

THE WORKS
OF
THOMAS REID, D.D.
NOW FULLY COLLECTED,
WITH SELECTIONS FROM HIS UNPUBLISHED LETTERS.

PREFACE,
NOTES AND SUPPLEMENTARY DISSERTATIONS,
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MDCCLXXII.

AN
INQUIRY
INTO
THE HUMAN MIND,
ON THE PRINCIPLES OF
COMMON SENSE.

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"The inspiration of the Almighty giveth them understanding."—JOB.

these different parts, is very different; yet we perceive the colour to be the same; we interpret the variety of appearance as a sign of light and shade, and not as a sign of real difference in colour. But, if the eye could be so far deceived as not to perceive the difference of light in the two parts of the cloth, we should, in that case, interpret the variety of appearance to signify a variety of colour in the parts of the cloth.

Again, if we suppose a piece of cloth placed as before, but having the shaded part so much brighter in the colour that it gives the same appearance to the eye as the more enlightened part, the sameness of appearance will here be interpreted to signify a variety of colour, because we shall make allowance for the effect of light and shade.

When the real colour of an object is known, the appearance of it indicates, in some circumstances, the degree of light or shade; in others, the colour of the circumambient bodies, whose rays are reflected by it; and, in other circumstances, it indicates the distance or proximity of the object—as was observed in the last section; and by means of these, many other things are suggested to the mind. Thus, an unusual appearance in the colour of familiar objects may be the diagnostic of a disease in the spectator. The appearance of things in my room may indicate sunshine or cloudy weather, the earth covered with snow or blackened with rain. It hath been observed, that the colour of the sky, in a piece of painting, may indicate the country of the painter, because the Italian sky is really of a different colour from the Flemish.

It was already observed, that the original and acquired perceptions which we have by our senses, are the language of nature to man, which, in many respects, hath a great affinity to human languages. The instances which we have given of acquired perceptions, suggest this affinity—that, as, in human languages, ambiguities are often found, so this language of nature in our acquired perceptions is not exempted from them. We have seen, in vision particularly, that the same appearance to the eye, may, in different circumstances, indicate different things. Therefore, when the circumstances are unknown upon which the interpretation of the signs depends, their meaning must be ambiguous; and when the circumstances are mistaken, the meaning of the signs must also be mistaken.

This is the case in all the phenomena which we call *fallacies of the senses*; and particularly in those which are called *fallacies in vision*. The appearance of things to the eye always corresponds to the fixed laws of Nature; therefore, if we speak properly, there is no fallacy in the senses. Nature always speaketh the same language,

and useth the same signs in the same circumstances; but we sometimes mistake the meaning of the signs, either through ignorance of the laws of Nature, or through ignorance of the circumstances which attend the signs.*

To a man unacquainted with the principles of optics, almost every experiment that is made with the prism, with the magic lantern, with the telescope, with the microscope, seems to produce some fallacy in vision. Even the appearance of a common mirror, to one altogether unacquainted with the effects of it, would seem most remarkably fallacious. For how can a man be more imposed upon, than in seeing that before him which is really behind him? How can he be more imposed upon, than in being made to see himself several yards removed from himself? Yet children, even before they can speak their mother-tongue, learn not to be deceived by these appearances. These, as well as all the other surprising appearances produced by optical glasses, are a part of the visual language, and, to those who understand the laws of Nature concerning light and colour, are in nowise fallacious, but have a distinct and true meaning.

Section XXIV.

OF THE ANALOGY BETWEEN PERCEPTION AND THE CREDIT WE GIVE TO HUMAN TESTIMONY.†

The objects of human knowledge are innumerable; but the channels by which it is conveyed to the mind are few. Among these, the perception of external things by our senses, and the informations which we receive upon human testimony, are not the least considerable; and so remarkable is the analogy between these two, and the analogy between the principles of the mind which are subservient to the one and those which are subservient to the other, that, without further apology, we shall consider them together.

In the testimony of Nature given by the senses, as well as in human testimony given by language, things are signified to us by signs; and in one as well as the other, the mind, either by original principles or by custom, passes from the sign to the conception and belief of the things signified.

We have distinguished our perceptions

* This is the doctrine of Aristotle; who holds that the senses never deceive us in relation to their proper objects.—H.

† Compare Mr. Stewart's "Elements," vol. I, ch. II, § 4, p. 217. Second edition. Campbell's "On Miracles," Part I, § 1. Smith's "Theory of Moral Sentiments," vol. II, p. 362. Sixth edition.—H.

into original and acquired; and language, into natural and artificial. Between acquired perception and artificial language, there is a great analogy; but still a greater between original perception and natural language.

The signs in original perception are sensations, of which Nature hath given us a great variety, suited to the variety of the things signified by them. Nature hath established a real connection between the signs and the things signified; and Nature hath also taught us the interpretation of the signs—so that, previous to experience, the sign suggests the thing signified, and creates the belief of it.

The signs in natural language are features of the face, gestures of the body, and modulations of the voice; the variety of which is suited to the variety of the things signified by them. Nature hath established a real connection between these signs, and the thoughts and dispositions of the mind which are signified by them; and Nature hath taught us the interpretation of these signs; so that, previous to experience, the signs suggest the thing signified, and create the belief of it.

A man in company, without doing good or evil, without uttering an articulate sound, may behave himself gracefully, civilly, politely; or, on the contrary, meanly, rudely, and impertinently. We see the dispositions of his mind by their natural signs in his countenance and behaviour, in the same manner as we perceive the figure and other qualities of bodies by the sensations which nature hath connected with them.

The signs in the natural language of the human countenance and behaviour, as well as the signs in our original perceptions, have the same signification in all climates and in all nations; and the skill of interpreting them is not acquired, but innate.

In acquired perception, the signs are either sensations, or things which we perceive by means of sensations. The connection between the sign and the thing signified, is established by nature; and we discover this connection by experience; but not without the aid of our original perceptions, or of those which we have already acquired. After this connection is discovered, the sign, in like manner as in original perception, always suggests the things signified, and creates the belief of it.

In artificial language, the signs are articulate sounds, whose connection with the things signified by them, is established by the will of men; and, in learning our mother tongue, we discover this connection by experience; but not without the aid of natural language, or of what we had before

attained of artificial language. And, after this connection is discovered, the sign, as in natural language, always suggests the thing signified, and creates the belief of it.

Our original perceptions are few, compared with the acquired; but, without the former, we could not possibly attain the latter. In like manner, natural language is scanty, compared with artificial; but, without the former, we could not possibly attain the latter.

Our original perceptions, as well as the natural language of human features and gestures, must be resolved into particular principles of the human constitution. Thus, it is by one particular principle of our constitution that certain features express anger; and, by another particular principle, that certain features express benevolence. It is, in like manner, by one particular principle of our constitution that a certain sensation signifies hardness in the body which I handle; and it is by another particular principle that a certain sensation signifies motion in that body.

But our acquired perceptions, and the information we receive by means of artificial language, must be resolved into general principles of the human constitution. When a painter perceives that this picture is the work of Raphael, that the work of Titian; a jeweller, that this is a true diamond, that a counterfeit; a sailor, that this is a ship of five hundred ton, that of four hundred; these different acquired perceptions are produced by the same general principles of the human mind, which have a different operation in the same person according as they are variously applied, and in different persons according to the diversity of their education and manner of life. In like manner, when certain articulate sounds convey to my mind the knowledge of the battle of Pharsalia, and others, the knowledge of the battle of Poltowa—when a Frenchman and an Englishman receive the same information by different articulate sounds—the signs used in these different cases, produce the knowledge and belief of the things signified, by means of the same general principles of the human constitution.

Now, if we compare the general principles of our constitution, which fit us for receiving information from our fellow-creatures by language, with the general principles which fit us for acquiring the perception of things by our senses, we shall find them to be very similar in their nature and manner of operation.

When we begin to learn our mother-tongue, we perceive, by the help of natural language, that they who speak to us use certain sounds to express certain things; we imitate the same sounds when we would

express the same things; and find that we are understood.

But here a difficulty occurs which merits our attention, because the solution of it leads to some original principles of the human mind, which are of great importance, and of very extensive influence. We know by experience that men *have* used such words to express such things; but all experience is of the *past*, and can, of itself, give no notion or belief of what is *future*. How come we, then, to believe, and to rely upon it with assurance, that men, who have it in their power to do otherwise, will continue to use the same words when they think the same things? Whence comes this knowledge and belief—this foresight, we ought rather to call it—of the future and voluntary actions of our fellow-creatures? Have they promised that they will never impose upon us by equivocation or falsehood? No, they have not. And, if they had, this would not solve the difficulty; for such promise must be expressed by words or by other signs; and, before we can rely upon it, we must be assured that they put the usual meaning upon the signs which express that promise. No man of common sense ever thought of taking a man's own word for his honesty; and it is evident that we take his veracity for granted when we lay any stress upon his word or promise. I might add, that this reliance upon the declarations and testimony of men is found in children long before they know what a promise is.

There is, therefore, in the human mind an early anticipation, neither derived from experience, nor from reason, nor from any compact or promise, that our fellow-creatures will use the same signs in language, when they have the same sentiments.

This is, in reality, a kind of prescience of human actions; and it seems to me to be an original principle of the human constitution, without which we should be incapable of language, and consequently incapable of instruction.

The wise and beneficent Author of Nature, who intended that we should be social creatures, and that we should receive the greatest and most important part of our knowledge by the information of others, hath, for these purposes, implanted in our natures two principles that tally with each other.

The first of these principles is, a propensity to speak truth, and to use the signs of language so as to convey our real sentiments. This principle has a powerful operation, even in the greatest liars; for where they lie once, they speak truth a hundred times. Truth is always uppermost, and is the natural issue of the mind. It requires no art or training, no inducement

or temptation, but only that we yield to a natural impulse. Lying, on the contrary, is doing violence to our nature; and is never practised, even by the worst men, without some temptation. Speaking truth is like using our natural food, which we would do from appetite, although it answered no end; but lying is like taking physic, which is nauseous to the taste, and which no man takes but for some end which he cannot otherwise attain.

If it should be objected, That men may be influenced by moral or political considerations to speak truth, and, therefore, that their doing so is no proof of such an original principle as we have mentioned—I answer, First, That moral or political considerations can have no influence until we arrive at years of understanding and reflection; and it is certain, from experience, that children keep to truth invariably, before they are capable of being influenced by such considerations. Secondly, When we are influenced by moral or political considerations, we must be conscious of that influence, and capable of perceiving it upon reflection. Now, when I reflect upon my actions most attentively, I am not conscious that, in speaking truth, I am influenced on ordinary occasions by any motive, moral or political. I find that truth is always at the door of my lips, and goes forth spontaneously, if not held back. It requires neither good nor bad intention to bring it forth, but only that I be artless and undesigning. There may indeed be temptations to falsehood, which would be too strong for the natural principle of veracity, unaided by principles of honour or virtue; but where there is no such temptation, we speak truth by instinct—and this instinct is the principle I have been explaining.

By this instinct, a real connection is formed between our words and our thoughts, and thereby the former become fit to be signs of the latter, which they could not otherwise be. And although this connection is broken in every instance of lying and equivocation, yet these instances being comparatively few, the authority of human testimony is only weakened by them, but not destroyed.

Another original principle implanted in us by the Supreme Being, is a disposition to confide in the veracity of others, and to believe what they tell us. This is the counterpart to the former; and, as that may be called the *principle of veracity*, we shall, for want of a more proper name, call this the *principle of credulity*. It is unlimited in children, until they meet with instances of deceit and falsehood; and it retains a very considerable degree of strength through life.

If Nature had left the mind of the speaker

in *æquilibrio*, without any inclination to the side of truth more than to that of falsehood, children would lie as often as they speak truth, until reason was so far ripened as to suggest the imprudence of lying, or conscience, as to suggest its immorality. And if Nature had left the mind of the hearer in *æquilibrio*, without any inclination to the side of belief more than to that of disbelief, we should take no man's word until we had positive evidence that he spoke truth. His testimony would, in this case, have no more authority than his dreams; which may be true or false, but no man is disposed to believe them, on this account, that they were dreamed. It is evident that, in the matter of testimony, the balance of human judgment is by nature inclined to the side of belief; and turns to that side of itself, when there is nothing put into the opposite scale. If it was not so, no proposition that is uttered in discourse would be believed, until it was examined and tried by reason; and most men would be unable to find reasons for believing the thousandth part of what is told them. Such distrust and incredulity would deprive us of the greatest benefits of society, and place us in a worse condition than that of savages.

Children, on this supposition, would be absolutely incredulous, and, therefore, absolutely incapable of instruction: those who had little knowledge of human life, and of the manners and characters of men, would be in the next degree incredulous: and the most credulous men would be those of greatest experience, and of the deepest penetration; because, in many cases, they would be able to find good reasons for believing testimony, which the weak and the ignorant could not discover.

In a word, if credulity were the effect of reasoning and experience, it must grow up and gather strength, in the same proportion as reason and experience do. But, if it is the gift of Nature, it will be strongest in childhood, and limited and restrained by experience; and the most superficial view of human life shews, that the last is really the case, and not the first.

It is the intention of Nature, that we should be carried in arms before we are able to walk upon our legs; and it is likewise the intention of Nature, that our belief should be guided by the authority and reason of others, before it can be guided by our own reason. The weakness of the infant, and the natural affection of the mother, plainly indicate the former; and the natural credulity of youth, and authority of age, as plainly indicate the latter. The infant, by

proper nursing and care, acquires strength to walk without support. Reason hath likewise her infancy, when she must be carried in arms: then she leans entirely upon authority, by natural instinct, as if she was conscious of her own weakness; and, without this support, she becomes vertiginous. When brought to maturity by proper culture, she begins to feel her own strength, and leans less upon the reason of others; she learns to suspect testimony in some cases, and to disbelieve it in others; and sets bounds to that authority to which she was at first entirely subject. But still to the end of life, she finds a necessity of borrowing light from testimony, where she has none within herself, and of leaning, in some degree, upon the reason of others, where she is conscious of her own imbecility.

And as, in many instances, Reason, even in her maturity, borrows aid from testimony, so in others she mutually gives aid to it, and strengthens its authority. For, as we find good reason to reject testimony in some cases, so in others we find good reason to rely upon it with perfect security, in our most important concerns. The character, the number, and the disinterestedness of witnesses, the impossibility of collusion, and the incredibility of their concurring in their testimony without collusion, may give an irresistible strength to testimony, compared to which its native and intrinsic authority is very inconsiderable.

Having now considered the general principles of the human mind which fit us for receiving information from our fellow-creatures, by the means of language, let us next consider the general principles which fit us for receiving the information of Nature by our acquired perceptions.

It is undeniable, and indeed is acknowledged by all, that when we have found two things to have been constantly conjoined in the course of nature, the appearance of one of them is immediately followed by the conception and belief of the other. The former becomes a natural sign of the latter; and the knowledge of their constant conjunction in time past, whether got by experience or otherwise, is sufficient to make us rely with assurance upon the continuance of that conjunction.

This process of the human mind is so familiar that we never think of inquiring into the principles upon which it is founded. We are apt to conceive it as a self-evident truth, that what is to come must be similar to what is past. Thus, if a certain degree of cold freezes water to-day, and has been known to do so in all time past, we have no doubt but the same degree of cold will freeze water to-morrow, or a year hence. That this is a truth which all men believe as

See, *genera*, Priestley's "Examination," p. 85. "Brown's Lect." lect. lxxxiv.—H.

soon as they understand it, I readily admit ; but the question is, Whence does its evidence arise ? Not from comparing the ideas, surely. For, when I compare the idea of cold with that of water hardened into a transparent solid body, I can perceive no connection between them ; no man can show the one to be the necessary effect of the other ; no man can give a shadow of reason why Nature hath conjoined them. But do we not learn their conjunction from experience ? True ; experience informs us that they have been conjoined in time past ; but no man ever had any experience of what is future ; and this is the very question to be resolved, How we come to believe that the *futures* will be like the *past* ? Hath the Author of nature promised this ? Or were we admitted to his council, when he established the present laws of nature, and determined the time of their continuance. No, surely. Indeed, if we believe that there is a wise and good Author of nature, we may see a good reason why he should continue the same laws of nature, and the same connections of things, for a long time : because, if he did otherwise, we could learn nothing from what is past, and all our experience would be of no use to us. But, though this consideration, when we come to the use of reason, may confirm our belief of the continuance of the present course of nature, it is certain that it did not give rise to this belief ; for children and idiots have this belief as soon as they know that fire will burn them. It must, therefore, be the effect of instinct, not of reason.*

The wise Author of our nature intended, that a great and necessary part of our knowledge should be derived from experience, before we are capable of reasoning, and he hath provided means perfectly adequate to this intention. For, First, He governs nature by fixed laws, so that we find innumerable connections of things which continue from age to age. Without this stability of the course of nature, there could be no experience ; or, it would be a false guide, and lead us into error and mischief. If there were not a principle of veracity in the human mind, men's words would not be signs of their thoughts : and if there were no regularity in the course of nature, no one thing could be a natural sign of another. Secondly, He hath implanted in human minds an original principle by which we believe and expect the continuance of the course of nature, and the continuance of those connec-

tions which we have observed in time past. It is by this general principle of our nature, that, when two things have been found connected in time past, the appearance of the one produces the belief of the other.

I think the ingenious author of the "Treatise of Human Nature" first observed, That our belief of the continuance of the laws of nature cannot be founded either upon knowledge or probability ; but, far from conceiving it to be an original principle of the mind, he endeavours to account for it from his favourite hypothesis, That belief is nothing but a certain degree of vivacity in the idea of the thing believed. I made a remark upon this curious hypothesis in the second chapter and shall now make another.

The belief which we have in perception, is a belief of the present existence of the object ; that which we have in memory, is a belief of its past existence ; the belief of which we are now speaking is a belief of its future existence ; and in imagination there is no belief at all. Now, I would gladly know of this author, how one degree of vivacity fixes the existence of the object to the present moment ; another carries it back to time past ; a third, taking a contrary direction, carries it into futurity ; and a fourth carries it out of existence altogether. Suppose, for instance, that I see the sun rising out of the sea : I remember to have seen him rise yesterday ; I believe he will rise to-morrow near the same place ; I can likewise imagine him rising in that place, without any belief at all. Now, according to this sceptical hypothesis, this perception, this memory, this foreknowledge, and this imagination, are all the same idea, diversified only by different degrees of vivacity. The perception of the sun rising is the most lively idea ; the memory of his rising yesterday is the same idea a little more faint ; the belief of his rising to-morrow is the same idea yet fainter ; and the imagination of his rising is still the same idea, but faintest of all. One is apt to think, that this idea might gradually pass through all possible degrees of vivacity without stirring out of its place. But, if we think so, we deceive ourselves ; for no sooner does it begin to grow languid than it moves backward into time past. Supposing this to be granted, we expect, at least, that, as it moves backward by the decay of its vivacity, the more that vivacity decays it will go back the farther, until it remove quite out of sight. But here we are deceived again ; for there is a certain period of this declining vivacity, when, as if it had met an elastic obstacle in its motion backward, it suddenly rebounds from the past to the future, without taking the present in its way. And now, having got

* Compare Stewart's "Elements," vol. I., chap. iv. § 5, p. 215, sixth edition ; "Philosophical Essays," p. 74, seq., fourth edition ; Royer Collard, in *Journ. de l'Académie de Médecine*, t. IV., p. 279, seq. ; with Paley's "Examination," p. 86, seq. I merely refer to works relative to Reid's doctrine.—H.

into the regions of futurity, we are apt to think that it has room enough to spend all its remaining vigour; but still we are deceived; for, by another sprightly bound, it mounts up into the airy region of imagination. So that ideas, in the gradual declension of their vivacity, seem to imitate the inflection of verbs in grammar. They begin with the present, and proceed in order to the preterite, the future, and the indefinite. This article of the sceptical creed is indeed so full of mystery, on whatever side we view it, that they who hold that creed are very injuriously charged with incredulity; for, to me, it appears to require as much faith as that of St Athanasius.

However, we agree with the author of the "Treatise of Human Nature," in this, That our belief of the continuance of nature's laws is not derived from reason. It is an instinctive prescience of the operations of nature, very like to that prescience of human actions which makes us rely upon the testimony of our fellow-creatures; and as, without the latter, we should be incapable of receiving information from men by language, so, without the former, we should be incapable of receiving the information of nature by means of experience.

All our knowledge of nature beyond our original perceptions, is got by experience, and consists in the interpretation of natural signs. The constancy of nature's laws connects the sign with the thing signified; and, by the natural principle just now explained, we rely upon the continuance of the connections which experience hath discovered; and thus the appearance of the sign is followed by the belief of the thing signified.

Upon this principle of our constitution, not only acquired perception, but all inductive reasoning, and all our reasoning from analogy, is grounded; and, therefore, for want of another name, we shall beg leave to call it *the inductive principle*. It is from the force of this principle that we immediately assent to that axiom upon which all our knowledge of nature is built, That effects of the same kind must have the same cause; for *effects* and *causes*, in the operations of nature, mean nothing but signs and the things signified by them. We perceive no proper causality or efficiency in any natural cause; but only a connection established by the course of nature between it and what is called its effect. Antecedently to all reasoning, we have, by our constitution, an anticipation that there is a fixed and steady course of nature; and we have an eager desire to discover this course of nature. We attend to every conjunction of things which presents itself, and expect the continuance of that conjunction. And, when such a conjunction has been often

observed, we conceive the things to be naturally connected, and the appearance of one, without any reasoning or reflection, carries along with it the belief of the other.

If any reader should imagine that the inductive principle may be resolved into what philosophers usually call the *association of ideas*, let him observe, that, by this principle, natural signs are not associated with the idea only, but with the belief of the things signified. Now, this can with no propriety be called an association of ideas, unless ideas and belief be one and the same thing. A child has found the prick of a pin conjoined with pain; hence he believes, and knows, that these things are naturally connected; he knows that the one will always follow the other. If any man will call this only an association of ideas, I dispute not about words, but I think he speaks very improperly. For, if we express it in plain English, it is a prescience that things which he hath found conjoined in time past, will be conjoined in time to come. And this prescience is not the effect of reasoning, but of an original principle of human nature, which I have called the *inductive principle*.*

This principle, like that of credulity, is unlimited in infancy, and gradually restrained and regulated as we grow up. It leads us often into mistakes; but is of infinite advantage upon the whole. By it, the child once burnt shuns the fire; by it, he likewise runs away from the surgeon by whom he was inoculated. It is better that he should do the last, than that he should not do the first.

But the mistakes we are led into by these two natural principles, are of a different kind. Men sometimes lead us into mistakes, when we perfectly understand their language, by speaking lies. But Nature never misleads us in this way; her language is always true; and it is only by misinterpreting it that we fall into error. There must be many accidental conjunctions of things, as well as natural connections; and the former are apt to be mistaken for the latter. Thus, in the instance above mentioned, the child connected the pain of inoculation with the surgeon; whereas it was really connected with the incision only. Philosophers, and men of science, are not exempted from such mistakes; indeed, all false reasoning in philosophy is owing to them; it is drawn from experience and analogy, as well as just reasoning, otherwise it could have no verisimilitude; but the one is an unskilful and rash,

* This objection to the solution, on the ground of *association*, is unsound. It is generally admitted that the term "Association of Ideas" is inadequate; the law of association extending not only to ideas, but to all our mental modifications.—H

the other a just and legitimate interpretation of natural signs. If a child, or a man of common understanding, were put to interpret a book of science, written in his mother-tongue, how many blunders and mistakes would he be apt to fall into? Yet he knows as much of this language as is necessary for his manner of life.

The language of Nature is the universal study; and the students are of different classes. Brutes, idiots, and children employ themselves in this study, and owe to it all their acquired perceptions. Men of common understanding make a greater progress, and learn, by a small degree of reflection, many things of which children are ignorant.

Philosophers fill up the highest form in this school, and are critics in the language of nature. All these different classes have one teacher—Experience, enlightened by the inductive principle. Take away the light of this inductive principle, and Experience is as blind as a mole; she may, indeed, feel what is present, and what immediately touches her; but she sees nothing that is either before or behind, upon the right hand or upon the left, future or past.

The rules of inductive reasoning, or of a just interpretation of Nature, as well as the fallacies by which we are apt to misinterpret her language, have been, with wonderful sagacity, delineated by the great genius of Lord Bacon: so that his "*Novum Organum*" may justly be called "A Grammar of the Language of Nature." It adds greatly to the merit of this work, and atones for its defects, that, at the time it was written, the world had not seen any tolerable model of inductive reasoning,* from which the rules of it might be copied. The arts of poetry and eloquence were grown up to perfection when Aristotle described them; but the art of interpreting Nature was yet in *embryo* when Bacon delineated its main features and proportions. Aristotle drew his rules from the best models of those arts that have yet appeared; but the best models of inductive reasoning that have yet appeared, which I take to be the third book of the "*Principia*," and the "*Optics*," of Newton, were drawn from Bacon's rules. The purpose of all those rules, is to teach us to distinguish seeming or apparent connections of things, in the course of nature, from such as are real.

They that are unskilful in inductive reasoning, are more apt to fall into error in their *reasonings* from the phenomena of nature than in their *acquired perceptions*; because we often reason from a few instances, and thereby are apt to mistake accidental conjunctions of things for natural

connections: but that habit of passing, without reasoning, from the sign to the thing signified, which constitutes acquired perception, must be learned by many instances or experiments; and the number of experiments serves to disjoin those things which have been accidentally conjoined, as well as to confirm our belief of natural connections.

From the time that children begin to use their hands, Nature directs them to handle everything over and over, to look at it while they handle it, and to put it in various positions, and at various distances from the eye. We are apt to excuse this as a childish diversion, because they must be doing something, and have not reason to entertain themselves in a more manly way. But, if we think more justly, we shall find, that they are engaged in the most serious and important study; and, if they had all the reason of a philosopher, they could not be more properly employed. For it is this childish employment that enables them to make the proper use of their eyes. They are thereby every day acquiring habits of perception, which are of greater importance than anything we can teach them. The original perceptions which Nature gave them are few, and insufficient for the purposes of life; and, therefore, she made them capable of acquiring many more perceptions by habit. And, to complete her work, she hath given them an unwearied assiduity in applying to the exercises by which those perceptions are acquired.

This is the education which Nature gives to her children. And, since we have fallen upon this subject, we may add, that another part of Nature's education is, That, by the course of things, children must often exert all their muscular force, and employ all their ingenuity, in order to gratify their curiosity, and satisfy their little appetites. What they desire is only to be obtained at the expense of labour and patience, and many disappointments. By the exercise of body and mind necessary for satisfying their desires, they acquire agility, strength, and dexterity in their motions, as well as health and vigour to their constitutions; they learn patience and perseverance; they learn to bear pain without dejection, and disappointment without despondence. The education of Nature is most perfect in savages, who have no other tutor; and we see that, in the quickness of all their senses, in the agility of their motions, in the hardness of their constitutions, and in the strength of their minds to bear hunger, thirst, pain, and disappointment, they commonly far exceed the civilized. A most ingenious writer, on this account, seems to prefer the savage life to that of society.

* Yet Galileo was anterior to Bacon.—H.

But the education of Nature could never of itself produce a Rousseau. It is the intention of Nature that human education should be joined to her institution, in order to form the man. And she hath fitted us for human education, by the natural principles of imitation and credulity, which discover themselves almost in infancy, as well as by others which are of later growth.

When the education which we receive from men, does not give scope to the education of Nature, it is wrong directed; it tends to hurt our faculties of perception, and to enervate both the body and mind. Nature hath her way of rearing men, as she hath of curing their diseases. The art of medicine is to follow Nature, to imitate and to assist her in the cure of diseases; and the art of education is to follow Nature, to assist and to imitate her in her way of rearing men. The ancient inhabitants of the Balesares followed Nature in the manner of teaching their children to be good archers, when they hung their dinner aloft by a thread, and left the youngers to bring it down by their skill in archery.

The education of Nature, without any more human care than is necessary to preserve life, makes a perfect savage. Human education, joined to that of Nature, may make a good citizen, a skilful artisan, or a well-bred man; but reason and reflection must superadd their tutory, in order to produce a Rousseau, a Bacon, or a Newton.

Notwithstanding the innumerable errors committed in human education, there is hardly any education so bad as to be worse than none. And I apprehend that, if even Rousseau were to choose whether to educate a son among the French, the Italians, the Chinese, or among the Eskimaux, he would not give the preference to the last.

When Reason is properly employed, she will confirm the documents of Nature, which are always true and wholesome; she will distinguish, in the documents of human education, the good from the bad, rejecting the last with modesty, and adhering to the first with reverence.

Most men continue all their days to be just what Nature and human education made them. Their manners, their opinions, their virtues, and their vices, are all got by habit, imitation, and instruction; and reason has little or no share in forming them.

CHAPTER VII.

Conclusion.

CONTAINING REFLECTIONS UPON THE OPINIONS OF PHILOSOPHERS ON THIS SUBJECT.

THERE are two ways in which men may

form their notions and opinions concerning the mind, and concerning its powers and operations. The first is the only way that leads to truth; but it is narrow and rugged, and few have entered upon it. The second is broad and smooth, and hath been much beaten, not only by the vulgar, but even by philosophers; it is sufficient for common life, and is well adapted to the purposes of the poet and orator: but, in philosophical disquisitions concerning the mind, it leads to error and delusion.

We may call the first of these ways, *the way of reflection*. When the operations of the mind are exerted, we are conscious of them; and it is in our power to attend to them, and to reflect upon them, until they become familiar objects of thought. This is the only way in which we can form just and accurate notions of those operations. But this attention and reflection is so difficult to man, surrounded on all hands by external objects which constantly solicit his attention, that it has been very little practised, even by philosophers. In the course of this inquiry, we have had many occasions to shew how little attention hath been given to the most familiar operations of the senses.

The second, and the most common way, in which men form their opinions concerning the mind and its operations, we may call *the way of analogy*. There is nothing in the course of nature so singular, but we can find some resemblance, or at least some analogy, between it and other things with which we are acquainted. The mind naturally delights in hunting after such analogies, and attends to them with pleasure. From them, poetry and wit derive a great part of their charms; and eloquence, not a little of its persuasive force.

Besides the pleasure we receive from analogies, they are of very considerable use, both to facilitate the conception of things, when they are not easily apprehended without such a handle, and to lead us to probable conjectures about their nature and qualities, when we want the means of more direct and immediate knowledge. When I consider that the planet Jupiter, in like manner as the earth, rolls round his own axis, and revolves round the sun, and that he is enlightened by several secondary planets, as the earth is enlightened by the moon, I am apt to conjecture, from analogy, that, as the earth by these means is fitted to be the habitation of various orders of animals, so the planet Jupiter is, by the like means, fitted for the same purpose: and, having no argument more direct and conclusive to determine me in this point, I yield, to this analogical reasoning, a degree of assent proportioned to its strength. When I observe that the potato plant very much