for me, I am acquitted by their ſentence; " if againſt me, the condition of our bargain is not fulfilled, by " my pleading a cauſe, and loſing it. The judges, thinking the " arguments unanſwerable on both ſides, put off the cauſe to a " long day."

CHAP.

Landesbibliothek Oldenburg

CHAP. V.

Account of the remaining books of the Organon.

SECT. I. *Of the Laſt Analytics.*

IN the Firſt Analytics, ſyllogiſms are conſidered in reſpect of their form; they are now to be conſidered in reſpect of their matter. The form lies in the neceſſary connection between the premiſes and the concluſion; and where ſuch a connection is wanting, they are ſaid to be informal, or vicious in point of form.

But where there is no fault in the form, there may be in the matter; that is, in the propoſitions of which they are compoſed, which may be true or falſe, probable or improbable.

When the premiſes are certain, and the concluſion drawn from them in due form, this is demonſtration, and produces ſcience. Such ſyllogiſms are called *apodictical*; and are handled in the two books of the Laſt Analytics. When the premiſes are not certain, but probable only, ſuch ſyllogiſms are called *dialectical*; and of them he treats in the eight books of the Topicks. But there are ſome ſyllogiſms which ſeem to be perfect both in matter and form, when they are not really ſo: as, a face may ſeem beautiful which is but painted. Theſe being apt to deceive, and produce a falſe opinion, are called *ſophiſtical*; and they are the ſubject of the book concerning Sophiſms.

To return to the Laſt Analytics, which treat of demonſtration

and of ſcience: We ſhall not pretend to abridge thoſe books; for Ariſtotle's writings do not admit of abridgement: no man can ſay what he ſays in fewer words; and he is not often guilty of repetition. We ſhall only give ſome of his capital concluſions, omitting his long reaſonings and nice diſtinctions, of which his genius was wonderfully productive.

All demonſtration muſt be built upon principles already known; and theſe upon others of the ſame kind; until we come at laſt to firſt principles, which neither can be demonſtrated, nor need to be, being evident of themſelves.

We cannot demonſtrate things in a circle, ſupporting the concluſion by the premiſes, and the premiſes again by the concluſion. Nor can there be an infinite number of middle terms between the firſt principle and the concluſion.

In all demonſtration, the firſt principles, the concluſion, and all the intermediate propoſitions, muſt be neceſſary, general, and eternal truths: for of things fortuitous, contingent, or mutable, or of individual things, there is no demonſtration.

Some demonſtrations prove only, that the thing is thus affected; others prove, why it is thus affected. The former may be drawn from a remote cauſe, or from an effect: but the latter muſt be drawn from an immediate cauſe; and are the moſt perfect.

The firſt figure is beſt adapted to demonſtration, becauſe it affords concluſions univerſally affirmative; and this figure is commonly uſed by the mathematicians.

The demonſtration of an affirmative propoſition is preferable to that of a negative; the demonſtration of an univerſal to that of a particular; and direct demonſtration to that *ad abſurdum*.

The principles are more certain than the concluſion.

There cannot be opinion and ſcience of the ſame thing at the ſame time.

In the ſecond book we are taught, that the queſtions that may be

be put, with regard to any thing, are four: 1. Whether the thing be thus affected. 2. Why it is thus affected. 3. Whether it exiſts. 4. What it is.

The laſt of theſe queſtions Ariſtotle, in good Greek, calls the *What is it* of a thing. The ſchoolmen, in very barbarous Latin, called this, the *quiddity* of a thing. This quiddity, he proves by many arguments, cannot be demonſtrated, but muſt be fixed by a definition. This gives occaſion to treat of definition, and how a right definition ſhould be formed. As an example he gives a definition of the number *three*, and defines it to be the firſt odd number.

In this book he treats alſo of the four kinds of cauſes; efficient, material, formal, and final.

Another thing treated of in this book is, the manner in which we acquire firſt principles, which are the foundation of all demonſtration. Theſe are not innate, becauſe we may be for a great part of life ignorant of them: nor can they be deduced demonſtratively from any antecedent knowledge, otherwiſe they would not be firſt principles. Therefore he concludes, that firſt principles are got by induction, from the informations of ſenſe. The ſenſes give us informations of individual things, and from theſe by induction we draw general concluſions: for it is a maxim with Ariſtotle, That there is nothing in the underſtanding which was not before in ſome ſenſe.

The knowledge of firſt principles, as it is not acquired by demonſtration, ought not to be called ſcience; and therefore he calls it *intelligence*.

SECT.

Sect. 2. *Of the Topics.*

The profeſſed deſign of the Topics is, to ſhew a method by which a man may be able to reaſon with probability and conſiſtency upon every queſtion that may occur.

Every queſtion is either about the genus of the ſubject, or its ſpecific difference, or ſome thing proper to it, or ſomething accidental.

To prove that this diviſion is complete, Ariſtotle reaſons thus: Whatever is attributed to a ſubject, it muſt either be, that the ſubject can be reciprocally attributed to it, or that it cannot. If the ſubject and attribute can be reciprocated, the attribute either declares what the ſubject is, and then it is a definition; or it does not declare what the ſubject is, and then it is a property. If the attribute cannot be reciprocated, it muſt be ſomething contained in the definition, or not. If it is contained in the definition of the ſubject, it muſt be the genus of the ſubject, or its ſpecific difference; for the definition conſiſts of theſe two. If it is not contained in the definition of the ſubject, it muſt be an accident.

The furniture proper to fit a man for arguing dialectically may be reduced to theſe four heads: 1. Probable propoſitions of all ſorts, which may on occaſion be aſſumed in an argument. 2. Diſtinctions of words which are nearly of the ſame ſignification. 3. Diſtinctions of things which are not ſo far aſunder but that they may be taken for one and the ſame. 4. Similitudes.

The ſecond and the five following books are taken up in enumerating the topics or heads of argument that may be uſed in queſtions about the genus, the definition, the properties, and the accidents of a thing; and occaſionally he introduces the topics for proving

proving things to be the ſame, or different; and the topics for proving one thing to be better or worſe than another.

In this enumeration of topics, Ariſtotle has ſhewn more the fertility of his genius, than the accuracy of method. The writers of logic ſeem to be of this opinion: for I know none of them that has followed him cloſely upon this ſubject. They have conſidered the topics of argumentation as reducible to certain axioms. For inſtance, when the queſtion is about the genus of a thing, it muſt be determined by ſome axiom about genus and ſpecies; when it is about a definition, it muſt be determined by ſome axiom relating to definition, and things defined: and ſo of other queſtions. They have therefore reduced the doctrine of the topics to certain axioms or canons, and diſpoſed theſe axioms in order under certain heads.

This method ſeems to be more commodious and elegant than that of Ariſtotle. Yet it muſt be acknowledged, that Ariſtotle has furniſhed the materials from which all the logicians have borrowed their doctrine of topics: and even Cicero, Quintilian, and other rhetorical writers, have been much indebted to the topics of Ariſtotle.

He was the firſt, as far as I know, who made an attempt of this kind: and in this he acted up to the magnanimity of his own genius, and that of ancient philoſophy. Every ſubject of human thought had been reduced to ten categories; every thing that can be attributed to any ſubject, to five predicables: he attempted to reduce all the forms of reaſoning to fixed rules of figure and mode, and to reduce all the topics of argumentation under certain heads; and by that means to collect as it were into one ſtore all that can be ſaid on one ſide or the other of every queſtion, and provide a grand arſenal, from which all future combatants might be furniſhed with arms offenſive and defenſive in every cauſe, ſo as to leave no room to future generations to invent any thing new.

The

The laſt book of the Topics is a code of the laws, according to which a ſyllogiſtical diſputation ought to be managed, both on the part of the aſſailant and defendant. From which it is evident, that this philoſopher trained his diſciples to contend, not for the truth merely, but for victory.

Sect. 3. *Of the book concerning Sophiſms.*

A ſyllogiſm which leads to a falſe concluſion, muſt be vicious, either in matter or form: for from true principles nothing but truth can be juſtly deduced. If the matter be faulty, that is, if either of the premiſes be falſe, that premiſe muſt be denied by the defendant. If the form be faulty, ſome rule of ſyllogiſm is tranſgreſſed; and it is the part of the defendant to ſhew, what general or ſpecial rule it is that is tranſgreſſed. So that, if he is an able logician, he will be impregnable in the defence of truth, and may reſiſt all the attacks of the ſophiſt. But as there are ſyllogiſms which may ſeem to be perfect both in matter and form, when they are not really ſo, as a piece of money may ſeem to be good coin, when it is adulterate; ſuch fallacious ſyllogiſms are conſidered in this treatiſe, in order to make a defendant more expert in the uſe of his defenſive weapons.

And here the author, with his uſual magnanimity, attempts to bring all the fallacies that can enter into a ſyllogiſm under thirteen heads; of which ſix lie in the diction or language, and ſeven not in the diction.

The fallacies in diction are, 1. When an ambiguous word is taken at one time in one ſenſe, and at another time in another. 2. When an ambiguous phraſe is taken in the ſame manner. 3. and 4. are ambiguities in ſyntax; when words are conjoined in ſyntax that ought to be disjoined; or disjoined when they ought

ought to be conjoined. 5. is an ambiguity in proſody, accent, or pronunciation. 6. An ambiguity ariſing from ſome figure of ſpeech.

When a ſophiſm of any of theſe kinds is tranſlated into another language, or even rendered into unambiguous expreſſions in the ſame language, the fallacy is evident, and the ſyllogiſm appears to have four terms.

The ſeven fallacies which are ſaid not to be in the diction, but in the thing, have their proper names in Greek and in Latin, by which they are diſtinguiſhed. Without minding their names, we ſhall give a brief account of their nature.

1. The firſt is, Taking an accidental conjunction of things for a natural or neceſſary connection: as, when from an accident we infer a property; when from an example we infer a rule; when from a ſingle act we infer a habit.

2. Taking that abſolutely which ought to be taken comparatively, or with a certain limitation. The conſtruction of language often leads into this fallacy: for in all languages it is common to uſe abſolute terms, to ſignify things which carry in them ſome ſecret compariſon; or to uſe unlimited terms, to ſignify what from its nature muſt be limited.

3. Taking that for the cauſe of a thing which was only an occaſion, or concomitant.

4. Begging the queſtion. This is done, when the thing to be proved, or ſome thing equivalent, is aſſumed in the premiſes.

5. Miſtaking the queſtion. When the concluſion of the ſyllogiſm is not the thing that ought to be proved, but ſomething elſe that is miſtaken for it.

6. When that which is not a conſequence is miſtaken for a conſequence; as if, becauſe all Africans are black, it were taken for granted that all blacks are Africans.

7. The laſt fallacy lies in propoſitions that are complex, and

imply two affimations, whereof one may be true, and the other falſe; ſo that whether you grant the propoſition, or deny it, you are intangled: as when it is affirmed, that ſuch a man has left off playing the fool. If it be granted, it implies, that he did play the fool formerly. If it be denied, it implies, or ſeems to imply, that he plays the fool ſtill.

In this enumeration, we ought, in juſtice to Ariſtotle, to expect only the fallacies incident to categorical ſyllogiſms. And I do not find, that the logicians have made any additions to it when taken in this view; altho' they have given ſome other fallacies that are incident to ſyllogiſms of the hypothetical kind, particularly the fallacy of an incomplete enumeration in disjunctive ſyllogiſms and dilemmas.

The different ſpecies of ſophiſms above mentioned are not ſo preciſely defined by Ariſtotle, or by ſubſequent logicians, but that they allow of great latitude in the application; and it is often dubious under what particular ſpecies a ſophiſtical ſyllogiſm ought to be claſſed. We even find the ſame example brought under one ſpecies by one author, and under another ſpecies by another. Nay, what is more ſtrange, Ariſtotle himſelf employs a long chapter in proving by a particular induction, that all the ſeven may be brought under that which we have called *miſtaking the queſtion*, and which is commonly called *ignoratio elenchi*. And indeed the proof of this is eaſy, without that laborious detail which Ariſtotle uſes for the purpoſe: for if you lop off from the concluſion of a ſophiſtical ſyllogiſm all that is not ſupported by the premiſes, the concluſion, in that caſe, will always be found different from that which ought to have been proved; and ſo it falls under the *ignoratio elenchi*.

It was probably Ariſtotle's aim, to reduce all the poſſible variety of ſophiſms, as he had attempted to do of juſt ſyllogiſms, to certain definite ſpecies: but he ſeems to be ſenſible that he had fallen

fallen ſhort in this laſt attempt. When a genus is properly divided into its ſpecies, the ſpecies ſhould not only, when taken together, exhauſt the whole genus; but every ſpecies ſhould have its own precinct ſo accurately defined, that one ſhall not encroach upon another. And when an individual can be ſaid to belong to two or three different ſpecies, the diviſion is imperfect; yet this is the caſe of Ariſtotle's diviſion of the ſophiſms, by his own acknowledgement. It ought not therefore to be taken for a diviſion ſtrictly logical. It may rather be compared to the ſeveral ſpecies or forms of action invented in law for the redreſs of wrongs. For every wrong there is a remedy in law by one action or another: but ſometimes a man may take his choice among ſeveral different actions. So every ſophiſtical ſyllogiſm may, by a little art, be brought under one or other of the ſpecies mentioned by Ariſtotle, and very often you may take your choice of two or three.

Beſides the enumeration of the various kinds of ſophiſms, there are many other things in this treatiſe concerning the art of managing a ſyllogiſtical diſpute with an antagoniſt. And indeed, if the paſſion for this kind of litigation, which reigned for ſo many ages, ſhould ever again lift up its head, we may predict, that the Organon of Ariſtotle will then become a faſhionable ſtudy: for it contains ſuch admirable materials and documents for this art, that it may be ſaid to have brought it to a ſcience.

The concluſion of this treatiſe ought not to be overlooked: it manifeſtly relates, not to the preſent treatiſe only, but alſo to the whole analytics and topics of the author. I ſhall therefore give the ſubſtance of it.

" Of thoſe who may be called inventers, ſome have made im-
" portant additions to things long before begun, and carried on
" through a courſe of ages; others have given a ſmall beginning
" to things which, in ſucceeding times, will be brought to greater
" perfection. The beginning of a thing, though ſmall, is the

" chief part of it, and requires the greateſt degree of invention;
" for it is eaſy to make additions to inventions once begun. Now
" with regard to the dialectical art, there was not ſomething done,
" and ſomething remaining to be done. There was abſolutely
" nothing done: for thoſe who profeſſed the art of diſputation,
" had only a ſet of orations compoſed, and of arguments, and
" of captious queſtions, which might ſuit many occaſions. Theſe
" their ſcholars ſoon learned, and fitted to the occaſion. This
" was not to teach you the art, but to furniſh you with the mate-
" rials produced by the art: as if a man profeſſing to teach you
" the art of making ſhoes, ſhould bring you a parcel of ſhoes of
" various ſizes and ſhapes, from which you may provide thoſe
" who want. This may have its uſe; but it is not to teach the
" art of making ſhoes. And indeed, with regard to rhetorical
" declamation, there are many precepts handed down from an-
" cient times; but with regard to the conſtruction of ſyllogiſms,
" not one.

" We have therefore employed much time and labour upon
" this ſubject; and if our ſyſtem appears to you not to be in the
" number of thoſe things, which, being before carried a certain
" length, were left to be perfected; we hope for your favourable
" acceptance of what is done, and your indulgence in what is left
" imperfect."

CHAP.

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CHAP. VI.

Reflections on the Utility of Logic, and the Means of its Improvement.

SECT. I. *Of the Utility of Logic.*

MEN rarely leave one extreme without running into the contrary. It is no wonder, therefore, that the exceſſive admiration of Ariſtotle, which continued for ſo many ages, ſhould end in an undue contempt; and that the high eſteem of logic as the grand engine of ſcience, ſhould at laſt make way for too unfavourable an opinion, which ſeems now prevalent, of its being unworthy of a place in a liberal education. Thoſe who think according to the faſhion, as the greateſt part of men do, will be as prone to go into this extreme, as their grandfathers were to go into the contrary.

Laying aſide prejudice, whether faſhionable or unfaſhionable, let us conſider whether logic is, or may be made, ſubſervient to any good purpoſe. Its profeſſed end is, to teach men to think, to judge, and to reaſon, with preciſion and accuracy. No man will ſay that this is a matter of no importance; the only thing, therefore, that admits of doubt, is, whether it can be taught.

To reſolve this doubt, it may be obſerved, that our rational faculty is the gift of God, given to men in very different meaſure. Some have a larger portion, ſome a leſs; and where there is a remarkable defect of the natural power, it cannot be ſupplied by any

any culture whatſoever. But this natural power, even where it is ſtrongeſt, may lie dead for want of the means of improvement; and a ſavage may have been born with as good faculties as a Bacon or a Newton. The amazing difference that appears in advanced life, is owing to this, that the talent of one was buried, being never put to uſe, while that of the other was cultivated to the beſt advantage.

It may likewiſe be obſerved, that the chief mean of improving our rational power, is the vigorous exerciſe of it, in various ways, and in different ſubjects, by which the habit is acquired of exerciſing it properly. Without ſuch exerciſe, and good ſenſe over and above, a man who has ſtudied logic all his life may, after all, be only a petulant wrangler, without true judgement, or ſkill of reaſoning, in any ſcience.

I take this to be Locke's meaning, when, in his Thoughts on Education, he ſays, "If you would have your ſon to reaſon well, "let him read Chillingworth." The ſtate of things is much altered ſince Locke wrote. Logic has been much improved, chiefly by his writings; and yet much leſs ſtreſs is laid upon it, and leſs time conſumed in it. His counſel, therefore, was judicious and ſeaſonable; to wit, That the improvement of our reaſoning power is to be expected much more from an intimate acquaintance with the authors who reaſon beſt, than from ſtudying voluminous ſyſtems of logic. But if he had meant, that the ſtudy of logic was of no uſe, nor deſerved any attention, he ſurely would not have taken the pains to have made ſo conſiderable an addition to it, by his *Eſſay on the Human Underſtanding*, and by his *Thoughts on the Conduct of the Underſtanding*. Nor would he have remitted his pupil to Chillingworth, the acuteſt logician, as well as the beſt reaſoner, of his age; and one who, in innumerable places of his excellent book, without pedantry even in that pedantic age, makes

makes the happieſt application of the rules of logic, for unraveling the ſophiſtical reaſoning of his antagoniſt.

Our reaſoning power makes no appearance in infancy; but as we grow up, it unfolds itſelf by degrees, like the bud of a tree. When a child firſt draws an inference, or perceives the force of an inference drawn by another perſon, we may call this *the birth of his reaſon:* but it is yet like a new-born babe, weak and tender; it muſt be cheriſhed, and carried in arms, and have food of eaſy digeſtion, till it gathers ſtrength.

I believe no man remembers this birth of his reaſon; but it is probable that his deciſions will at firſt be weak and wavering; and, compared with that ſteady conviction which he acquires in ripe years, will be like the dawn of the morning compared with noon-day. We ſee that the reaſon of children yields to authority, as a reed to the wind; nay, that it clings to it, and leans upon it, as if conſcious of its own weakneſs.

When reaſon acquires ſuch ſtrength as to ſtand on its own bottom, without the aid of authority, or even in oppoſition to authority, this may be called its *manly age*. But in moſt men, it hardly ever arrives at this period. Many, by their ſituation in life, have not the opportunity of cultivating their rational powers. Many, from the habit they have acquired, of ſubmitting their opinions to the authority of others, or from ſome other principle which operates more powerfully than the love of truth, ſuffer their judgement to be carried along, to the end of their days, either by the authority of a leader, or of a party, or of the multitude, or by their own paſſions. Such perſons, however learned, however acute, may be ſaid to be all their days children in underſtanding. They reaſon, they diſpute, and perhaps write; but it is not that they may find the truth; but that they may defend opinions which have deſcended to them by inheritance, or into which they have fallen by accident, or been led by affection.

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I agree with Mr Locke, that there is no ſtudy better fitted to exerciſe and ſtrengthen the reaſoning powers, than that of the mathematical ſciences; for two reaſons; firſt, Becauſe there is no other branch of ſcience which gives ſuch ſcope to long and accurate trains of reaſoning; and, ſecondly, Becauſe in mathematics there is no room for authority, or for prejudice of any kind, which may give a falſe bias to the judgement.

When a youth of moderate parts begins to ſtudy Euclid, every thing at firſt is new to him. His apprehenſion is unſteady; his judgement is feeble; and reſts partly upon the evidence of the thing, and partly upon the authority of his teacher. But every time he goes over the definitions, the axioms, the elementary propoſitions, more light breaks in upon him; the language becomes familiar, and conveys clear and ſteady conceptions; the judgement is confirmed; he begins to ſee what demonſtration is; and it is impoſſible to ſee it without being charmed with it. He perceives it to be a kind of evidence which has no need of authority to ſtrengthen it. He finds himſelf emancipated from that bondage, and exults ſo much in this new ſtate of independence, that he ſpurns at authority, and would have demonſtration for every thing; until experience teaches him, that this is a kind of evidence which cannot be had in moſt things; and that in his moſt important concerns, he muſt reſt contented with probability.

As he goes on in mathematics, the road of demonſtration becomes ſmooth and eaſy; he can walk in it firmly, and take wider ſteps: and, at laſt, he acquires the habit, not only of underſtanding a demonſtration, but of diſcovering and demonſtrating mathematical truths.

Thus, a man without rules of logic, may acquire the habit of reaſoning juſtly in mathematics; and, I believe, he may, by like means, acquire the habit of reaſoning juſtly in mechanics, in juriſprudence,

riſprudence, in politics, or in any other ſcience. Good ſenſe, good examples, and aſſiduous exerciſe, may bring a man to reaſon juſtly and acutely in his own profeſſion, without rules.

But if any man think, that from this conceſſion he may infer the inutility of logic, he betrays a great want of that art by this inference: for it is no better reaſoning than this, That becauſe a man may go from Edinburgh to London by the way of Paris, therefore any other road is uſeleſs.

There is perhaps no practical art which may not be acquired, in a very conſiderable degree, by example and practice, without reducing it to rules. But practice, joined with rules, may carry a man on in his art farther and more quickly, than practice without rules. Every ingenious artiſt knows the utility of having his art reduced to rules, and by that means made a ſcience. He is thereby enlightened in his practice, and works with more aſſurance. By rules, he ſometimes corrects his own errors, and often detects the errors of others: he finds them of great uſe to confirm his judgement, to juſtify what is right, and to condemn what is wrong.

Is it of no uſe in reaſoning, to be well acquainted with the various powers of the human underſtanding, by which we reaſon? Is it of no uſe, to reſolve the various kinds of reaſoning into their ſimple elements; and to diſcover, as far as we are able, the rules by which thoſe elements are combined in judging and in reaſonning? Is it of no uſe, to mark the various fallacies in reaſoning, by which even the moſt ingenious men have been led into error? It muſt ſurely betray great want of underſtanding, to think theſe things uſeleſs or unimportant. Theſe are the things which logicians have attempted; and which they have executed; not indeed ſo completely as to leave no room for improvement, but in ſuch a manner as to give very conſiderable aid to our reaſoning powers. That the principles laid down with regard to definition

and diviſion, with regard to the converſion and oppoſition of propoſitions and the general rules of reaſoning, are not without uſe, is ſufficiently apparent from the blunders committed by thoſe who diſdain any acquaintance with them.

Although the art of categorical ſyllogiſm is better fitted for ſcholaſtic litigation, than for real improvement in knowledge, it is a venerable piece of antiquity, and a great effort of human genius. We admire the pyramids of Egypt, and the wall of China, tho' uſeleſs burdens upon the earth. We can bear the moſt minute deſcription of them, and travel hundreds of leagues to ſee them. If any perſon ſhould, with ſacrilegious hands, deſtroy or deface them, his memory would be had in abhorrence. The predicaments and predicables, the rules of ſyllogiſm, and the topics, have a like title to our veneration as antiquities: they are uncommon efforts, not of human power, but of human genius; and they make a remarkable period in the progreſs of human reaſon.

The prejudice againſt logic has probably been ſtrengthened by its being taught too early in life. Boys are often taught logic as they are taught their creed, when it is an exerciſe of memory only, without underſtanding. One may as well expect to underſtand grammar before he can ſpeak, as to underſtand logic before he can reaſon. It muſt even be acknowledged, that commonly we are capable of reaſoning in mathematics more early than in logic. The objects preſented to the mind in this ſcience, are of a very abſtract nature, and can be diſtinctly conceived only when we are capable of attentive reflection upon the operations of our own underſtanding, and after we have been accuſtomed to reaſon. There may be an elementary logic, level to the capacity of thoſe who have been but little exerciſed in reaſoning; but the moſt important parts of this ſcience require a ripe underſtanding, capable of reflecting

reflecting upon its own operations. Therefore to make logic the firſt branch of ſcience that is to be taught, is an old error that ought to be corrected.

SECT. 2. *Of the Improvement of Logic.*

In compoſitions of human thought expreſſed by ſpeech or by writing, whatever is excellent and whatever is faulty, fall within the province, either of grammar, or of rhetoric, or of logic. Propriety of expreſſion is the province of grammar; grace, elegance, and force, in thought and in expreſſion, are the province of rhetoric; juſtneſs and accuracy of thought are the province of logic.

The faults in compoſition, therefore, which fall under the cenſure of logic, are obſcure and indiſtinct conceptions, falſe judgement, inconcluſive reaſoning, and all improprieties in diſtinctions, definitions, diviſion, or method. To aid our rational powers, in avoiding theſe faults and in attaining the oppoſite excellencies, is the end of logic; and whatever there is in it that has no tendency to promote this end, ought to be thrown out.

The rules of logic being of a very abſtract nature, ought to be illuſtrated by a variety of real and ſtriking examples taken from the writings of good authors. It is both inſtructive and entertaining, to obſerve the virtues of accurate compoſition in writers of fame. We cannot ſee them, without being drawn to the imitation of them, in a more powerful manner than we can be by dry rules. Nor are the faults of ſuch writers leſs inſtructive or leſs powerful monitors. A wreck, left upon a ſhoal, or upon a rock, is not more uſeful to the ſailor, than the faults of good writers, when ſet up to view, are to thoſe who come after them. It was a

happy thought in a late ingenious writer of Engliſh grammar, to collect under the ſeveral rules, examples of bad Engliſh found in the moſt approved authors. It were to be wiſhed that the rules of logic were illuſtrated in the ſame manner. By this means, a ſyſtem of logic would become a repoſitory; wherein whatever is moſt acute in judging and in reaſoning, whatever is moſt accurate in dividing, diſtinguiſhing, and defining, ſhould be laid up and diſpoſed in order for our imitation; and wherein the falſe ſteps of eminent authors ſhould be recorded for our admonition.

After men had laboured in the ſearch of truth near two thouſand years, by the help of ſyllogiſms, Lord Bacon propoſed the method of induction, as a more effectual engine for that purpoſe. His *Novum Organum* gave a new turn to the thoughts and labours of the inquiſitive, more remarkable, and more uſeful, than that which the *Organum* of Ariſtotle had given before; and may be conſidered as a ſecond grand æra in the progreſs of human reaſon.

The art of ſyllogiſm produced numberleſs diſputes, and numberleſs ſects, who fought againſt each other with much animoſity, without gaining or loſing ground; but did nothing conſiderable for the benefit of human life. The art of induction, firſt delineated by Lord Bacon, produced numberleſs laboratories and obſervatories, in which Nature has been put to the queſtion by thouſands of experiments, and forced to confeſs many of her ſecrets, which before were hid from mortals. And by theſe, arts have been improved, and human knowledge wonderfully increaſed.

In reaſoning by ſyllogiſm, from general principles we deſcend to a concluſion virtually contained in them. The proceſs of induction is more arduous; being an aſcent from particular premiſes to a general concluſion. The evidence of ſuch general concluſions is not demonſtrative, but probable: but when the induc-

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tion is ſufficiently copious, and carried on according to the rules of art, it forces conviction no leſs than demonſtration itſelf does.

The greateſt part of human knowledge reſts upon evidence of this kind. Indeed we can have no other for general truths which are contingent in their nature, and depend upon the will and ordination of the maker of the world. He governs the world he has made, by general laws. The effects of theſe laws in particular phenomena are open to our obſervation; and by obſerving a train of uniform effects with due caution, we may at laſt decypher the law of nature by which they are regulated.

Lord Bacon has diſplayed no leſs force of genius in reducing to rules this method of reaſoning, than Ariſtotle did in the method of ſyllogiſm. His *Novum Organum* ought therefore to be held as a moſt important addition to the ancient logic. Thoſe who underſtand it, and enter into the ſpirit of it, will be able to diſtinguiſh the chaff from the wheat in philoſophical diſquiſitions into the works of God. They will learn to hold in due contempt all hypotheſes and theories, the creatures of human imagination, and to reſpect nothing but facts ſufficiently vouched, or concluſions drawn from them by a fair and chaſte interpretation of nature.

Moſt arts have been reduced to rules, after they had been brought to a conſiderable degree of perfection by the natural ſagacity of artiſts; and the rules have been drawn from the beſt examples of the art that had been before exhibited: but the art of philoſophical induction was delineated by Lord Bacon in a very ample manner, before the world had ſeen any tolerable example of it. This, altho' it adds greatly to the merit of the author, muſt have produced ſome obſcurity in the work, and a defect of proper examples for illuſtration. This defect may now be eaſily ſupplied, from thoſe authors who, in their philoſophical diſquiſitions, have moſt ſtrictly purſued the path pointed out in the *Novum Organum*. Among theſe Sir Iſaac Newton ſeems to hold the firſt rank, having,

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in the third book of his *Principia*, and in his Optics, had the rules of the *Novum Organum* conſtantly in his eye.

I think Lord Bacon was alſo the firſt who endeavoured to reduce to a ſyſtem the prejudices or biaſſes of the mind, which are the cauſes of falſe judgement, and which he calls *the idols of the human underſtanding*. Some late writers of logic have very properly introduced this into their ſyſtem; but it deſerves to be more copiouſly handled, and to be illuſtrated by real examples.

It is of great conſequence to accurate reaſoning, to diſtinguiſh firſt principles which are to be taken for granted, from propoſitions which require proof. All the real knowledge of mankind may be divided into two parts: the firſt conſiſting of ſelf-evident propoſitions; the ſecond, of thoſe which are deduced by juſt reaſoning from ſelf-evident propoſitions. The line which divides theſe two parts ought to be marked as diſtinctly as poſſible, and the principles that are ſelf-evident reduced, as far as can be done, to general axioms. This has been done in mathematics from the beginning, and has tended greatly to the emolument of that ſcience. It has lately been done in natural philoſophy: and by this means that ſcience has advanced more in an hundred and fifty years, than it had done before in two thouſand. Every ſcience is in an unformed ſtate until its firſt principles are aſcertained: after that is done, it advances regularly, and ſecures the ground it has gained.

Altho' firſt principles do not admit of direct proof, yet there muſt be certain marks and characters, by which thoſe that are truly ſuch may be diſtinguiſhed from counterfeits. Theſe marks ought to be deſcribed, and applied, to diſtinguiſh the genuine from the ſpurious.

In the ancient philoſophy there is a redundance, rather than a defect, of firſt principles. Many things were aſſumed under that character without a juſt title: That nature abhors a *vacuum*; That

That bodies do not gravitate in their proper place; That the heavenly bodies undergo no change; That they move in perfect circles, and with an equable motion. Such principles as these were assumed in the Peripatetic philosophy, without proof, as if they were self-evident.

Des Cartes, sensible of this weakness in the ancient philosophy, and desirous to guard against it in his own system, resolved to admit nothing until his assent was forced by irresistible evidence. The first thing which he found to be certain and evident was, that he thought, and reasoned, and doubted. He found himself under a necessity of believing the existence of those operations of mind of which he was conscious: and having thus found sure footing in this one principle of consciousness, he rested satisfied with it, hoping to be able to build the whole fabric of his knowledge upon it; like Archimedes, who wanted but one fixed point to move the whole earth. But the foundation was too narrow; and in his progress he unawares assumes many things less evident than those which he attempts to prove. Altho' he was not able to suspect the testimony of consciousness, yet he thought the testimony of sense, of memory, and of every other faculty, might be suspected, and ought not to be received until proof was brought that they are not fallacious. Therefore he applies these faculties, whose character is yet in question, to prove, That there is an infinitely perfect Being, who made him, and who made his senses, his memory, his reason, and all his faculties; That this Being is no deceiver, and therefore could not give him faculties that are fallacious; and that on this account they deserve credit.

It is strange, that this philosopher, who found himself under a necessity of yielding to the testimony of consciousness, did not find the same necessity of yielding to the testimony of his senses, his memory, and his understanding: and that while he was certain that he doubted, and reasoned, he was uncertain whether two

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and three made five, and whether he was dreaming or awake. It is more ſtrange, that ſo acute a reaſoner ſhould not perceive, that his whole train of reaſoning to prove that his faculties were not fallacious, was mere ſophiſtry: for if his faculties were fallacious, they might deceive him in this train of reaſoning; and ſo the concluſion, That they were not fallacious, was only the teſtimony of his faculties in their own favour, and might be a fallacy.

It is difficult to give any reaſon for diſtruſting our other faculties, that will not reach conſciouſneſs itſelf. And he who diſtruſts thoſe faculties of judging and reaſoning which God hath given him, muſt even reſt in his ſcepticiſm till he come to a ſound mind, or until God give him new faculties to ſit in judgement upon the old. If it be not a firſt principle, That our faculties are not fallacious, we muſt be abſolute ſceptics: for this principle is incapable of proof; and if it is not certain, nothing elſe can be certain.

Since the time of Des Cartes, it has been faſhionable with thoſe who dealt in abſtract philoſophy, to employ their invention in finding philoſophical arguments, either to prove thoſe truths which ought to be received as firſt principles, or to overturn them: and it is not eaſy to ſay, whether the authority of firſt principles is more hurt by the firſt of theſe attempts, or by the laſt; for ſuch principles can ſtand ſecure only upon their own bottom; and to place them upon any other foundation than that of their intrinſic evidence, is in effect to overturn them.

I have lately met with a very ſenſible and judicious treatiſe, wrote by Father Buffier about fifty years ago, concerning firſt principles, and the ſource of human judgements, which, with great propriety, he prefixed to his treatiſe of logic. And indeed I apprehend it is a ſubject of ſuch conſequence, that if inquiſitive men

men can be brought to the ſame unanimity in the firſt principles of the other ſciences, as in thoſe of mathematics and natural philoſophy, (and why ſhould we deſpair of a general agreement in things that are ſelf-evident ?), this might be conſidered as a third grand æra in the progreſs of human reaſon.