of certain unknown natures, which have an absolute being, wherein creation might terminate.

Hyl. True.

Phil. Is it not therefore evident, the asserters of matter destroy the plain obvious sense of Moses, with which their notions are utterly inconsistent; and instead of it obtrude on us I know not what, something equally unintelligible to themselves and me.

Hyl. I cannot contradict you.

Phil. Moses tells us of a creation. A creation of what? of unknown quiddities, of occasions, or substratums? No, certainly; but of things obvious to the senses. You must first reconcile this with your notions, if you expect I should be reconciled to them.

Hyl. I see you can assault me with my own weapons.

Phil. Then as to *absolute existence;* was there ever known a more jejune notion than that? Something it is, so abstracted and unintelligible, that you have frankly owned you could not conceive it, much less explain any thing by it. But allowing matter to exist, and the notion of absolute existence to be as clear as light, yet was this ever known to make the creation more credible? Nay, hath it not furnished the atheists and infidels of all ages with the most plausible argument against a creation? That a corporeal substance, which hath an absolute existence without the minds of spirits, should be produced out of nothing by the mere will of a spirit, hath been looked upon as a thing so contrary to all reason, so impossible and absurd, that not only the most celebrated among the ancients, but even divers modern and Christian philosophers, have thought matter co-eternal with the Deity. Lay these things together, and then judge you whether materialism disposes men to believe the creation of things.

Hyl. I own, Philonous, I think it does not. This of the *creation* is the last objection I can think of; and I must needs own it hath been sufficiently answered as well as the rest. Nothing now remains to be overcome, but a sort of unaccountable backwardness that I find in myself toward your notions.

Phil. When a man is swayed, he knows not why, to one side of a question, can this, think you, be any thing else but the effect of prejudice, which never fails to attend old and rooted notions? And indeed in this respect I cannot deny the belief of matter to have very much the advantage over the contrary opinion, with men of a learned education.

Hyl. I confess it seems to be as you say.

Phil. As a balance therefore to this weight of prejudice, let us throw into the scale the great advantages that arise from the belief of immaterialism, both in regard to religion and human learning. The being of a God, and incorruptibility of the soul,

those great articles of religion, are they not proved with the clearest and most immediate evidence? When I say the being of a *God*, I do not mean an obscure, general cause of things, whereof we have no conception, but *God*, in the strict and proper sense of the word. A being whose spirituality, omnipresence, providence, omniscience, infinite power, and goodness, are as conspicuous as the existence of sensible things, of which (notwithstanding the fallacious pretences and affected scruples of sceptics) there is no more reason to doubt than of our own being. Then with relation to human sciences; in natural philosophy, what intricacies, what obscurities, what contradictions, hath the belief of matter led men into! To say nothing of the numberless disputes about its extent, continuity, homogenity, gravity, divisibility, &c., do they not pretend to explain all things by bodies operating on bodies, according to the laws of motion? and yet, are they able to comprehend how any one body should move another? Nay, admitting there was no difficulty in reconciling the notion of an inert being with a cause; or in conceiving how an accident might pass from one body to another; yet by all their strained thoughts and extravagant suppositions, have they been able to reach the mechanical production of any one animal or vegetable body? Can they account by the laws of motion, for sounds, tastes, smells, or colours, or for the regular course of things? Have they accounted by physical principles for the aptitude and contrivance, even of the most inconsiderable parts of the universe? But laying aside matter and corporeal causes, and admitting only the efficiency of an all-perfect mind, are not all the effects of nature easy and intelligible? If the phenomena are nothing else but *ideas*; God is a *spirit*, but matter an unintelligent, unperceiving being. If they demonstrate an unlimited power in their cause; God is active and omnipotent, but matter an inert mass. If the order, regularity, and usefulness of them can never be sufficiently admired; God is infinitely wise and provident, but matter destitute of all contrivance and design. These surely are great advantages in *physics*. Not to mention that the apprehension of a distant Deity naturally disposes men to a negligence in their *moral* actions, which they would be more cautious of in case they thought him immediately present, and acting on their minds without the interposition of matter, or unthinking second causes. Then in *metaphysics*; what difficulties concerning entity in abstract, substantial forms, hylarchic principles, plastic natures, substance and accident, principle of individuation, possibility of matter's thinking, origin of ideas, the manner how two independent substances, so widely different as *spirit* and *matter*, should mutually operate on each other! what difficulties, I say, and endless disquisitions concerning these and innumerable other the like points, do we escape by supposing only spirits and ideas? Even the *mathematics* themselves, if we

take away the absolute existence of extended things, become much more clear and easy; the most shocking paradoxes and intricate speculations in those sciences, depending on the infinite divisibility of finite extension, which depends on that supposition. But what need is there to insist on the particular sciences? Is not that opposition to all science whatsoever, that frenzy of the ancient and modern sceptics, built on the same foundation? Or can you produce so much as one argument against the reality of corporeal things, or in behalf of that avowed utter ignorance of their natures, which doth not suppose their reality to consist in an external absolute existence? Upon this supposition indeed, the objections from the change of colours in a pigeon's neck, or the appearances of a broken oar in the water, must be allowed to have weight. But those and the like objections vanish, if we do not maintain the being of absolute external originals, but place the reality of things in ideas, fleeting indeed, and changeable; however not changed at random, but according to the fixed order of nature. For herein consists that constancy and truth of things, which secures all the concerns of life, and distinguishes that which is *real* from the irregular visions of the fancy.

Hyl. I agree to all you have now said, and must own that nothing can incline me to embrace your opinion, more than the advantages I see it is attended with. I am by nature lazy, and this would be a mighty abridgment in knowledge. What doubts, what hypotheses, what labyrinths of amusement, what fields of disputation, what an ocean of false learning, may be avoided by that single notion of *immaterialism!*

Phil. After all, is there any thing further remaining to be done? You may remember you promised to embrace that opinion which upon examination should appear most agreeable to common sense, and remote from scepticism. This, by your own confession, is that which denies matter, or the absolute existence of corporeal things. Nor is this all; the same notion has been proved several ways, viewed in different lights, pursued in its consequences, and all objections against it cleared. Can there be a greater evidence of its truth? or is it possible it should have all the marks of a true opinion, and yet be false?

Hyl. I own myself entirely satisfied for the present in all respects. But what security can I have that I shall still continue the same full assent to your opinion, and that no unthought-of objection or difficulty will occur hereafter?

Phil. Pray, Hylas, do you in other cases, when a point is once evidently proved, withhold your assent on account of objections or difficulties it may be liable to? Are the difficulties that attend the doctrine of incommensurable quantities, of the angle of contact, of the asymptotes to curves, or the like, sufficient to make you hold out against mathematical demonstration? Or will you dis-

believe the providence of God, because there may be some particular things which you know not how to reconcile with it? If there are difficulties attending immaterialism, there are at the same time direct and evident proofs for it. But for the existence of matter there is not one proof, and far more numerous and insurmountable objections lie against it. But where are those mighty difficulties you insist on? Alas! you know not where or what they are; something which may possibly occur hereafter. If this be a sufficient pretence for withholding your full assent, you should never yield it to any proposition, how free soever from exceptions, how clearly and solidly soever demonstrated.

Hyl. You have satisfied me, Philonous.

Phil. But to arm you against all future objections, do but consider, that which bears equally hard on two contradictory opinions, can be a proof against neither. Whenever therefore any difficulty occurs, try if you can find a solution for it on the hypothesis of the *materialists*. Be not deceived by words; but sound your own thoughts. And in case you cannot conceive it easier by the help of *materialism*, it is plain it can be no objection against *immaterialism*. Had you proceeded all along by this rule, you would probably have spared yourself abundance of trouble in objecting; since of all your difficulties I challenge you to show one that is explained by matter; nay, which is not more unintelligible with, than without that supposition, and consequently makes rather *against* than *for* it. You should consider in each particular, whether the difficulty arises from the *non-existence of matter*. If it doth not, you might as well argue from the infinite divisibility of extension against the divine prescience, as from such a difficulty against *immaterialism*. And yet upon recollection I believe you will find this to have been often, if not always the case. You should likewise take heed not to argue on a *petitio principii*. One is apt to say, the unknown substances ought to be esteemed real things, rather than the ideas in our minds: and who can tell but the unthinking external substance may concur as a cause or instrument in the production of our ideas? But is not this proceeding on a supposition that there are such external substances? And to suppose this, is it not begging the question? But above all things you should beware of imposing on yourself by that vulgar sophism, which is called *ignoratio elenchi*. You talked often as if you thought I maintained the non-existence of sensible things: whereas in truth no one can be more thoroughly assured of their existence than I am, and it is you who doubt; I should have said, positively deny it. Every thing that is seen, felt, heard, or any way perceived by the senses, is, on the principles I embrace, a real being, but not on yours. Remember the matter you contend for is an unknown somewhat (if indeed it may be termed *somewhat*), which is quite

stripped of all sensible qualities, and can neither be perceived by sense, nor apprehended by the mind. Remember, I say, that it is not any object which is hard or soft, hot or cold, blue or white, round or square, &c. For all these things I affirm do exist. Though indeed I deny they have any existence distinct from being perceived; or that they exist out of all minds whatsoever. Think on these points; let them be attentively considered and still kept in view. Otherwise you will not comprehend the state of the question; without which your objections will always be wide of the mark, and instead of mine, may possibly be directed (as more than once they have been) against your own notions.

Hyl. I must needs own, Philonous, nothing seems to have kept me from agreeing with you more than this same *mistaking the question*. In denying matter, at first glimpse I am tempted to imagine you deny the things we see and feel; but upon reflection find there is no ground for it. What think you therefore of retaining the name *matter*, and applying it to sensible things? This may be done without any change in your sentiments: and believe me it would be a means of reconciling them to some persons, who may be more shocked at an innovation in words than in opinion.

Phil. With all my heart: retain the word *matter*, and apply it to the objects of sense, if you please, provided you do not attribute to them any subsistence distinct from their being perceived. I shall never quarrel with you for an expression. *Matter*, or *material substance*, are terms introduced by philosophers; and as used by them, imply a sort of independency, or a subsistence distinct from being perceived by a mind: but are never used by common people; or if ever, it is to signify the immediate objects of sense. One would think therefore, so long as the names of all particular things, with the terms *sensible, substance, body, stuff*, and the like, are retained, the word *matter* should be never missed in common talk. And in philosophical discourses it seems the best way to leave it quite out; since there is not perhaps any one thing that hath more favoured and strengthened the depraved bent of the mind toward *atheism*, than the use of that general confused term.

Hyl. Well but, Philonous, since I am content to give up the notion of an unthinking substance exterior to the mind, I think you ought not to deny me the privilege of using the word *matter* as I please, and annexing it to a collection of sensible qualities subsisting only in the mind. I freely own there is no other substance in a strict sense, than *spirit*. But I have been so long accustomed to the term *matter*, that I know not how to part with it. To say, there is no *matter* in the world, is still shocking to me. Whereas to say, there is no *matter*, if by that term be meant an unthinking substance existing without the mind; but if

by matter is meant some sensible thing, whose existence consists in being perceived, then there is *matter:* this distinction gives it quite another turn: and men will come into your notions with small difficulty, when they are proposed in that manner. For after all, the controversy about matter, in the strict acceptation of it, lies altogether between you and the philosophers, whose principles, I acknowledge, are not near so natural, or so agreeable to the common sense of mankind, and holy scripture, as yours. There is nothing we either desire or shun, but as it makes, or is apprehended to make some part of our happiness or misery. But what hath happiness or misery, joy or grief, pleasure or pain, to do with absolute existence, or with unknown entities, abstracted from all relation to us? It is evident, things regard us only as they are pleasing or displeasing: and they can please or displease only so far forth as they perceived. Further therefore we are not concerned; and thus far you leave things as you found them. Yet still there is something new in this doctrine. It is plain, I do not now think with the philosophers, nor yet altogether with the vulgar. I would know how the case stands in that respect: precisely, what you have added to, or altered in my former notions.

Phil. I do not pretend to be a setter-up of *new notions.* My endeavours tend only to unite and place in a clearer light that truth, which was before shared between the vulgar and the philosophers: the former being of opinion, that *those things they immediately perceive are the real things:* and the latter, that *the things immediately perceived are ideas which exist only in the mind.* Which two notions put together, do in effect constitute the substance of what I advance.

Hyl. I have been a long time distrusting my senses; methought I saw things by a dim light, and through false glasses. Now the glasses are removed, and a new light breaks in upon my understanding. I am clearly convinced that I see things in their native forms; and am no longer in pain about their unknown natures or absolute existence. This is the state I find myself in at present: though indeed the course that brought me to it I do not yet thoroughly comprehend. You set out upon the same principles that Academics, Cartesians, and the like sects, usually do; and for a long time it looked as if you were advancing their philosophical scepticism; but in the end your conclusions are directly opposite to theirs.

Phil. You see, Hylas, the water of yonder fountain, how it is forced upwards, in a round column, to a certain height; at which it breaks and falls back into the bason from whence it rose: its ascent, as well as descent, proceeding from the same uniform law or principle of *gravitation.* Just so, the same principles which at first view lead to scepticism, pursued to a certain point, bring men back to common sense.

AN ESSAY

TOWARDS

A NEW THEORY OF VISION.

TO THE RIGHT HONOURABLE

SIR JOHN PERCIVALE, BART.,

ONE OF HER MAJESTY'S MOST HONOURABLE PRIVY COUNCIL IN THE KINGDOM OF IRELAND.

SIR,

I COULD not, without doing violence to myself, forbear upon this occasion to give some public testimony of the great and well-grounded esteem I have conceived for you, ever since I had the honour and happiness of your acquaintance. The outward advantages of fortune, and the early honours with which you are adorned, together with the reputation you are known to have, amongst the best and most considerable men, may well imprint veneration and esteem on the minds of those who behold you from a distance. But these are not the chief motives that inspire me with the respect I bear you. A nearer approach has given me the view of something in your person, infinitely beyond the external ornaments of honour and estate. I mean, an intrinsic stock of virtue and good sense, a true concern for religion, and disinterested love of your country. Add to these an uncommon proficiency in the best and most useful parts of knowledge; together with (what in my mind is a perfection of the first rank) a surpassing goodness of nature. All which I have collected, not from the uncertain reports of fame, but from my own experience. Within these few months, that I have the honour to be known unto you, the many delightful hours I have passed in your agreeable and improving conversation, have afforded me the opportunity of discovering in you many excellent qualities, which at once fill me with admiration and esteem. That one at those years, and in those circumstances of wealth and greatness, should continue proof against the charms of luxury, and those criminal pleasures, so fashionable and predominant in the age we live in. That he should preserve a sweet and modest behaviour, free from that insolent and assuming air, so familiar to those who are placed above the ordinary rank of men. That he should manage a great fortune with that prudence and inspection, and at the same time expend it with that generosity and nobleness of mind, as to show himself equally remote from a sordid parsimony, and a lavish, inconsiderate profusion of the good things he is entrusted with. This, surely, were admirable and praiseworthy. But that he should moreover, by an impartial exercise of his reason, and constant perusal of the sacred scriptures, endeavour to attain a right notion of the principles of natural and revealed religion. That he should with the concern of a true patriot have the interest of the public at heart, and omit no means of informing himself what may be prejudicial or advantageous to his country, in order to prevent the one, and promote the other. In fine, that by a constant application to the most severe and useful studies, by a strict observation of the rules of honour and virtue, by frequent and

serious reflections on the mistaken measures of the world, and the true end and happiness of mankind, he should in all respects qualify himself bravely to run the race that is set before him, to deserve the character of *great* and *good* in this life, and be ever happy hereafter. This were amazing, and almost incredible. Yet all this, and more than this, Sir, might I justly say of you; did either your modesty permit, or your character stand in need of it. I know it might deservedly be thought a vanity in me, to imagine that any thing coming from so obscure a hand as mine, could add a lustre to your reputation. But I am withal sensible how far I advance the interest of my own, by laying hold on this opportunity to make it known that I am admitted into some degree of intimacy with a person of your exquisite judgment. And with that view, I have ventured to make you an address of this nature, which the goodness I have ever experienced in you inclines me to hope, will meet with a favourable reception at your hands. Though I must own, I have your pardon to ask, for touching on what may, possibly, be offensive to a virtue you are possessed of in a very distinguishing degree. Excuse me, Sir, if it was out of my power to mention the name of Sir John Percivale without paying some tribute to that extraordinary and surprising merit, whereof I have so lively and affecting an idea, and which, I am sure, cannot be exposed in too full a light for the imitation of others. Of late, I have been agreeably employed in considering the most noble, pleasant, and comprehensive of all the senses. The fruit of that (labour shall I call it or) diversion is what I now present you with, in hopes it may give some entertainment to one who, in the midst of business and vulgar enjoyments, preserves a relish for the more refined pleasures of thought and reflection. My thoughts concerning vision have led me into some notions, so far out of the common road, that it had been improper to address them to one of a narrow and contracted genius. But you, Sir, being master of a large and free understanding, raised above the power of those prejudices that enslave the far greater part of mankind, may deservedly be thought a proper patron for an attempt of this kind. Add to this, that you are no less disposed to forgive, than qualified to discern, whatever faults may occur in it. Nor do I think you defective in any one point necessary to form an exact judgment on the most abstract and difficult things, so much as in a just confidence of your own abilities. And in this one instance, give me leave to say, you show a manifest weakness of judgment. With relation to the following essay, I shall only add, that I beg your pardon for laying a trifle of that nature in your way, at a time when you are engaged in the important affairs of the nation, and desire you to think, that I am with all sincerity and respect,

SIR,

Your most faithful and most humble servant,

GEORGE BERKELEY.

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AN ESSAY

TOWARDS

A NEW THEORY OF VISION.

I. My design is to show the manner wherein we perceive by sight, the distance, magnitude, and situation of *objects*. Also to consider the difference there is betwixt the *ideas* of sight and touch, and whether there be any *idea* common to both senses. In treating of all which, it seems to me, the writers of optics have proceeded on wrong principles.

II. It is, I think, agreed by all, that *distance* of itself, and immediately, cannot be seen. For *distance* being a line directed end-wise to the eye, it projects only one point in the fund of the eye. Which point remains invariably the same, whether the distance be longer or shorter.

III. I find it also acknowledged, that the estimate we make of the distance of *objects* considerably remote, is rather an act of judgment grounded on *experience* than of *sense*. For example, when I perceive a great number of intermediate *objects*, such as houses, fields, rivers, and the like, which I have experienced to take up a considerable space; I thence form a judgment or conclusion, that the *object* I see beyond them is at a great distance. Again, when an *object* appears faint and small, which, at a near distance, I have experienced to make a vigorous and large appearance; I instantly conclude it to be far off. And this, it is evident, is the result of *experience;* without which, from the faintness and littleness, I should not have inferred any thing concerning the distance of *objects*.

IV. But when an *object* is placed at so near a distance, as that the interval between the eyes bears any sensible proportion to it, it is the received opinion that the two *optic axes* (the fancy that we see only with one eye at once being exploded) concurring at the *object*, do there make an *angle*, by means of which, according as it is greater or lesser, the *object* is perceived to be nearer or further off.

V. Betwixt which, and the foregoing manner of estimating distance, there is this remarkable difference. That whereas there was no apparent, necessary connexion between small dis-

tance and a large and strong appearance, or between great distance, and a little and faint appearance. Yet there appears a very necessary connexion between an obtuse angle and near distance, and an acute angle and further distance. It does not in the least depend upon experience, but may be evidently known by any one before he had experienced it, that the nearer the concurrence of the *optic axes*, the greater the *angle*, and the remoter their concurrence is, the lesser will be the *angle* comprehended by them.

VI. There is another way, mentioned by the optic writers, whereby they will have us judge of those distances, in respect of which, the breadth of the *pupil* hath any sensible bigness. And that is the greater or lesser divergency of the rays, which, issuing from the visible point, do fall on the *pupil:* that point being judged nearest, which is seen by most diverging rays; and that remoter, which is seen by less diverging rays. And so on, the apparent distance still increasing, as the divergency of the rays decreases, till at length it becomes infinite, when the rays that fall on the *pupil* are to sense parallel. And after this manner it is said we perceive distances when we look only with one eye.

VII. In this case also, it is plain we are not beholding to ex perience: it being a certain, necessary truth, that the nearer the direct rays falling on the eye approach to a *parallelism*, the further off is the point of their intersection, or the visible point from whence they flow.

VIII. I have here set down the common, current accounts that are given of our perceiving near distances by sight, which, though they are unquestionably received for true by *mathematicians*, and accordingly made use of by them in determining the apparent places of *objects*, do, nevertheless, seem to me very unsatisfactory: and that for these following reasons:—

IX. *First*, It is evident that when the mind perceives any *idea*, not immediately and of itself, it must be by the means of some other *idea*. Thus, for instance, the passions which are in the mind of another, are of themselves to me invisible. I may nevertheless perceive them by sight, though not immediately, yet by means of the colours they produce in the countenance. We do often see shame or fear in the looks of a man, by perceiving the changes of his countenance to red or pale.

X. Moreover it is evident, that no *idea* which is not itself perceived, can be to me the means of perceiving any other *idea*. If I do not perceive the redness or paleness of a man's face themselves, it is impossible I should perceive by them the passions which are in his mind.

XI. Now from Sect. II., it is plain that distance is in its own nature imperceivable, and yet it is perceived by sight. It remains, therefore, that it be brought into view by means of some other *idea* that is itself immediately perceived in the act of *vision*.

XII. But those *lines* and *angles*, by means whereof *mathematicians* pretend to explain the perception of distance, are themselves not at all perceived, nor are they, in truth, ever thought of by those unskilful in optics. I appeal to any one's experience, whether, upon sight of an *object*, he compute its distance by the bigness of the *angle* made by the meeting of the two *optic axes*? Or whether he ever think of the greater or lesser divergency of the rays, which arrive from any point to his *pupil*? Nay, whether it be not perfectly impossible for him to perceive by sense the various angles wherewith the rays, according to their greater or lesser divergence, do fall on his eye. Every one is himself the best judge of what he perceives, and what not. In vain shall all the *mathematicians* in the world tell me, that I perceive certain *lines* and *angles* which introduce into my mind the various *ideas* of *distance*; so long as I myself am conscious of no such thing.

XIII. Since, therefore, those *angles* and *lines* are not themselves perceived by sight, it follows from Sect. x., that the mind does not by them judge of the distance of *objects*.

XIV. Secondly, the truth of this assertion will be yet further evident to any one that considers those *lines* and *angles* have no real existence in nature, being only an *hypothesis* framed by *mathematicians*, and by them introduced into *optics*, that they might treat of that science in a *geometrical* way.

XV. The third and last reason I shall give for my rejecting that doctrine is, that though we should grant the real existence of those *optic angles*, &c., and that it was possible for the mind to perceive them; yet these principles would not be found sufficient to explain the phenomena of *distance*. As shall be shown hereafter.

XVI. Now, it being already shown that distance is suggested to the mind by the mediation of some other *idea* which is itself perceived in the act of seeing. It remains that we inquire what *ideas* or *sensations* there be that attend *vision*, unto which we may suppose the *ideas* of distance are connected, and by which they are introduced into the mind. And first, it is certain by experience, that when we look at a near *object* with both eyes, according as it approaches or recedes from us, we alter the disposition of our eyes, by lessening or widening the interval between the *pupils*. This disposition or turn of the eyes is attended with a sensation, which seems to me, to be that which in this case brings the *idea* of greater or lesser distance into the mind.

XVII. Not that there is any natural or necessary connexion between the sensation we perceive by the turn of the eyes, and greater or lesser distance. But because the mind has by constant *experience* found the different sensations corresponding to the different dispositions of the eyes, to be attended each with a different

degree of distance in the *object:* there has grown an habitual or customary connexion, between those two sorts of *ideas.* So that the mind no sooner perceives the sensation arising from the different turn it gives the eyes, in order to bring the *pupils* nearer or further asunder, but it withal perceives the different *idea* of distance which was wont to be connected with that sensation. Just as upon hearing a certain sound, the *idea* is immediately suggested to the understanding, which custom had united with it.

XVIII. Nor do I see, how I can easily be mistaken in this matter. I know evidently that distance is not perceived of itself. That by consequence, it must be perceived by means of some other *idea* which is immediately perceived, and varies with the different degrees of distance. I know also that the sensation arising from the turn of the eyes is of itself immediately perceived, and various degrees thereof are connected with different distances: which never fail to accompany them into my mind, when I view an *object* distinctly with both eyes, whose distance is so small, that in respect of it the interval between the eyes has any considerable magnitude.

XIX. I know it is a received opinion, that by altering the disposition of the eyes, the mind perceives whether the angle of the *optic axes* is made greater or lesser. And that accordingly by a kind of *natural geometry,* it judges the point of their intersection to be nearer, or further off. But that this is not true, I am convinced by my own experience. Since I am not conscious that I make any such use of the perception I have by the turn of my eyes. And for me to make those judgments, and draw those conclusions from it, without knowing that I do so, seems altogether incomprehensible.

XX. From all which it plainly follows, that the judgment we make of the distance of an *object,* viewed with both eyes, is entirely the *result of experience.* If we had not constantly found certain sensations arising from the various disposition of the eyes, attended with certain degrees of distance, we should never make those sudden judgments from them, concerning the distance of *objects*; no more than we would pretend to judge of a man's thoughts, by his pronouncing words we had never heard before.

XXI. Secondly, an *object* placed at a certain distance from the eye, to which the breadth of the *pupil* bears a considerable proportion, being made to approach, is seen more confusedly. And the nearer it is brought, the more confused appearance it makes. And this being found constantly to be so, there arises in the mind an *habitual* connexion between the several degrees of confusion and distance. The greater confusion still implying the lesser distance, and the lesser confusion, the greater distance of the *object.*

XXII. This confused appearance of the *object,* doth therefore

seem to me to be the *medium*, whereby the mind judges of distance in those cases, wherein the most approved writers of optics will have it judge, by the different divergency with which the rays flowing from the radiating point fall on the *pupil*. No man, I believe, will pretend to see or feel those imaginary angles, that the rays are supposed to form according to their various inclinations on his eye. But he cannot choose seeing whether the *object* appear more or less confused. It is therefore a manifest consequence from what has been demonstrated, that instead of the greater or less divergency of the rays, the mind makes use of the greater or lesser confusedness of the appearance, thereby to determine the apparent place of an *object*.

XXIII. Nor doth it avail to say, there is not any necessary connexion between confused *vision*, and distance, great or small. For I ask any man, what necessary connexion he sees between the redness of a blush and shame? and yet no sooner shall he behold that colour to arise in the face of another, but it brings into his mind the *idea* of that passion which has been observed to accompany it.

XXIV. What seems to have misled the writers of optics in this matter is, that they imagine men judge of distance, as they do of a conclusion in mathematics: betwixt which and the premises, it is indeed absolutely requisite there be an apparent, necessary connexion. But it is far otherwise, in the sudden judgments men make of distance. We are not to think that brutes and children, or even grown reasonable men, whenever they perceive an *object* to approach, or depart from them, do it by virtue of *geometry* and *demonstration*.

XXV. That one *idea* may suggest another to the mind, it will suffice that they have been observed to go together: without any demonstration of the necessity of their coexistence, or without so much as knowing what it is that makes them so to coexist. Of this there are innumerable instances, of which no one can be ignorant.

XXVI. Thus greater confusion having been constantly attended with nearer distance, no sooner is the former *idea* perceived, but it suggests the latter to our thoughts. And if it had been the ordinary course of nature, that the further off an *object* were placed, the more confused it should appear; it is certain, the very same perception that now makes us think an *object* approaches, would then have made us to imagine it went further off. That perception, abstracting from *custom* and *experience*, being equally fitted to produce the *idea* of great distance, or small distance, or no distance at all.

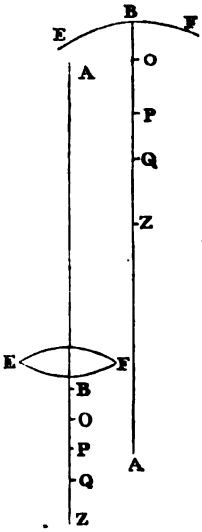
XXVII. Thirdly, an *object* being placed at the distance above specified, and brought nearer to the eye, we may nevertheless prevent, at least for some time, the appearance's growing more

confused, by straining the eye. In which case, that sensation supplies the place of confused *vision*, in aiding the mind to judge of the distance of the *object*. It being esteemed so much the nearer, by how much the effort, or straining of the eye in order to distinct *vision*, is greater.

XXVIII. I have here set down those sensations or *ideas* that seem to me to be the constant and general occasions of introducing into the mind the different *ideas* of near distance. It is true in most cases, that divers other circumstances contribute to frame our *idea* of distance, viz., the particular number, size, kind, &c., of the things seen. Concerning which, as well as all other the forementioned occasions which suggest distance, I shall only observe, they have none of them, in their own nature, any relation or connexion with it: nor is it possible they should ever signify the various degrees thereof, otherwise than as by *experience* they have been found to be connected with them.

XXIX. I shall proceed upon these principles to account for a phenomenon, which has hitherto strangely puzzled the writers of optics, and is so far from being accounted for by any of their *theories of vision*, that it is, by their own confession, plainly repugnant to them; and of consequence, if nothing else could be objected, were alone sufficient to bring their credit in question. The whole difficulty I shall lay before you in the words of the learned Doctor Barrow, with which he concludes his optic lectures.

" Hæc sunt, quæ circa partem opticæ præcipuè mathematicam dicenda mihi suggessit meditatio. Circa reliquas (quæ φυσικώτεραι sunt, adeoque sæpiusculè pro certis principiis plausibiles conjecturas venditare necessum habent), nihil ferè quicquam admodum verisimile succurrit, à pervulgatis (ab iis, inquam, quæ Keplerus, Scheinerus, Cartesius, et post illos alii tradiderunt) alienum aut diversum. Atqui tacere malo, quàm toties oblatam cramben reponere. Proinde receptui cano; nec ita tamen ut prorsus discedam, anteaquàm improbam quandam difficultatem (pro sinceritate quam et vobis et veritati debeo minimè dissimulandam) in medium protulero, quæ doctrinæ nostræ, hactenus inculcatæ, se objicit adversam, ab eâ saltem nullam admittit solutionem. Illa, breviter, talis est: Lenti vel speculo cavo E B F exponatur punctum visibile A, ita distans, ut radii ex A manantes ex inflectione versus axem A B cogantur. Sitque radiationis limes (seu puncti A imago, qualem supra

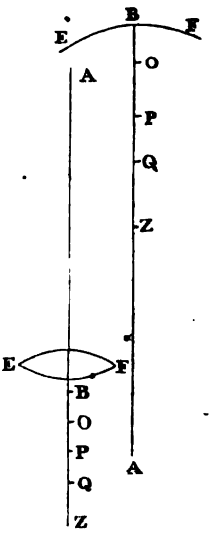


passim statuimus) punctum Z. Inter hoc autem et inflectentis verticem B uspiam positus concipiatur oculus. Quæri jam potest, ubi loci debeat punctum A apparere? Retrorsùm ad punctum Z videri non fert natura (cùm omnis impressio sensum afficiens proveniat a partibus A) ac experientia reclamat. Nostris autem è placitis consequi videtur, ipsum ad partes anticas apparens, ab intervallo longissimè dissito, (quod et maximum sensibile quodvis intervallum quodammodo exsuperet) apparere. Cùm enim quò radiis minùs divergentibus attingitur objectum, eò (seclusis utique prænotionibus et præjudiciis) longiùs abesse sentiatur; et quod parallelos ad oculum radios projicit, remotissimè positum æstimetur: exigere ratio videtur, ut quod convergentibus radiis apprehenditur, adhuc magis, si fieri posset, quoad apparentiam elongetur. Quin et circa casum hunc generatim inquiri possit, quidnam omnino sit, quod apparentem puncti A locum determinet, faciatque quòd constanti ratione nunc propius, nunc remotius appareat? Cui itidem dubio nihil quicquam ex hactenus dictorum *analogiâ* responderi posse videtur, nisi debere punctum A perpetuò longissimè semotum videri. Verùm experientia secùs attestatur, illud pro diversâ oculi inter puncta B, Z, positione variè distans, nunquam ferè (si unquam) longinquius ipso A liberè spectato, subindè verò multò propinquius apparere; quinimo, quò oculum appellentes radii magis convergunt, eò speciem objecti propiùs accedere. Nempe, si puncto B admoveatur oculus, suo (ad lentem) ferè nativo in loco conspicitur punctum A (vel æquè distans, ad speculum); ad O reductus oculus ejusce speciem appropinquantem cernit; ad P adhuc vicinius ipsum existimat; ac ità sensim, donec alicubi tandem, velut ad Q, constituto oculo objectum summè propinquum apparens, in meram confusionem incipiat evanescere. Quæ sanè cuncta rationibus atque decretis nostris repugnare videntur, aut cum iis saltem parum amicè conspirant. Neque nostram tantùm sententiam pulsat hoc experimentum, at ex æquo cæteras quas nôrim omnes: veterem imprimis ac vulgatam, nostræ præ reliquis affinem, ità convellere videtur, ut ejus vi coactus doctissimus A. Tacquetus isti principio (cui penè soli totam inædificaverat Captoptricam suam) ceu infido ac inconstanti renunciârit, adeoque suam ipse doctrinam labefactârit; id tamen, opinor, minimè facturus, si rem totam inspexisset penitiùs, atque difficultatis fundum attigisset. Apud me verò non ita pollet hæc, nec eousque præpollebit ulla difficultas, ut ab iis quæ manifestè rationi consentanea video, discedam; præsertim quum, ut hîc accidit, ejusmodi difficultas in singularis cujuspiam casûs disparitate fundetur. Nimirum in præsente casu peculiare quiddam, naturæ subtilitati involutum, delitescit, ægrè fortassis, nisi perfectiùs explorato videndi modo, detegendum. Circa quod nil, fateor, hactenus excogitare potui quod adblandiretur animo meo, nedum plane satisfaceret. Vobis

itaque nodum hunc, utinam feliciore conatu, resolvendum committo."

IN ENGLISH AS FOLLOWS:

"I have here delivered what my thoughts have suggested to me, concerning that part of optics which is more properly mathematical. As for the other parts of that science (which being rather physical, do consequently abound with plausible conjectures, instead of certain principles) there has in them scarce any thing occurred to my observation, different from what has been already said by Kepler, Scheinerus, Descartes, &c. And, methinks, I had better say nothing at all, than repeat that which has been so often said by others; I think it therefore high time to take my leave of this subject. But before I quit it for good and all, the fair and ingenuous dealing that I owe both to you and to truth, obliges me to acquaint you with a certain untoward difficulty, which seems directly opposite to the doctrine I have been hitherto inculcating, at least, admits of no solution from it. In short it is this. Before the double convex glass or concave speculum E B F, let the point A be placed, at such a distance that the rays proceeding from A, after refraction or reflection, be brought to unite somewhere in the ax A B. And suppose the point of union (i. e. the image of the point A, as hath been already set forth) to be Z; between which and B, the vertex of the glass or speculum, conceive the eye to be any where placed. The question now is, where the point A ought to appear. Experience shows, that it doth not appear behind at the point Z, and it were contrary to nature that it should; since all the impression which affects the sense comes from towards A. But from our tenets it should seem to follow, that it would appear before the eye at a vast distance off, so great as should in some sort surpass all sensible distance. For since, if we exclude all anticipations and prejudices, every *object* appears by so much the further off, by how much the rays it sends to the eye are less diverging; and that *object* is thought to be most remote, from which parallel rays proceed unto the eye; reason would make one think, that *object* should appear at yet a greater distance, which is seen by converging rays. Moreover it may in general be asked concerning this case, what it is that determines the apparent place of the point A, and maketh it to appear after a constant manner, sometimes nearer, at other times further off? To which doubt I see



nothing that can be answered agreeable to the principles we have laid down, except only that the point A ought always to appear extremely remote. But on the contrary, we are assured by experience, that the point A appears variously distant, according to the different situations of the eye between the points B and Z. And that it doth almost never (if at all) seem further off, than it would if it were beheld by the naked eye; but on the contrary, it doth sometimes appear much nearer. Nay, it is even certain, that by how much the rays falling on the eye do more converge, by so much the nearer does the *object* seem to approach. For the eye being placed close to the point B, the *object* A appears nearly in its own natural place, if the point B is taken in the glass, or at the same distance, if in the speculum. The eye being brought back to O, the *object* seems to draw near; and being come to P, it beholds it still nearer: and so on by little and little, till at length the eye being placed somewhere, suppose at Q, the *object* appearing extremely near, begins to vanish into mere confusion. All which doth seem repugnant to our principles; at least, not rightly to agree with them. Nor is our tenet alone struck at by this experiment, but likewise all others that ever came to my knowledge are every whit as much endangered by it. The ancient one especially (which is most commonly received, and comes nearest to mine) seems to be so effectually overthrown thereby, that the most learned Tacquet has been forced to reject that principle, as false and uncertain, on which alone he had built almost his whole Catoptrics, and consequently by taking away the foundation, hath himself pulled down the superstructure he had raised on it. Which nevertheless I do not believe he would have done, had he but considered the whole matter more thoroughly, and examined the difficulty to the bottom. But as for me, neither this, nor any other difficulty shall have so great an influence on me, as to make me renounce that which I know to be manifestly agreeable to reason. Especially when, as it here falls out, the difficulty is founded in the peculiar nature of a certain odd and particular case. For in the present case something peculiar lies hid, which being involved in the subtilty of nature, will perhaps hardly be discovered till such time as the manner of vision is more perfectly made known. Concerning which, I must own, I have hitherto been able to find out nothing, that has the least show of *probability*, not to mention *certainty*. I shall therefore leave this knot to be untied by you, wishing you may have better success in it than I have had."

XXX. The ancient and received principle, which Dr. Barrow here mentions as the main foundation of Tacquet's Catoptrics, is, that 'every visible point seen by reflection from a speculum, shall appear placed at the intersection of the reflected ray and the perpendicular of incidence:' which intersection in the present case

happening to be behind the eye, it greatly shakes the authority of that principle, whereon the aforementioned author proceeds throughout his whole catoptrics, in determining the apparent place of *objects* seen by reflection from any kind of speculum.

XXXI. Let us now see how this phenomenon agrees with our tenets. The eye the nearer it is placed to the point B in the above figures, the more distinct is the appearance of the *object*: but as it recedes to O, the appearance grows more confused; and at P it sees the *object* yet more confused; and so on, till the eye being brought back to Z, sees the *object* in the greatest confusion of all. Wherefore by Sect. XXI. the *object* should seem to approach the eye gradually, as it recedes from the point B, viz. at O it should (in consequence of the principle I have laid down in the aforesaid section) seem nearer than it did at B, and at P nearer than O, and at Q nearer than at P; and so on, till it quite vanishes at Z. Which is the very matter of fact, as any one that pleases may easily satisfy himself by experiment.

XXXII. This case is much the same, as if we should suppose an Englishman to meet a foreigner, who used the same words with the English, but in a direct contrary signification. The Englishman would not fail to make a wrong judgment of the *ideas* annexed to those sounds, in the mind of him that used them. Just so in the present case, the *object* speaks (if I may so say) with words that the eye is well acquainted with, viz. confusions of appearance; but whereas heretofore the greatest confusions were always wont to signify nearer distances, they have in this case a direct contrary signification, being connected with the greater distances. Whence it follows, that the eye must unavoidably be mistaken, since it will take the confusions in the sense it has been used to, which is directly opposed to the true.

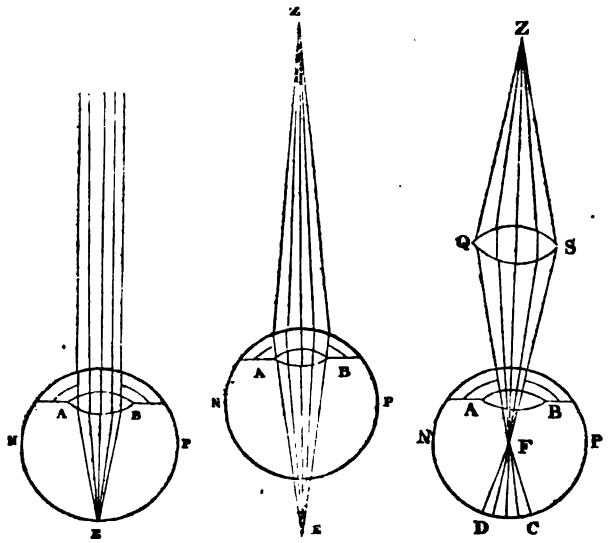
XXXIII. This phenomenon, as it entirely subverts the opinion of those who will have us judge of distance by lines and angles, on which supposition it is altogether inexplicable, so it seems to me no small confirmation of the truth of that principle whereby it is explained. But in order to a more full explication of this point, and to show how far the hypothesis of the mind's judging by the various divergency of rays may be of use in determining the apparent place of an *object*, it will be necessary to premise some few things, which are already well known to those who have any skill in dioptrics.

XXXIV. First, any radiating point is then distinctly seen, when the rays proceeding from it are, by the refractive power of the crystalline, accurately reunited in the retina, or fund of the eye. But if they are reunited, either before they are at retina, or after they have past it, then there is confused vision.

XXXV. Secondly, suppose in the adjacent figures N P represent an eye duly framed, and retaining its natural figure. In

fig. 1, the rays falling nearly parallel on the eye, are by the crystalline A B refracted, so as their focus, or point of union F, falls exactly on the retina. But if the rays fall sensibly diverging on the eye, as in fig. 2, then their focus falls beyond the retina: or if the rays are made to converge by the lens Q S, before they come at the eye, as in fig. 3, their focus F will fall

Fig. 1. Fig. 2. Fig. 3.



before the retina. In which two last cases, it is evident from the foregoing section, that the appearance of the point Z is confused. And by how much the greater is the convergency or divergency of the rays falling on the pupil, by so much the further will the point of their reunion be from the retina, either before or behind it, and consequently the point Z will appear by so much the more confused. And this, by the bye, may show us the difference between confused and faint vision. Confused vision is, when the rays proceeding from each distinct point of the *object*, are not accurately re-collected in one corresponding point of the retina, but take up some space thereon. So that rays from different points become mixed and confused together. This is opposed to distinct vision, and attends near objects. Faint vision is, when by reason of the distance of the object, or grossness of the interjacent medium, few rays arrive from the object to the eye. This is opposed to vigorous, or clear vision, and attends remote objects. But to return.

XXXVI. The eye, or (to speak truly) the mind perceiving only the confusion itself, without ever considering the cause from

which it proceeds, doth constantly annex the same degree of distance to the same degree of confusion. Whether that confusion be occasioned by converging or by diverging rays, it matters not. Whence it follows, that the eye viewing the object Z through the glass Q S (which by refraction causeth the rays Z Q, Z S, &c., to converge), should judge it to be at such a nearness, at which if it were placed, it would radiate on the eye with rays diverging to that degree, as would produce the same confusion which is now produced by converging rays, i. e. would cover a portion of the retina equal to D C: vide fig. 3, supra. But then this must be understood (to use Dr. Barrow's phrase) *seclusis prænotionibus et præjudiciis*, in case we abstract from all other circumstances of vision, such as the figure, size, faintness, &c., of the visible objects; all which do ordinarily concur to form our idea of distance, the mind having by frequent experience observed their several sorts or degrees to be connected with various distances.

XXXVII. It plainly follows from what hath been said, that a person perfectly purblind (i. e. that could not see an object distinctly, but when placed close to his eye) would not make the same wrong judgment that others do, in the forementioned case. For, to him, greater confusions constantly suggesting greater distances, he must, as he recedes from the glass, and the object grows more confused, judge it to be at a further distance; contrary to what they do, who have had the perception of the objects growing more confused, connected with the idea of approach.

XXXVIII. Hence also it doth appear, there may be good use of computation by lines and angles in optics; not that the mind judgeth of distance immediately by them, but because it judgeth by somewhat which is connected with them, and to the determination whereof they may be subservient. Thus the mind judging of the distance of an object by the confusedness of its appearance, and this confusedness being greater or lesser to the naked eye, according as the object is seen by rays more or less diverging, it follows that a man may make use of the divergency of the rays in computing the apparent distance, though not for its own sake, yet on account of the confusion with which it is connected. But, so it is, the confusion itself is entirely neglected by mathematicians, as having no necessary relation with distance, such as the greater or lesser angles of divergency are conceived to have. And these (especially for that they fall under mathematical computation) are alone regarded, in determining the apparent places of objects, as though they were the sole and immediate cause of the judgments the mind makes of distance. Whereas, in truth, they should not at all be regarded in themselves, or any otherwise, than as they are supposed to be the cause of confused vision.

XXXIX. The not considering of this has been a fundamental and perplexing oversight. For proof whereof, we need go no further than the case before us. It having been observed, that the most diverging rays brought into the mind the idea of nearest distance, and that still, as the divergency decreased, the distance increased; and it being thought, the connexion between the various degrees of divergency and distance was immediate, this naturally leads one to conclude, from an ill grounded analogy, that converging rays shall make an object appear at an immense distance: and that, as the convergency increases, the distance (if it were possible) should do so likewise. That this was the cause of Dr. Barrow's mistake, is evident from his own words which we have quoted. Whereas had the learned Doctor observed, that diverging and converging rays, how opposite soever they may seem, do nevertheless agree in producing the same effect, to wit, confusedness of vision, greater degrees whereof are produced indifferently, either as the divergency or convergency of the rays increaseth; and that it is by this effect, which is the same in both, that either the divergency or convergency is perceived by the eye;—I say had he but considered this, it is certain he would have made a quite contrary judgment, and rightly concluded, that those rays which fall on the eye with greater degrees of convergency should make the object from whence they proceed, appear by so much the nearer. But it is plain, it was impossible for any man to attain to a right notion of this matter, so long as he had regard only to lines and angles, and did not apprehend the true nature of vision, and how far it was of mathematical consideration.

XL. Before we dismiss this subject, it is fit we take notice of a query relating thereto, proposed by the ingenious Mr. Molyneux, in his treatise of Dioptrics,* where, speaking of this difficulty, he has these words: "And so he (i. e. Dr. Barrow) leaves this difficulty to the solution of others, which I (after so great an example) shall do likewise; but with the resolution of the same admirable author of not quitting the evident doctrine which we have before laid down, for determining the *locus objecti*, on account of being pressed by one difficulty, which seems inexplicable till a more intimate knowledge of the visive faculty be obtained by mortals. In the mean time, I propose it to the consideration of the ingenious, whether the *locus apparens* of an object placed as in this 9th Section, be not as much before the eye, as the distinct base is behind the eye." To which query we may venture to answer in the negative. For in the present case, the rule for determining the distance of the distinct base or respective focus from the glass is this: As the difference between the distance of the object and focus is to the focus or focal length,

* Par. I. Prop. xxxi. Sect. 9.

so the distance of the object from the glass is to the distance of the respective focus or distinct base from the glass.* Let us now suppose the object to be placed at the distance of the focal length, and one half of the focal length from the glass, and the eye close to the glass, hence it will follow by the rule, that the distance of the distinct base behind the eye is double the true distance of the object before the eye. If therefore Mr. Molyneux's conjecture held good, it would follow that the eye should see the object twice as far off as it really is; and in other cases at three or four times its due distance, or more. But this manifestly contradicts experience, the object never appearing, at furthest, beyond its due distance. Whatever therefore is built on this supposition (vid. Corol. 1. Prop. lvii. ibid.) comes to the ground along with it.

XLI. From what hath been premised, it is a manifest consequence, that a man born blind, being made to see, would, at first, have no idea of distance by sight; the sun and stars, the remotest objects as well as the nearer, would all seem to be in his eye, or rather in his mind. The objects intromitted by sight, would seem to him (as in truth they are) no other than a new set of thoughts or sensations, each whereof is as near to him, as the perceptions of pain or pleasure, or the most inward passions of his soul. For our judging objects perceived by sight to be at any distance, or without the mind, is (vide Sect. XXVIII.) entirely the effect of experience, which one in those circumstances could not yet have attained to.

XLII. It is indeed otherwise upon the common supposition, that men judge of distance by the angle of the optic axes, just as one in the dark, or a blind man by the angle comprehended by two sticks, one whereof he held in each hand. For if this were true, it would follow that one blind from his birth being made to see, should stand in need of no new experience, in order to perceive distance by sight. But that this is false, has, I think, been sufficiently demonstrated.

XLIII. And perhaps upon a strict inquiry, we shall not find that even those, who from their birth have grown up in a continued habit of seeing, are irrecoverably prejudiced on the other side, to wit, in thinking what they see to be at a distance from them. For at this time it seems agreed on all hands, by those who have had any thoughts of that matter, that colours, which are the proper and immediate object of sight, are not without the mind. But then it will be said, by sight we have also the ideas of extension, and figure, and motion; all which may well be thought without, and at some distance from the mind, though colour should not. In answer to this, I appeal to any man's experience, whether the visible extension of any object doth not

* Molyneux Diopt. Par. I. Prop. v.

appear as near to him, as the colour of that object; nay, whether they do not both seem to be in the very same place. Is not the extension we see coloured, and is it possible for us, so much as in thought, to separate and abstract colour from extension? Now, where the extension is, there surely is the figure, and there the motion too. I speak of those which are perceived by sight.

XLIV. But for a fuller explication of this point, and to show that the immediate objects of sight are not so much as the ideas or resemblances of things placed at a distance, it is requisite that we look nearer into the matter, and carefully observe what is meant in common discourse, when one says, that which he sees is at a distance from him. Suppose, for example, that looking at the moon I should say it were fifty or sixty semidiameters of the earth distant from me. Let us see what moon this is spoken of: it is plain it cannot be the visible moon, or any thing like the visible moon, or that which I see, which is only a round, luminous plain, of about thirty visible points in diameter. For in case I am carried from the place where I stand directly towards the moon, it is manifest the object varies, still as I go on; and by the time that I am advanced fifty or sixty semidiameters of the earth, I shall be so far from being near a small, round, luminous flat, that I shall perceive nothing like it; this object having long since disappeared, and if I would recover it, it must be by going back to the earth from whence I set out. Again, suppose I perceive by sight the faint and obscure idea of something, which I doubt whether it be a man, or a tree, or a tower, but judge it to be at the distance of about a mile. It is plain I cannot mean, that what I see is a mile off, or that it is the image or likeness of any thing which is a mile off, since that every step I take towards it, the appearance alters, and from being obscure, small, and faint, grows clear, large, and vigorous. And when I come to the mile's end, that which I saw first is quite lost, neither do I find any thing in the likeness of it.

XLV. In these and the like instances, the truth of the matter stands thus: having of a long time experienced certain ideas, perceivable by touch, as distance, tangible figure, and solidity, to have been connected with certain ideas of sight, I do, upon perceiving these ideas of sight, forthwith conclude what tangible ideas are, by the wonted ordinary course of nature, like to follow. Looking at an object, I perceive a certain visible figure and colour, with some degree of faintness and other circumstances, which from what I have formerly observed, determine me to think, that if I advance forward so many paces or miles, I shall be affected with such and such ideas of touch: so that in truth and strictness of speech, I neither see distance itself, nor any thing that I take to be at a distance. I say, neither distance, nor things placed at a distance are themselves, or their ideas, truly perceived

by sight. This I am persuaded of, as to what concerns myself; and I believe whoever will look narrowly into his own thoughts, and examine what he means by saying, he sees this or that thing at a distance, will agree with me, that what he sees only suggests to his understanding, that after having passed a certain distance, to be measured by the motion of his body, which is perceivable by touch, he shall come to perceive such and such tangible ideas which have been usually connected with such and such visible ideas. But that one might be deceived by these suggestions of sense, and that there is no necessary connexion between visible and tangible ideas suggested by them, we need go no further than the next looking-glass or picture to be convinced. Note, that when I speak of tangible ideas, I take the word idea for any the immediate object of sense, or understanding, in which large signification it is commonly used by the moderns.

XLVI. From what we have shown it is a manifest consequence, that the ideas of space, outness, and things placed at a distance, are not, strictly speaking, the object of sight; they are not otherwise perceived by the eye than by the ear. Sitting in my study I hear a coach drive along the street; I look through the casement and see it; I walk out and enter into it; thus, common speech would incline one to think, I heard, saw, and touched the same thing, to wit, the coach. It is nevertheless certain, the ideas intromitted by each sense are widely different, and distinct from each other; but having been observed constantly to go together, they are spoken of as one and the same thing. By the variation of the noise I perceive the different distances of the coach, and know that it approaches before I look out. Thus by the ear I perceive distance, just after the same manner as I do by the eye.

XLVII. I do not nevertheless say, I hear distance in like manner as I say that I see it, the ideas perceived by hearing not being so apt to be confounded with the ideas of touch, as those of sight are; so likewise a man is easily convinced that bodies and external things are not properly the object of hearing, but only sounds, by the mediation whereof the idea of this or that body or distance is suggested to his thoughts. But then one is with more difficulty brought to discern the difference there is betwixt the ideas of sight and touch: though it be certain, a man no more sees or feels the same thing, than he hears and feels the same thing.

XLVIII. One reason of which seems to be this: It is thought a great absurdity to imagine, that one and the same thing should have any more than one extension, and one figure. But the extension and figure of a body, being let into the mind two ways, and that indifferently, either by sight or touch, it seems to follow that we see the same extension, and the same figure which we feel.

XLIX. But if we take a close and accurate view of things, it must be acknowledged that we never see and feel one and the same object. That which is seen is one thing, and that which is felt is another; if the visible figure and extension be not the same with the tangible figure and extension, we are not to infer that one and the same thing has divers extensions. The true consequence is, that the objects of sight and touch are two distinct things. It may perhaps require some thought rightly to conceive this distinction. And the difficulty seems not a little increased, because the combination of visible ideas hath constantly the same name as the combination of tangible ideas wherewith it is connected: which doth of necessity arise from the use and end of language.

L. In order therefore to treat accurately and unconfusedly of vision, we must bear in mind that there are two sorts of objects apprehended by the eye, the one primarily and immediately, the other secondarily and by intervention of the former. Those of the first sort neither are, nor appear to be, without the mind, or at any distance off; they may indeed grow greater or smaller, more confused, or more clear, or more faint, but they do not, cannot approach or recede from us. Whenever we say an object is at a distance, whenever we say it draws near, or goes further off, we must always mean it of the latter sort, which properly belong to the touch, and are not so truly perceived, as suggested by the eye in like manner as thoughts by the ear.

LI. No sooner do we hear the words of a familiar language pronounced in our ears, but the ideas corresponding thereto present themselves to our minds; in the very same instant the sound and the meaning enter the understanding: so closely are they united, that it is not in our power to keep out the one, except we exclude the other also. We even act in all respects as if we heard the very thoughts themselves. So likewise the secondary objects, or those which are only suggested by sight, do often more strongly affect us, and are more regarded than the proper objects of that sense, along with which they enter into the mind, and with which they have a far more strict connexion, than ideas have with words. Hence it is, we find it so difficult to discriminate between the immediate and mediate objects of sight, and are so prone to attribute to the former, what belongs only to the latter. They are, as it were, most closely twisted, blended, and incorporated together. And the prejudice is confirmed and riveted in our thoughts by a long tract of time, by the use of language and want of reflection. However, I believe any one that shall attentively consider what we have already said, and shall say upon this subject before we have done, (especially if he pursue it in his own thoughts) may be able to deliver himself from that prejudice. Sure I am, it is worth some

attention to whoever would understand the true nature of vision.

LII. I have now done with distance, and proceed to show how it is, that we perceive by sight the magnitude of objects. It is the opinion of some that we do it by angles, or by angles in conjunction with distance. But neither angles nor distance being perceivable by sight, and the things we see being in truth at no distance from us, it follows, that as we have shown lines and angles not to be the medium the mind makes use of in apprehending the apparent place, so neither are they the medium whereby it apprehends the apparent magnitude of objects.

LIII. It is well known, that the same extension at a near distance shall subtend a greater angle, and at a further distance a lesser angle. And by this principle, we are told, the mind estimates the magnitude of an object, comparing the angle under which it is seen with its distance, and thence inferring the magnitude thereof. What inclines men to this mistake (beside the humour of making one see by geometry) is, that the same perceptions or ideas which suggest distance, do also suggest magnitude. But if we examine it, we shall find they suggest the latter, as immediately as the former. I say they do not first suggest distance, and then leave it to the judgment to use that as a medium, whereby to collect the magnitude; but they have as close and immediate a connexion with the magnitude, as with the distance; and suggest magnitude as independently of distance, as they do distance independently of magnitude. All which will be evident to whoever considers what hath been already said, and what follows.

LIV. It hath been shown, there are two sorts of objects apprehended by sight; each whereof hath its distinct magnitude, or extension. The one properly tangible, i. e. to be perceived and measured by touch, and not immediately falling under the sense of seeing: the other, properly and immediately visible, by mediation of which the former is brought in view. Each of these magnitudes are greater or lesser, according as they contain in them more or fewer points; they being made up of points or minimums. For, whatever may be said of extension in abstract, it is certain, sensible extension is not infinitely divisible. There is a *minimum tangibile*, and a *minimum visibile*, beyond which sense cannot perceive. This every one's experience will inform him.

LV. The magnitude of the object which exists without the mind, and is at a distance, continues always invariably the same: but the visible object still changing as you approach to, or recede from the tangible object, it hath no fixed and determinate greatness. Whenever therefore we speak of the magnitude of any thing, for instance a tree or a house, we must mean the tangible magnitude; otherwise there can be nothing steady and free from ambiguity spoken of it. But though the tangible and visible

magnitude in truth belong to two distinct objects, I shall nevertheless (especially since those objects are called by the same name and are observed to coexist) to avoid tediousness and singularity of speech, sometimes speak of them as belonging to one and the same thing.

LVI. Now in order to discover by what means the magnitude of tangible objects is perceived by sight, I need only reflect on what passes in my own mind, and observe what those things be which introduce the ideas of greater or lesser into my thoughts, when I look on any object. And these I find to be, first, the magnitude or extension of the visible object, which being immediately perceived by sight, is connected with that other which is tangible, and placed at a distance; secondly, the confusion or distinctness: and thirdly, the vigorousness or faintness of the aforesaid visible appearance. *Cæteris paribus*, by how much the greater or lesser the visible object is, by so much the greater or lesser do I conclude the tangible object to be. But be the idea immediately perceived by sight never so large, yet if it be withal confused, I judge the magnitude of the thing to be but small: if it be distinct and clear, I judge it greater: and if it be faint, I apprehend it to be yet greater. What is here meant by confusion and faintness, hath been explained in Sect. XXXV.

LVII. Moreover the judgments we make of greatness do, in like manner, as those of distance, depend on the disposition of the eye; also on the figure, number, and situation of objects, and other circumstances that have been observed to attend great or small tangible magnitudes. Thus, for instance, the very same quantity of visible extension, which in the figure of a tower doth suggest the idea of great magnitude, shall in the figure of a man suggest the idea of much smaller magnitude. That this is owing to the experience we have had of the usual bigness of a tower and a man, no one, I suppose, need be told.

LVIII. It is also evident, that confusion or faintness have no more a necessary connexion with little or great magnitude, than they have with little or great distance. As they suggest the latter, so they suggest the former to our mind. And by consequence, if it were not for experience, we should no more judge a faint or confused appearance to be connected with great or little magnitude, than we should that it was connected with great or little distance.

LIX. Nor will it be found, that great or small visible magnitude hath any necessary relation to great or small tangible magnitude; so that the one may certainly be inferred from the other. But, before we come to the proof of this, it is fit we consider the difference there is betwixt the extension and figure which is the proper object of touch, and that other which is termed visible; and how the former is principally, though not immediately, taken

notice of, when we look at any object. This has been before mentioned, but we shall here inquire into the cause thereof. We regard the objects that environ us, in proportion as they are adapted to benefit or injure our own bodies, and thereby produce in our minds the sensations of pleasure or pain. Now bodies operating on our organs by an immediate application, and the hurt or advantage arising therefrom depending altogether on the tangible, and not at all on the visible, qualities of any object; this is a plain reason why those should be regarded by us much more than these: and for this end the visive sense seems to have been bestowed on animals, to wit, that by the perception of visible ideas (which in themselves are not capable of affecting, or any wise altering the frame of their bodies) they may be able to foresee (from the experience they have had, what tangible ideas are connected with such and such visible ideas) the damage or benefit which is like to ensue, upon the application of their own bodies to this or that body which is at a distance: which foresight how necessary it is to the preservation of an animal, every one's experience can inform him. Hence it is, that when we look at an object, the tangible figure and extension thereof are principally attended to; whilst there is small heed taken of the visible figure and magnitude, which, though more immediately perceived, do less concern us, and are not fitted to produce any alteration in our bodies.

LX. That the matter of fact is true, will be evident to any one, who considers that a man placed at ten foot distance, is thought as great, as if he were placed at the distance of only five foot: which is true, not with relation to the visible, but tangible greatness of the object. The visible magnitude being far greater at one station than it is at the other.

LXI. Inches, feet, &c., are settled, stated lengths, whereby we measure objects, and estimate their magnitude. We say, for example, an object appears to be six inches or six foot long. Now, that this cannot be meant of visible inches, &c., is evident, because a visible inch is itself no constant, determinate magnitude, and cannot therefore serve to mark out and determine the magnitude of any other thing. Take an inch marked upon a ruler; view it successively, at the distance of half a foot, a foot, a foot and a half, &c., from the eye: at each of which, and at all the intermediate distances, the inch shall have a different visible extension, i. e. there shall be more or fewer points discerned in it. Now I ask, which of all these various extensions is that stated, determinate one, that is agreed on for a common measure of other magnitudes? No reason can be assigned, why we should pitch on one, more than another: and except there be some invariable, determinate extension fixed on to be marked by the word inch, it is plain, it can be used to little purpose; and to say, a thing con-

tains this or that number of inches, shall imply no more than that it is extended, without bringing any particular idea of that extension into the mind. Further, an inch and a foot, from different distances, shall both exhibit the same visible magnitude, and yet at the same time you shall say, that one seems several times greater than the other. From all which it is manifest, that the judgments we make of the magnitude of objects by sight, are altogether in reference to their tangible extension. Whenever we say an object is great or small, of this or that determinate measure, I say, it must be meant of the tangible, and not the visible extension, which, though immediately perceived, is nevertheless little taken notice of.

LXII. Now, that there is no necessary connexion between these two distinct extensions, is evident from hence; because our eyes might have been framed in such a manner, as to be able to see nothing but what were less than the *minimum tangibile*. In which case, it is not impossible we might have perceived all the immediate objects of sight, the very same that we do now: but unto those visible appearances, there would not be connected those different tangible magnitudes, that are now. Which shows, the judgments we make of the magnitude of things placed at a distance, from the various greatness of the immediate objects of sight, do not arise from any essential or necessary, but only a customary tie, which has been observed between them.

LXIII. Moreover, it is not only certain, that any idea of sight might not have been connected with this or that idea of touch, which we now observe to accompany it; but also, that the greater visible magnitudes might have been connected with, and introduced into our minds lesser tangible magnitudes, and the lesser visible magnitudes greater tangible magnitudes. Nay, that it actually is so, we have daily experience; that object which makes a strong and large appearance, not seeming near so great as another, the visible magnitude whereof is much less, but more faint, and the appearance upper, or which is the same thing painted lower on the *retina*, which faintness and situation suggest both greater magnitude and greater distance.

LXIV. From which, and from Sect. LVII. LVIII., it is manifest, that as we do not perceive the magnitude of objects immediately by sight, so neither do we perceive them by the mediation of any thing which has a necessary connexion with them. Those ideas that now suggest unto us the various magnitudes of external objects, before we touch them, might possibly have suggested no such thing: or they might have signified them, in a direct contrary manner; so that the very same ideas, on the perception whereof we judge an object to be small, might as well have served to make us conclude it great. Those ideas being in their own nature equally fitted to bring into our minds

the idea of small, or great, or no size at all of outward objects; just as the words of any language are in their own nature indifferent to signify this or that thing, or nothing at all.

LXV. As we see distance, so we see magnitude. And we see both, in the same way that we see shame or anger in the looks of a man. Those passions are themselves invisible: they are nevertheless let in by the eye along with colours and alterations of countenance, which are the immediate object of vision, and which signify them for no other reason, than barely because they have been observed to accompany them: without which experience, we should no more have taken blushing for a sign of shame, than of gladness.

LXVI. We are nevertheless exceeding prone to imagine those things, which are perceived only by the mediation of others, to be themselves the immediate objects of sight; or, at least, to have in their own nature a fitness to be suggested by them, before ever they had been experienced to coexist with them. From which prejudice every one, perhaps, will not find it easy to emancipate himself, by any the clearest convictions of reason. And there are some grounds to think, that if there was one only invariable and universal language in the world, and that men were born with the faculty of speaking it, it would be the opinion of many, that the ideas in other men's minds were properly perceived by the ear, or had at least a necessary and inseparable tie with the sounds that were affixed to them. All which seems to arise from a want of due application of our discerning faculty, thereby to discriminate between the ideas that are in our understandings, and consider them apart from each other; which would preserve us from confounding those that are different, and make us see what ideas do, and what do not include or imply this or that other idea.

LXVII. There is a celebrated phenomenon, the solution whereof I shall attempt to give, by the principles that have been laid down, in reference to the manner wherein we apprehend by sight the magnitude of objects. The apparent magnitude of the moon, when placed in the horizon, is much greater than when it is in the meridian; though the angle under which the diameter of the moon is seen, be not observed greater in the former case, than in the latter: and the horizontal moon doth not constantly appear of the same bigness, but at some times seemeth far greater than at others.

LXVIII. Now in order to explain the reason of the moon's appearing greater than ordinary in the horizon, it must be observed, that the particles which compose our atmosphere intercept the rays of light proceeding from any object to the eye; and by how much the greater is the portion of atmosphere interjacent between the object and the eye, by so much the more

are the rays intercepted; and by consequence, the appearance of the object rendered more faint, every object appearing more vigorous or more faint, in proportion as it sendeth more or fewer rays into the eye. Now, between the eye and the moon, when situated in the horizon, there lies a far greater quantity of atmosphere, than there does when the moon is in the meridian. Whence it comes to pass, that the appearance of the horizontal moon is fainter, and therefore by Sect. LVI. it should be thought bigger in that situation, than in the meridian, or in any other elevation above the horizon.

LXIX. Further, the air being variously impregnated, sometimes more and sometimes less with vapours and exhalations fitted to retund and intercept the rays of light, it follows, that the appearance of the horizontal moon hath not always an equal faintness, and by consequence, that luminary, though in the very same situation, is at one time judged greater than at another.

LXX. That we have here given the true account of the phenomena of the horizontal moon, will, I suppose, be further evident to any one from the following considerations. First, it is plain, that which in this case suggests the idea of greater magnitude, must be something which is itself perceived; for, that which is unperceived cannot suggest to our perception any other thing. Secondly, it must be something that does not constantly remain the same, but is subject to some change or variation, since the appearance of the horizontal moon varies, being at one time greater than at another. And yet, thirdly, it cannot be the visible figure or magnitude, since that remains the same, or is rather lesser, by how much the moon is nearer to the horizon. It remains therefore, that the true cause is that affection or alteration of the visible appearance, which proceeds from the greater paucity of rays arriving at the eye, and which I term *faintness*, since this answers all the forementioned conditions, and I am not conscious of any other perception that doth.

LXXI. Add to this, that in misty weather it is a common observation, that the appearance of the horizontal moon is far larger than usual, which greatly conspires with, and strengthens our opinion. Neither would it prove, in the least, irreconcileable with what we have said, if the horizontal moon should chance sometimes to seem enlarged beyond its usual extent, even in more serene weather. For we must not only have regard to the mist which happens to be in the place where we stand; we ought also to take into our thoughts the whole sum of vapours and exhalations, which lie betwixt the eye and the moon: all which cooperating to render the appearance of the moon more faint, and thereby increase its magnitude, it may chance to appear greater than it usually does, even in the horizontal position, at a time when, though there be no extraordinary fog or haziness

just in the place where we stand; yet, the air between the eye and the moon, taken altogether, may be loaded with a greater quantity of interspersed vapours and exhalations, than at other times.

LXXII. It may be objected, that in consequence of our principles, the interposition of a body in some degree opaque, which may intercept a great part of the rays of light, should render the appearance of the moon in the meridian as large, as when it is viewed in the horizon. To which I answer, it is not faintness any how applied, that suggests greater magnitude, there being no necessary, but only an experimental connexion between those two things: it follows, that the faintness, which enlarges the appearance, must be applied in such sort, and with such circumstances, as have been observed to attend the vision of great magnitudes. When from a distance we behold great objects, the particles of the intermediate air and vapours, which are themselves unperceivable, do interrupt the rays of light, and thereby render the appearance less strong and vivid; now, faintness of appearance, caused in this sort, hath been experienced to coexist with great magnitude. But when it is caused by the interposition of an opaque sensible body, this circumstance alters the case, so that a faint appearance this way caused, doth not suggest greater magnitude, because it hath not been experienced to coexist with it.

LXXIII. Faintness, as well as all other ideas of perceptions, which suggest magnitude or distance, doth it in the same way that words suggest the notions to which they are annexed. Now it is known, a word pronounced with certain circumstances, or in a certain context with other words, hath not always the same import and signification that it hath when pronounced in some other circumstances, or different context of words. The very same visible appearance as to faintness and all other respects, if placed on high, shall not suggest the same magnitude that it would if it were seen at an equal distance, on a level with the eye. The reason whereof is, that we are rarely accustomed to view objects at a great height; our concerns lie among things situated rather before than above us; and accordingly our eyes are not placed on the top of our heads, but in such a position as is most convenient for us to see distant objects standing in our way, and this situation of them being a circumstance which usually attends the vision of distant objects, we may from hence account for (what is commonly observed) an object's appearing of different magnitude, even with respect to its horizontal extension, on the top of a steeple, for example, a hundred feet high, to one standing below, from what it would if placed at a hundred feet distance on a level with his eye. For it hath been shown, that the judgment we make on the magnitude of a thing, depends not

on the visible appearance alone, but also on divers other circumstances, any one of which being omitted or varied may suffice to make some alteration in our judgment. Hence, the circumstance of viewing a distant object in such a situation as is usual, and suits with the ordinary posture of the head and eyes, being omitted, and instead thereof a different situation of the object which requires a different posture of the head taking place, it is not to be wondered at, if the magnitude be judged different; but it will be demanded, why a high object should constantly appear less than an equidistant low object of the same dimensions, for so it is observed to be; it may indeed be granted that the variation of some circumstances may vary the judgment, made on the magnitude of high objects, which we are less used to look at: but it does not hence appear, why they should be judged less rather than greater? I answer, that in case the magnitude of distant objects was suggested by the extent of their visible appearance alone, and thought proportional thereto, it is certain they would then be judged much less than now they seem to be, vide Sect. LXXIX. But several circumstances concurring to form the judgment we make on the magnitude of distant objects, by means of which they appear far larger than others, whose visible appearance hath an equal or even greater extension; it follows, that upon the change or omission of any of those circumstances, which are wont to attend the vision of distant objects, and so come to influence the judgments made on their magnitude, they shall proportionably appear less than otherwise they would. For any of those things that caused an object to be thought greater, than in proportion to its visible extension, being either omitted or applied without the usual circumstances, the judgment depends more entirely on the visible extension, and consequently the object must be judged less. Thus in the present case, the situation of the thing seen being different from what it usually is in those objects we have occasion to view, and whose magnitude we observe, it follows, that the very same object, being a hundred feet high, should seem less than if it was a hundred feet off on (or nearly on) a level with the eye. What has been here set forth, seems to me to have no small share in contributing to magnify the appearance of the horizontal moon, and deserves not to be passed over in the explication of it.

LXXIV. If we attentively consider the phenomenon before us, we shall find the not discerning between the mediate and immediate objects of sight, to be the chief cause of the difficulty that occurs in the explication of it. The magnitude of the visible moon, or that which is the proper and immediate object of vision, is no greater when the moon is in the horizon, than when it is in the meridian. How comes it, therefore, to seem greater in one situation than the other? What is it can put this cheat on the

understanding? It has no other perception of the moon, than what it gets by sight: and that which is seen, is of the same extent, I say the visible appearance hath the same, or rather a less magnitude, when the moon is viewed in the horizontal, than when in the meridional position: and yet it is esteemed greater in the former than in the latter. Herein consists the difficulty, which doth vanish and admit of a most easy solution, if we consider that as the visible moon is not greater in the horizon than in the meridian, so neither is it thought to be so. It hath been already shown, that in any act of vision, the visible object absolutely, or in itself, is little taken notice of, the mind still carrying its view from that to some tangible ideas, which have been observed to be connected with it, and by that means come to be suggested by it. So that when a thing is said to appear great or small, or whatever estimate be made of the magnitude of any thing, this is meant not of the visible, but of the tangible object. This duly considered, it will be no hard matter to reconcile the seeming contradiction there is, that the moon should appear of a different bigness, the visible magnitude thereof remaining still the same. For by Sect. LVI. the very same visible extension, with a different faintness, shall suggest a different tangible extension. When therefore the horizontal moon is said to appear greater than the meridional moon, this must be understood not of a greater visible extension, but of a greater tangible or real extension, which by reason of the more than ordinary faintness of the visible appearance, is suggested to the mind along with it.

LXXV. Many attempts have been made by learned men, to account for this appearance. Gassendus, Descartes, Hobbes, and several others, have employed their thoughts on that subject; but how fruitless and unsatisfactory their endeavours have been, is sufficiently shown in the Philosophical Transactions,* where you may see their several opinions at large set forth and confuted, not without some surprise at the gross blunders that ingenious men have been forced into, by endeavouring to reconcile this appearance with the ordinary principles of optics. Since the writing of which, there hath been published in the Transactions† another paper relating to the same affair, by the celebrated Dr. Wallis, wherein he attempts to account for that phenomena, which, though it seems not to contain any thing new, or different from what had been said before by others, I shall nevertheless consider in this place.

LXXVI. His opinion, in short, is this; we judge not of the magnitude of an object by the visual angle alone, but by the visual angle in conjunction with the distance. Hence, though the angle remain the same, or even become less, yet if withal the distance seem to have been increased, the object shall appear

* Phil. Trans. Num. 187, p. 314. † Num. 187, p. 323.

greater. Now, one way whereby we estimate the distance of any thing, is by the number and extent of the intermediate objects: when therefore the moon is seen in the horizon, the variety of fields, houses, &c., together with the large prospect of the wide, extended land or sea, that lies between the eye and the utmost limb of the horizon, suggest unto the mind the idea of greater distance, and consequently magnify the appearance. And this, according to Dr. Wallis, is the true account of the extraordinary largeness attributed by the mind to the horizontal moon, at a time when the angle subtended by its diameter is not one jot greater than it used to be.

LXXVII. With reference to this opinion, not to repeat what hath been already said concerning distance, I shall only observe, first, that if the prospect of interjacent objects be that which suggests the idea of further distance, and this idea of further distance be the cause that brings into the mind the idea of greater magnitude, it should hence follow, that if one looked at the horizontal moon from behind a wall, it would appear no bigger than ordinary. For in that case, the wall interposing cuts off all that prospect of sea and land, &c., which might otherwise increase the apparent distance, and thereby the apparent magnitude of the moon. Nor will it suffice to say, the memory doth even then suggest all that extent of land, &c., which lies within the horizon; which suggestion occasions a sudden judgment of sense, that the moon is further off and larger than usual. For ask any man, who from such a station beholding the horizontal moon, shall think her greater than usual, whether he hath at that time in his mind any idea of the intermediate objects, or long tract of land that lies between his eye and the extreme edge of the horizon? And whether it be that idea which is the cause of his making the aforementioned judgment? He will, I suppose, reply in the negative, and declare the horizontal moon shall appear greater than the meridional, though he never thinks of all or any of those things that lie between him and it. Secondly, it seems impossible by this hypothesis to account for the moon's appearing in the very same situation, at one time greater than at another; which nevertheless has been shown to be very agreeable to the principles we have laid down, and receives a most easy and natural explication from them. For the further clearing up of this point, it is to be observed that what we immediately and properly see are only lights and colours in sundry situations and shades, and degrees of faintness and clearness, confusion and distinctness. All which visible objects are only in the mind; nor do they suggest aught external, whether distance or magnitude, otherwise than by habitual connexion as words do things. We are also to remark, that, beside the straining of the eyes, and beside the vivid and faint, the distinct and

confused appearances (which bearing some proportions to lines and angles, have been substituted instead of them, in the foregoing part of this treatise), there are other means which suggest both distance and magnitude; particularly, the situation of visible points, or objects, as upper or lower; the former suggesting a further distance, and greater magnitude, the latter a nearer distance, and lesser magnitude: all which is an effect only of custom and experience; there being really nothing intermediate in the line of distance, between the uppermost and lowermost, which are both equidistant, or rather at no distance from the eye, as there is also nothing in upper or lower, which by necessary connexion should suggest greater or lesser magnitude. Now, as these customary, experimental means of suggesting distance, do likewise suggest magnitude, so they suggest the one as immediately as the other. I say, they do not (vide Sect. LIII.) first suggest distance, and then leave the mind from thence to infer or compute magnitude, but suggest magnitude as immediately and directly as they suggest distance.

LXXVIII. This phenomenon of the horizontal moon is a clear instance of the insufficiency of lines and angles, for explaining the way wherein the mind perceives and estimates the magnitude of outward objects. There is nevertheless a use of computation by them, in order to determine the apparent magnitude of things, so far as they have a connexion with, and are proportional to those other ideas or perceptions, which are the true and immediate occasions that suggest to the mind the apparent magnitude of things. But this in general may, I think, be observed concerning mathematical computation in optics; that it can never be very precise and exact, since the judgments we make of the magnitude of external things do often depend on several circumstances, which are not proportionable to, or capable of being defined by lines and angles.

LXXIX. From what has been said, we may safely deduce this consequence, to wit, that a man born blind, and made to see, would at first opening of his eyes make a very different judgment of the magnitude of objects intromitted by them, from what others do. He would not consider the ideas of sight, with reference to, or as having any connexion with the ideas of touch: his view of them being entirely terminated within themselves, he can no otherwise judge them great or small, than as they contain a greater or lesser number of visible points. Now, it being certain that any visible point can cover or exclude from view only one other visible point, it follows, that whatever object intercepts the view of another, hath an equal number of visible points with it; and consequently they shall both be thought by him to have the same magnitude. Hence it is evident, one in those circumstances would judge his thumb, with which he might hide a

tower, or hinder its being seen, equal to that tower, or his hand, the interposition whereof might conceal the firmament from his view, equal to the firmament: how great an inequality soever there may, in our apprehensions, seem to be betwixt those two things, because of the customary and close connexion that has grown up in our minds between the objects of sight and touch, whereby the very different and distinct ideas of those two senses are so blended and confounded together, as to be mistaken for one and the same thing; out of which prejudice we cannot easily extricate ourselves.

LXXX. For the better explaining the nature of vision, and setting the manner wherein we perceive magnitudes in a due light, I shall proceed to make some observations concerning matters relating thereto, whereof the want of reflection, and duly separating between tangible and visible ideas, is apt to create in us mistaken and confused notions. And first, I shall observe that the *minimum visibile* is exactly equal in all beings whatsoever, that are endowed with the visive faculty. No exquisite formation of the eye, no peculiar sharpness of sight, can make it less in one creature than in another; for it not being distinguishable into parts, nor in any wise consisting of them, it must necessarily be the same to all. For suppose it otherwise, and that the *minimum visibile* of a mite, for instance, be less than the *minimum visibile* of a man; the latter therefore may by detraction of some part be made equal to the former: it doth therefore consist of parts, which is inconsistent with the notion of a *minimum visibile*, or point.

LXXXI. It will perhaps be objected that the *minimum visibile* of a man doth really and in itself contain parts whereby it surpasses that of a mite, though they are not perceivable by the man. To which I answer, the *minimum visibile* having (in like manner as all other the proper and immediate objects of sight) been shown not to have any existence without the mind of him who sees it, it follows there cannot be any part of it that is not exactly perceived, and therefore visible. Now for any object to contain several distinct visible parts, and at the same time to be a *minimum visibile*, is a manifest contradiction.

LXXXII. Of these visible points we see at all times an equal number. It is every whit as great when our view is contracted and bounded by near objects, as when it is extended to larger and remoter. For it being impossible that one *minimum visibile* should obscure or keep out of sight more than another, it is a plain consequence, that when my view is on all sides bounded by the walls of my study, I see just as many visible points as I could, in case that by the removal of the study-walls, and all other obstructions, I had a full prospect of the circumjacent fields, mountains, sea, and open firmament; for so long as

I am shut up within the walls, by their interposition, every point of the external objects is covered from my view: but each point that is seen being able to cover or exclude from sight one only other corresponding point, it follows, that whilst my sight is confined to those narrow walls, I see as many points, or *minima visibilia*, as I should were those walls away, by looking on all the external objects, whose prospect is intercepted by them. Whenever therefore we are said to have a greater prospect at one time than another, this must be understood with relation not to the proper and immediate, but the secondary and mediate objects of vision, which, as hath been shown, properly belong to the touch.

LXXXIII. The visive faculty, considered with reference to its immediate objects, may be found to labour of two defects: first, in respect of the extent or number of visible points that are at once perceivable by it, which is narrow and limited to a certain degree. It can take in at view but a certain determinate number of *minima visibilia*, beyond which it cannot extend its prospect. Secondly, our sight is defective in that its view is not only narrow, but also for the most part confused; of those things that we take in at one prospect, we can see but a few at once clearly and unconfusedly; and the more we fix our sight on any one object, by so much the darker and more indistinct shall the rest appear.

LXXXIV. Corresponding to these two defects of sight, we may imagine as many perfections, to wit, first, that of comprehending in one view a greater number of visible points; secondly, of being able to view them all equally and at once, with the utmost clearness and distinction. That those perfections are not actually in some intelligences of a different order and capacity from ours, it is impossible for us to know.

LXXXV. In neither of those two ways do microscopes contribute to the improvement of sight; for when we look through a microscope, we neither see more visible points, nor are the collateral points more distinct than when we look with the naked eye, at objects placed in a due distance. A microscope brings us as it were into a new world: it presents us with a new scene of visible objects, quite different from what we behold with the naked eye. But herein consists the most remarkable difference, to wit, that whereas the objects perceived by the eye alone, have a certain connexion with tangible objects, whereby we are taught to foresee what will ensue upon the approach or application of distant objects to the parts of our own body, which much conduceth to its preservation; there is not the like connexion between things tangible and those visible objects that are perceived by help of a fine microscope.

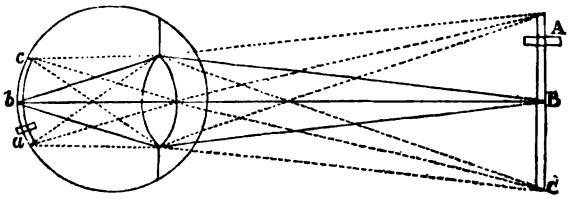
LXXXVI. Hence it is evident, that were our eyes turned into the nature of microscopes, we should not be much benefited

by the change; we should be deprived of the forementioned advantage we at present receive by the visive faculty; and have left us only the empty amusement of seeing, without any other benefit arising from it. But in that case, it will perhaps be said, our sight would be endued with a far greater sharpness and penetration than it now hath. But I would fain know wherein consists that sharpness, which is esteemed so great an excellency of sight. It is certain from what we have already shown, that the *minimum visibile* is never greater or lesser, but in all cases constantly the same: and in the case of microscopical eyes, I see only this difference, to wit, that upon the ceasing of a certain observable connexion betwixt the divers perceptions of sight and touch, which before enabled us to regulate our actions by the eye, it would now be rendered utterly unserviceable to that purpose.

LXXXVII. Upon the whole, it seems that if we consider the use and end of sight, together with the present state and circumstances of our being, we shall not find any great cause to complain of any defect or imperfection in it, or easily conceive how it could be mended. With such admirable wisdom is that faculty contrived, both for the pleasure and convenience of life.

LXXXVIII. Having finished what I intended to say, concerning the distance and magnitude of objects, I come now to treat of the manner wherein the mind perceives by sight their situation. Among the discoveries of the last age, it is reputed none of the least, that the manner of vision hath been more clearly explained than ever it had been before. There is, at this day, no one ignorant, that the pictures of external objects are painted on the *retina*, or fund of the eye. That we can see nothing which is not so painted: and that, according as the picture is more distinct or confused, so also is the perception we have of the object: but then in this explication of vision, there occurs one mighty difficulty. The objects are painted in an inverted order on the bottom of the eye: the upper part of any object being painted on the lower part of the eye, and the lower part of the object on the upper part of the eye: and so also as to right and left. Since therefore the pictures are thus inverted, it is demanded how it comes to pass, that we see the objects erect and in their natural posture?

LXXXIX. In answer to this difficulty, we are told, that the mind, perceiving an impulse of a ray of light on the upper part of the eye, considers this ray as coming in a direct line from the lower part of the object, and in like manner tracing the ray that strikes on the lower part of the eye, it is directed to the upper part of the object. Thus in the adjacent figure C the lower point of the object A B C is projected on *c* the upper part of the eye. So likewise, the highest point A is projected on *a* the



lowest part of the eye, which makes the representation *c b a* inverted: but the mind, considering the stroke that is made on *c* as coming in the straight line C *c* from the lower end of the object, and the stroke or impulse on *a* as coming in the line A *a* from the upper end of the object, is directed to make a right judgment of the situation of the object A B C, notwithstanding the picture of it is inverted. This is illustrated by conceiving a blind man, who, holding in his hands two sticks that cross each other, doth with them touch the extremities of an object, placed in a perpendicular situation. It is certain, this man will judge that to be the upper part of the object, which he touches with the stick held in the undermost hand, and that to be the lower part of the object, which he touches with the stick in his uppermost hand. This is the common explication of the erect appearance of objects, which is generally received and acquiesced in, being (as Mr. Molyneux tells us*) *allowed by all men as satisfactory.*

XC. But this account to me does not seem in any degree true. Did I perceive those impulses, decussations, and directions of the rays of light, in like manner as hath been set forth, then, indeed, it would not at first view be altogether void of probability. And there might be some pretence for the comparison of the blind man and his cross sticks. But the case is far otherwise. I know very well that I perceive no such thing. And, of consequence, I cannot thereby make an estimate of the situation of objects. I appeal to any one's experience, whether he be conscious to himself, that he thinks on the intersection made by the radious pencils, or pursues the impulses they give in right lines, whenever he perceives by sight the position of any object? To me it seems evident, that crossing and tracing of the rays, is never thought on by children, idiots, or in truth by any other, save only those who have applied themselves to the study of optics. And for the mind to judge of the situation of objects by those things, without perceiving them, or to perceive them without knowing it, is equally beyond my comprehension. Add to this, that the explaining the manner of vision by the example of

* Diopt. Par. ii. c. 7, p. 289.

cross sticks, and hunting for the object along the axes of the radious pencils, doth suppose the proper objects of sight to be perceived at a distance from us, contrary to what hath been demonstrated.

XCI. It remains, therefore, that we look for some other explication of this difficulty: and I believe it not impossible to find one, provided we examine it to the bottom, and carefully distinguish between the ideas of sight and touch; which cannot be too oft inculcated in treating of vision: but more especially throughout the consideration of this affair, we ought to carry that distinction in our thoughts: for that from want of a right understanding thereof, the difficulty of explaining erect vision seems chiefly to arise.

XCII. In order to disentangle our minds from whatever prejudices we may entertain with relation to the subject in h ad, nothing seems more apposite, than the taking into our thoughts the case of one born blind, and afterwards, when grown up, made to see. And though perhaps it may not be an easy task to divest ourselves entirely of the experience received from sight, so as to be able to put our thoughts exactly in the posture of such a one's: we must nevertheless, as far as possible, endeavour to frame true conceptions of what might reasonably be supposed to pass in his mind.

XCIII. It is certain that a man actually blind, and who had continued so from his birth, would by the sense of feeling attain to have ideas of upper and lower. By the motion of his hand he might discern the situation of any tangible object placed within his reach. That part on which he felt himself supported, or towards which he perceived his body to gravitate, he would term lower, and the contrary to this upper; and accordingly denominate whatsoever objects he touched.

XCIV. But then, whatever judgments he makes concerning the situation of objects, are confined to those only that are perceivable by touch. All those things that are intangible, and of a spiritual nature, his thoughts and desires, his passions, and in general all the modifications of his soul, to these he would never apply the terms upper and lower, except only in a metaphorical sense. He may, perhaps, by way of allusion, speak of high or low thoughts: but those terms, in their proper signification, would never be applied to any thing that was not conceived to exist without the mind. For a man born blind, and remaining in the same state, could mean nothing else by the words higher and lower, than a greater or lesser distance from the earth: which distance he would measure by the motion or application of his hand, or some other part of his body. It is, therefore, evident, that all those things which, in respect of each other, would by him be thought higher or lower, must be such as were conceived to exist without his mind, in the ambient space.

XCV. Whence it plainly follows, that such a one, if we suppose him made to see, would not at first sight think that any thing he saw was high or low, erect or inverted: for it hath been already demonstrated in Sect. XLI. that he would not think the things he perceived by sight to be at any distance from him, or without his mind. The objects to which he had hitherto been used to apply the terms up and down, high and low, were such only as affected, or were some way perceived by his touch; but the proper objects of vision make a new set of ideas, perfectly distinct and different from the former, and which can in no sort make themselves perceived by touch. There is, therefore, nothing at all that could induce him to think those terms applicable to them: nor would he ever think it, till such time as he had observed their connexion with tangible objects, and the same prejudice began to insinuate itself into his understanding, which from their infancy had grown up in the understandings of other men.

XCVI. To set this matter in a clearer light, I shall make use of an example. Suppose the above-mentioned blind person, by his touch, perceives a man to stand erect. Let us inquire into the manner of this. By the application of his hand to the several parts of a human body, he had perceived different tangible ideas, which being collected into sundry complex ones have distinct names annexed to them. Thus one combination of a certain tangible figure, bulk, and consistency of parts is called the head, another the hand, a third the foot, and so of the rest: all which complex ideas could, in his understanding, be made up only of ideas perceivable by touch. He had also by his touch obtained an idea of earth or ground, towards which he perceives the parts of his body to have a natural tendency. Now, by erect nothing more being meant, than that perpendicular position of a man, wherein his feet are nearest to the earth: if the blind person, by moving his hand over the parts of the man who stands before him, perceives the tangible ideas that compose the head, to be furthest from, and those that compose the feet to be nearest to, that other combination of tangible ideas which he calls earth: he will denominate that man erect. But if we suppose him on a sudden to receive his sight, and that he behold a man standing before him, it is evident, in that case, he would neither judge the man he sees to be erect nor inverted; for he never having known those terms applied to any other save tangible things, or which existed in the space without him, and what he sees neither being tangible, nor perceived as existing without, he could not know that in propriety of language they were applicable to it.

XCVII. Afterwards, when upon turning his head or eyes up and down to the right and left, he shall observe the visible objects to change, and shall also attain to know, that they are

called by the same names, and connected with the objects perceived by touch; then, indeed, he will come to speak of them and their situation, in the same terms that he has been used to apply to tangible things: and those that he perceives by turning up his eyes, he will call upper, and those that by turning down his eyes, he will call lower.

XCVIII. And this seems to me the true reason why he should think those objects uppermost that are painted on the lower part of his eye: for, by turning the eye up they shall be distinctly seen; as likewise those that are painted on the highest part of the eye shall be distinctly seen, by turning the eye down, and are for that reason esteemed lowest: for we have shown that to the immediate objects of sight, considered in themselves, he would not attribute the terms high and low. It must therefore be on account of some circumstances which are observed to attend them; and these, it is plain, are the actions of turning the eye up and down, which suggest a very obvious reason, why the mind should denominate the objects of sight accordingly high or low. And without this motion of the eye, this turning it up and down in order to discern different objects, doubtless, erect, inverse, and other the like terms relating to the position of tangible objects, would never have been transferred, or in any degree apprehended to belong to the ideas of sight: the mere act of seeing including nothing in it to that purpose; whereas the different situations of the eye naturally direct the mind to make a suitable judgment of the situation of objects intromitted by it.

XCIX. Further, when he has by experience learned the connexion there is between the several ideas of sight and touch, he will be able, by the perception he has of the situation of visible things in respect of one another, to make a sudden and true estimation of the situation of outward, tangible things corresponding to them. And thus it is, he shall perceive by sight the situation of external objects, which do not properly fall under that sense.

C. I know we are very prone to think, that if just made to see, we should judge of the situation of visible things as we do now: but, we are also as prone to think, that at first sight, we should in the same way apprehend the distance and magnitude of objects, as we do now: which hath been shown to be a false and groundless persuasion. And for the like reasons, the same censure may be passed on the positive assurance, that most men, before they have thought sufficiently of the matter, might have of their being able to determine by the eye, at first view, whether objects were erect or inverse.

CI. It will, perhaps, be objected to our opinion, that a man, for instance, being thought erect when his feet are next the earth, and inverted when his head is next the earth, it doth hence

follow, that by the mere act of vision, without any experience or altering the situation of the eye, we should have determined whether he were erect or inverted: for both the earth itself, and the limbs of the man who stands thereon, being equally perceived by sight, one cannot choose seeing what part of the man is nearest the earth, and what part furthest from it, i. e. whether he be erect or inverted.

CII. To which I answer, the ideas which constitute the tangible earth and man, are entirely different from those which constitute the visible earth and man. Nor was it possible, by virtue of the visive faculty alone, without superadding any experience of touch, or altering the position of the eye, ever to have known, or so much as suspected, there had been any relation or connexion between them: hence a man at first view would not denominate any thing he saw, earth, or head, or foot; and consequently, he could not tell by the mere act of vision, whether the head or feet were nearest the earth: nor, indeed, would he have thereby any thought of earth or man, erect or inverse, at all: which will be made yet more evident if we nicely observe, and make a particular comparison between the ideas of both senses.

CIII. That which I see is only variety of light and colours. That which I feel is hard or soft, hot or cold, rough or smooth. What similitude, what connexion have those ideas with these? Or how is it possible, that any one should see reason to give one and the same name to combinations of ideas so very different, before he had experienced their coexistence? We do not find there is any necessary connexion betwixt this or that tangible quality, and any colour whatsoever. And we may sometimes perceive colours, where there is nothing to be felt. All which doth make it manifest that no man, at first receiving of his sight, would know there was any agreement between this or that particular object of his sight, and any object of touch he had been already acquainted with: the colours therefore of the head, would to him no more suggest the idea of head, than they would the idea of foot.

CIV. Further, we have at large shown (vide Sect. LXIII. and LXIV.) there is no discoverable, necessary connexion, between any given visible magnitude, and any one particular tangible magnitude; but that it is entirely the result of custom and experience, and depends on foreign and accidental circumstances, that we can by the perception of visible extension inform ourselves, what may be the extension of any tangible object connected with it. Hence it is certain that neither the visible magnitude of head or foot, would bring along with them into the mind, at first opening of the eyes, the respective tangible magnitudes of those parts.

CV. By the foregoing section, it is plain the visible figure of any part of the body hath no necessary connexion with the tangible figure thereof, so as at first sight to suggest it to the mind: for figure is the termination of magnitude, whence it follows, that no visible magnitude, having in its own nature an aptness to suggest any one particular tangible magnitude, so neither can any visible figure be inseparably connected with its corresponding tangible figure: so as of itself and in a way prior to experience, it might suggest it to the understanding. This will be further evident, if we consider that what seems smooth and round to the touch, may to sight, if viewed through a microscope, seem quite otherwise.

CVI. From all which laid together and duly considered, we may clearly deduce this inference. In the first act of vision, no idea entering by the eye would have a perceivable connexion with the ideas to which the names earth, man, head, foot, &c., were annexed in the understanding of a person blind from his birth; so as in any sort to introduce them into his mind, or make themselves be called by the same names, and reputed the same things with them, as afterwards they come to be.

CVII. There doth, nevertheless, remain one difficulty, which perhaps may seem to press hard on our opinion, and deserve not to be passed over: for though it be granted that neither the colour, size, nor figure of the visible feet have any necessary connexion with the ideas that compose the tangible feet, so as to bring them at first sight into my mind, or make me in danger of confounding them before I had been used to, and for some time experienced their connexion: yet thus much seems undeniable, namely, that the number of the visible feet, being the same with that of the tangible feet, I may from hence, without any experience of sight, reasonably conclude, that they represent or are connected with the feet rather than the head. I say, it seems the idea of two visible feet will sooner suggest to the mind the idea of two tangible feet than of one head; so that the blind man, upon first reception of the visive faculty, might know which were the feet or two, and which the head or one.

CVIII. In order to get clear of this seeming difficulty, we need only observe, that diversity of visible objects doth not necessarily infer diversity of tangible objects corresponding to them. A picture painted with great variety of colours affects the touch in one uniform manner; it is therefore evident, that I do not by any necessary consecution, independent of experience, judge of the number of things tangible, from the number of things visible. I should not therefore at first opening my eyes conclude, that because I see two I shall feel two. How, therefore can I, before experience teaches me, know that the visible legs, because two, are connected with the tangible legs, or the

visible head, because one, is connected with the tangible head? The truth is, the things I see are so very different and heterogeneous from the things I feel, that the perception of the one would never have suggested the other to my thoughts, or enabled me to pass the least judgment thereon, until I had experienced their connexion.

CIX. But for a fuller illustration of this matter, it ought to be considered that number (however some may reckon it amongst the primary qualities) is nothing fixed and settled, really existing in things themselves. It is entirely the creature of the mind, considering, either an idea by itself, or any combination of ideas to which it gives one name, and so makes it pass for a unit. According as the mind variously combines its ideas, the unit varies; and as the unit, so the number, which is only a collection of units, doth also vary. We call a window one, a chimney one, and yet a house in which there are many windows, and many chimnies, hath an equal right to be called one, and many houses go to the making of one city. In these and the like instances, it is evident the *unit* constantly relates to the particular draughts the mind makes of its ideas, to which it affixes names, and wherein it includes more or less, as best suits its own ends and purposes. Whatever therefore the mind considers as one, that is a unit. Every combination of ideas is considered as one thing by the mind, and in token thereof is marked by one name. Now, this naming and combining together of ideas is perfectly arbitrary, and done by the mind in such sort, as experience shows it to be most convenient: without which, our ideas had never been collected into such sundry distinct combinations as they now are.

CX. Hence it follows, that a man born blind, and afterwards, when grown up, made to see, would not, in the first act of vision, parcel out the ideas of sight into the same distinct collections that others do, who have experienced which do regularly coexist and are proper to be bundled up together under one name. He would not, for example, make into one complex idea, and thereby esteem and unite all those particular ideas, which constitute the visible head or foot. For there can be no reason assigned why he should do so, barely upon his seeing a man stand upright before him: there crowd into his mind the ideas which compose the visible man, in company with all the other ideas of sight perceived at the same time: but all these ideas offered at once to his view, he would not distribute into sundry distinct combinations, till such time as, by observing the motion of the parts of the man and other experiences, he comes to know which are to be separated, and which to be collected together.

CXI. From what hath been premised, it is plain the objects of sight and touch make, if I may so say, two sets of ideas

which are widely different from each other. To objects of either kind, we indifferently attribute the terms high and low, right and left, and such like, denoting the position or situation of things: but then we must well observe that the position of any object is determined with respect only to objects of the same sense. We say any object of touch is high or low, according as it is more or less distant from the tangible earth: and in like manner we denominate any object of sight high or low, in proportion as it is more or less distant from the visible earth: but to define the situation of visible things, with relation to the distance they bear from any tangible thing, or *vice versa*, this were absurd and perfectly unintelligible. For all visible things are equally in the mind, and take up no part of the external space: and consequently are equidistant from any tangible thing, which exists without the mind.

CXII. Or rather to speak truly, the proper objects of sight are at no distance, neither near nor far from any tangible thing. For if we inquire narrowly into the matter, we shall find that those things only are compared together in respect of distance, which exist after the same manner, or appertain unto the same sense. For by the distance between any two points, nothing more is meant than the number of intermediate points: if the given points are visible, the distance between them is marked out by the number of the interjacent visible points: if they are tangible, the distance between them is a line consisting of tangible points; but if they are one tangible, and the other visible, the distance between them doth neither consist of points perceivable by sight nor by touch, i. e. it is utterly inconceivable. This, perhaps, will not find an easy admission into all men's understanding: however, I should gladly be informed whether it be not true, by any one who will be at the pains to reflect a little, and apply it home to his thoughts.

CXIII. The not observing what has been delivered in the two last sections, seems to have occasioned no small part of the difficulty that occurs in the business of erect appearances. The head, which is painted nearest the earth, seems to be furthest from it; and on the other hand, the feet, which are painted furthest from the earth, are thought nearest to it. Herein lies the difficulty, which vanishes if we express the thing more clearly and free from ambiguity, thus: how comes it that, to the eye, the visible head, which is nearest the tangible earth, seems furthest from the earth, and the visible feet, which are furthest from the tangible earth, seem nearest the earth. The question being thus proposed, who sees not the difficulty is founded on a supposition, that the eye, or visive faculty, or rather the soul by means thereof, should judge of the situation of visible objects, with reference to their distance from the tangible earth? Whereas it

is evident the tangible earth is not perceived by sight: and it hath been shown in the two last preceding sections, that the location of visible objects is determined only by the distance they bear from one another; and that it is nonsense to talk of distance, far or near, between a visible and tangible thing.

CXIV. If we confine our thoughts to the proper objects of sight, the whole is plain and easy. The head is painted furthest from, and the feet nearest to the visible earth; and so they appear to be. What is there strange or unaccountable in this? Let us suppose the pictures in the fund of the eye, to be the immediate objects of the sight. The consequence is, that things should appear in the same posture they are painted in; and is it not so? The head which is seen, seems furthest from the earth which is seen; and the feet which are seen, seem nearest to the earth which is seen? and just so they are painted.

CXV. But, say you, the picture of the man is inverted, and yet the appearance is erect: I ask, what mean you by the picture of the man, or, which is the same thing, the visible man's being inverted? You tell me it is inverted, because the heels are uppermost, and the head undermost? Explain me this. You say, that by the head's being undermost, you mean that it is nearest to the earth; and by the heels being uppermost, that they are furthest from the earth. I ask again, what earth you mean? You cannot mean the earth that is painted on the eye, or the visible earth: for the picture of the head is furthest from the picture of the earth, and the picture of the feet nearest to the picture of the earth; and accordingly the visible head is furthest from the visible earth, and the visible feet nearest to it. It remains, therefore, that you mean the tangible earth, and so determine the situation of visible things with respect to tangible things: contrary to what hath been demonstrated in Sect. CXI. and CXII. The two distinct provinces of sight and touch should be considered apart, and as if their objects had no intercourse, no manner of relation to one another, in point of distance or position.

CXVI. Further, what greatly contributes to make us mistake in this matter is, that when we think of the pictures in the fund of the eye, we imagine ourselves looking on the fund of another's eye, or another looking on the fund of our own eye, and beholding the pictures painted thereon. Suppose two eyes A and B: A from some distance looking on the pictures in B sees them inverted, and for that reason concludes they are inverted in B: but this is wrong. There are projected in little on the bottom of A, the images of the pictures of, suppose man, earth, &c., which are painted on B. And besides these, the eye B itself, and the objects which environ it, together with another earth, are projected in a larger size on A. Now, by the eye A, these larger images

are deemed the true objects, and the lesser only pictures in miniature. And it is with respect to those greater images, that it determines the situation of the smaller images: so that comparing the little man with the great earth, A judges him inverted, or that the feet are furthest from, and the head nearest to the great earth. Whereas, if A compare the little man with the little earth, then he will appear erect, i. e. his head shall seem furthest from, and his feet nearest to the little earth. But we must consider that B does not see two earths as A does: it sees only what is represented by the little pictures in A, and consequently shall judge the man erect: for, in truth, the man in B is not inverted, for there the feet are next the earth; but it is the representation of it in A which is inverted, for there the head of the representation of the picture of the man in B is next the earth, and the feet furthest from the earth, meaning the earth which is without the representation of the pictures in B. For if you take the little images of the pictures in B, and consider them by themselves, and with respect only to one another, they are all erect and in their natural posture.

CXVII. Further, there lies a mistake in our imagining that the pictures of external objects are painted on the bottom of the eye. It hath been shown, there is no resemblance between the ideas of sight, and things tangible. It hath likewise been demonstrated, that the proper objects of sight do not exist without the mind. Whence it clearly follows, that the pictures painted on the bottom of the eye, are not the pictures of external objects. Let any one consult his own thoughts, and then say what affinity, what likeness there is between that certain variety and disposition of colours, which constitute the visible man, or picture of a man, and that other combination of far different ideas, sensible by touch, which compose the tangible man. But if this be the case, how come they to be accounted pictures or images, since that supposes them to copy or represent some originals or other?

CXVIII. To which I answer: in the forementioned instance, the eye A takes the little images, included within the representation of the other eye B, to be pictures or copies, whereof the archetypes are not things existing without, but the larger pictures projected on its own fund: and which by A are not thought pictures, but the originals, or true things themselves. Though if we suppose a third eye C, from a due distance to behold the fund of A, then indeed the things projected thereon, shall to C seem pictures or images, in the same sense that those projected on B do to A.

CXIX. Rightly to conceive this point, we must carefully distinguish between the ideas of sight and touch, between the visible and tangible eye: for certainly on the tangible eye, nothing either

is or seems to be painted. Again, the visible eye, as well as all other visible objects, hath been shown to exist only in the mind, which perceiving its own ideas, and comparing them together, calls some pictures in respect of others. What hath been said, being rightly comprehended and laid together, doth, I think, afford a full and genuine explication of the erect appearance of objects: which phenomenon, I must confess, I do not see how it can be explained by any theories of vision hitherto made public.

CXX. In treating of these things, the use of language is apt to occasion some obscurity and confusion, and create in us wrong ideas: for language being accommodated to the common notions and prejudices of men, it is scarce possible to deliver the naked and precise truth, without great circumlocution, impropriety, and (to an unwary reader) seeming contradictions: I do, therefore, once for all desire whoever shall think it worth his while to understand what I have written concerning vision, that he would not stick in this or that phrase, or manner of expression, but candidly collect my meaning from the whole sum and tenor of my discourse, and laying aside the words as much as possible, consider the bare notions themselves, and then judge whether they are agreeable to truth and his own experience, or no.

CXXI. We have shown the way wherein the mind by mediation of visible ideas doth perceive or apprehend the distance, magnitude, and situation of tangible objects. I come now to inquire more particularly concerning the difference between the ideas of sight and touch, which are called by the same names, and see whether there be any idea common to both senses. From what we have at large set forth and demonstrated in the foregoing parts of this treatise, it is plain there is no one selfsame numerical extension, perceived both by sight and touch; but that the particular figures and extensions perceived by sight, however they may be called by the same names, and reputed the same things, with those perceived by touch, are nevertheless different, and have an existence distinct and separate from them: so that the question is not now concerning the same numerical ideas, but whether there be any one and the same sort or species of ideas equally perceivable to both senses? or, in other words, whether extension, figure, or motion perceived by sight, are not specifically distinct from extension, figure, and motion perceived by touch?

CXXII. But before I come more particularly to discuss this matter, I find it proper to consider extension in abstract: for of this there is much talk, and I am apt to think, that when men speak of extension, as being an idea common to two senses, it is with a secret supposition, that we can single out extension from all other tangible and visible qualities, and form thereof an abstract idea, which idea they will have common both to sight and touch. We are therefore to understand by extension in abstract,

an idea of extension; for instance, a line or surface, entirely stripped of all other sensible qualities and circumstances that might determine it to any particular existence; it is neither black, nor white, nor red, nor hath it any colour at all, or any tangible quality whatsoever, and consequently it is of no finite determinate magnitude: for that which bounds or distinguishes one extension from another, is some quality or circumstance wherein they disagree.

CXXIII. Now I do not find that I can perceive, imagine, or any wise frame in my mind such an abstract idea, as is here spoken of. A line or surface, which is neither black, nor white, nor blue, nor yellow, &c., nor long, nor short, nor rough, nor smooth, nor square, nor round, &c., is perfectly incomprehensible. This I am sure of as to myself: how far the faculties of other men may reach, they best can tell.

CXXIV. It is commonly said, that the object of geometry is abstract extension; but geometry contemplates figures: now, figure is the termination of magnitude, but we have shown that extension in abstract hath no finite determinate magnitude, whence it clearly follows that it can have no figure, and consequently is not the object of geometry. It is indeed a tenet as well of the modern as of the ancient philosophers, that all general truths are concerning universal abstract ideas; without which, we are told, there could be no science, no demonstration of any general proposition in geometry. But it were no hard matter, did I think it necessary to my present purpose, to show that propositions and demonstrations in geometry might be universal, though they who make them never think of abstract general ideas of triangles or circles.

CXXV. After reiterated endeavours to apprehend the general idea of a triangle, I have found it altogether incomprehensible. And surely if any one were able to introduce that idea into my mind, it must be the author of the Essay concerning Human Understanding; he, who has so far distinguished himself from the generality of writers, by the clearness and significancy of what he says. Let us therefore see how this celebrated author describes the general, or abstract idea of a triangle. "It must be (says he) neither oblique, nor rectangular, neither equilateral, equicrural, nor scalenum; but all and none of these at once. In effect it is somewhat imperfect that cannot exist; an idea, wherein some parts of several different and inconsistent ideas are put together." Essay on Human Understanding, b. iv. c. vii. § 9. This is the idea, which he thinks needful for the enlargement of knowledge, which is the subject of mathematical demonstration, and without which we could never come to know any general proposition concerning triangles. That author acknowledges it doth "require some pains and skill to form this

general idea of a triangle," ibid. But had he called to mind what he says in another place, to wit, "that ideas of mixed modes, wherein any inconsistent ideas are put together, cannot so much as exist in the mind, i. e. be conceived." Vide b. iii. c. x. § 33, ibid. I say, had this occurred to his thoughts, it is not improbable he would have owned it above all the pains and skill he was master of, to form the above-mentioned idea of a triangle, which is made up of manifest, staring contradictions. That a man who thought so much, and laid so great a stress on clear and determinate ideas, should nevertheless talk at this rate, seems very surprising. But the wonder will lessen if it be considered, that the source whence this opinion flows, is the prolific womb which has brought forth innumerable errors and difficulties, in all parts of philosophy, and in all the sciences. But this matter, taken in its full extent, were a subject too vast and comprehensive to be insisted on in this place. And so much for extension in abstract.

CXXVI. Some, perhaps, may think pure space, vacuum, or trine dimension to be equally the object of sight and touch: but though we have a very great propension, to think the ideas of outness and space to be the immediate object of sight; yet if I mistake not, in the foregoing parts of this essay, that hath been clearly demonstrated to be a mere delusion, arising from the quick and sudden suggestion of fancy, which so closely connects the idea of distance with those of sight, that we are apt to think it is itself a proper and immediate object of that sense, till reason corrects the mistake.

CXXVII. It having been shown, that there are no abstract ideas of figure, and that it is impossible for us, by any precision of thought, to frame an idea of extension separate from all other visible and tangible qualities, which shall be common both to sight and touch: the question now remaining is, whether the particular extensions, figures, and motions, perceived by sight be of the same kind, with the particular extensions, figures, and motions, perceived by touch. In answer to which, I shall venture to lay down the following proposition: *The extension, figures, and motions, perceived by sight are specifically distinct from the ideas of touch, called by the same names, nor is there any such thing as one idea or kind of idea common to both senses.* This proposition may, without much difficulty, be collected from what hath been said in several places of this essay. But because it seems so remote from, and contrary to, the received notions and settled opinion of mankind, I shall attempt to demonstrate it more particularly, and at large, by the following arguments:—

CXXVIII. When, upon perception of an idea, I range it under this or that sort; it is because it is perceived after the same manner, or because it has a likeness or conformity with, or

affects me in the same way as the ideas of the sort I rank it under. In short, it must not be entirely new, but have something in it old, and already perceived by me: it must, I say, have so much at least, in common with the ideas I have before known and named, as to make me give it the same name with them. But it has been, if I mistake not, clearly made out, that a man born blind would not, at first reception of his sight, think the things he saw were of the same nature with the objects of touch, or had any thing in common with them; but that they were a new set of ideas, perceived in a new manner, and entirely different from all he had ever perceived before: so that he would not call them by the same name, nor repute them to be of the same sort, with any thing he had hitherto known.

CXXIX. Secondly, light and colours are allowed by all to constitute a sort or species entirely different from the ideas of touch: nor will any man, I presume, say they can make themselves perceived by that sense: but there is no other immediate object of sight besides light and colours. It is therefore a direct consequence, that there is no idea common to both senses.

CXXX. It is a prevailing opinion, even amongst those who have thought and writ most accurately concerning our ideas, and the ways whereby they enter into the understanding, that something more is perceived by sight, than barely light and colours with their variations. Mr. Locke termeth sight, "The most comprehensive of all our senses, conveying to our minds the ideas of light and colours, which are peculiar only to that sense; and also the far different ideas of space, figure, and motion." Essay on Human Understanding, b. ii. c. ix. § 9. Space or distance, we have shown, is no otherwise the object of sight than of hearing. Vide Sect. XLVI. And as for figure and extension, I leave it to any one, that shall calmly attend to his own clear and distinct ideas, to decide, whether he has any idea intromitted immediately and properly by sight, save only light and colours: or whether it be possible for him to frame in his mind a distinct abstract idea of visible extension, or figure, exclusive of all colour; and, on the other hand, whether he can conceive colour without visible extension? For my own part, I must confess, I am not able to attain so great a nicety of abstraction; in a strict sense, I see nothing but light and colours, with their several shades and variations. He who beside these doth also perceive by sight ideas far different and distinct from them, hath that faculty in a degree more perfect and comprehensive than I can pretend to. It must be owned, that by the mediation of light and colours, other far different ideas are suggested to my mind: but so they are by hearing, which, beside sounds, which are peculiar to that sense, doth by their mediation suggest not only space, figure, and motion, but also all other ideas whatsoever that can be signified by words.

CXXXI. Thirdly, it is, I think, an axiom universally received, that quantities of the same kind may be added together, and make one entire sum. Mathematicians add lines together, but they do not add a line to a solid, or conceive it as making one sum with a surface: these three kinds of quantity being thought incapable of any such mutual addition, and consequently of being compared together, in the several ways of proportion, are by them esteemed entirely disparate and heterogeneous. Now let any one try in his thoughts to add a visible line or surface to a tangible line or surface, so as to conceive them making one continued sum or whole. He that can do this, may think them homogeneous; but he that cannot must, by the foregoing axiom, think them heterogeneous: a blue and a red line I can conceive added together into one sum, and making one continued line; but to make, in my thoughts, one continued line of a visible and tangible line added together is, I find, a task far more difficult, and even insurmountable; and I leave it to the reflection and experience of every particular person to determine for himself.

CXXXII. A further confirmation of our tenet may be drawn from the solution of Mr. Molyneux's problem, published by Mr. Locke in his Essay: which I shall set down as it there lies, together with Mr. Locke's opinion of it, "Suppose a man born blind, and now adult, and taught by his touch to distinguish between a cube and a sphere of the same metal, and nighly of the same bigness, so as to tell when he felt one and the other, which is the cube and which the sphere. Suppose then the cube and sphere placed on a table, and the blind man to be made to see: Quære, Whether by his sight, before he touched them, he could now distinguish, and tell, which is the globe, which is the cube. To which the acute and judicious proposer answers: Not. For though he has obtained the experience of how a globe, how a cube affects his touch; yet he has not yet attained the experience, that what affects his touch so or so must affect his sight so or so: or that a protuberant angle in the cube, that pressed his hand unequally, shall appear to his eye, as it doth in the cube. I agree with this thinking gentleman, whom I am proud to call my friend, in his answer to this his problem; and am of opinion, that the blind man, at first sight, would not be able with certainty to say, which was the globe, which the cube, whilst he only saw them." Essay on Human Understanding, b. ii. c. ix. § 8.

CXXXIII. Now, if a square surface perceived by touch be of the same sort with a square surface perceived by sight; it is certain the blind man here mentioned might know a square surface, as soon as he saw it: it is no more but introduced into his mind, by a new inlet, an idea he has been already well acquainted with. Since therefore he is supposed to have known by his

touch, that a cube is a body terminated by square surfaces, and that a sphere is not terminated by square surfaces; upon the supposition that a visible and tangible square differ only *in numero*, it follows, that he might know, by the unerring mark of the square surfaces, which was the cube, and which not, while he only saw them. We must therefore allow, either that visible extension and figures are specifically distinct from tangible extension and figures, or else, that the solution of this problem, given by those two thoughtful and ingenious men, is wrong.

CXXXIV. Much more might be laid together in proof of the proposition I have advanced: but what has been said is, if I mistake not, sufficient to convince any one that shall yield a reasonable attention: and as for those that will not be at the pains of a little thought, no multiplication of words will ever suffice to make them understand the truth, or rightly conceive my meaning.

CXXXV. I cannot let go the above-mentioned problem without some reflection on it. It hath been made evident, that a man blind from his birth, would not, at first sight, denominate any thing he saw, by the names he had been used to appropriate to ideas of touch, vide Sect. CVI. Cube, sphere, table, are words he has known applied to things perceivable by touch, but to things perfectly intangible he never knew them applied. Those words, in their wonted application, always marked out to his mind bodies, or solid things which were perceived by the resistance they gave: but there is no solidity, no resistance or protrusion perceived by sight. In short, the ideas of sight are all new perceptions, to which there be no names annexed in his mind; he cannot therefore understand what is said to him concerning them: and to ask of the two bodies he saw placed on the table, which was the sphere, which the cube, were to him a question downright bantering and unintelligible; nothing he sees being able to suggest to his thoughts the idea of body, distance, or, in general, of any thing he had already known.

CXXXVI. It is a mistake, to think the same thing affects both sight and touch. If the same angle or square, which is the object of touch, be also the object of vision, what should hinder the blind man, at first sight, from knowing it? For though the manner wherein it affects the sight, be different from that wherein it affected his touch; yet, there being, beside this manner or circumstance, which is new and unknown, the angle or figure, which is old and known, he cannot choose but discern it.

CXXXVII. Visible figure and extension having been demonstrated to be of a nature entirely different and heterogeneous from tangible figure and extension, it remains that we inquire concerning motion. Now that visible motion is not of the same sort with tangible motion, seems to need no further proof, it being an evident corollary from what we have shown concerning

the difference there is between visible and tangible extension: but for a more full and express proof hereof, we need only observe, that one who had not yet experienced vision, would not at first sight know motion. Whence it clearly follows, that motion perceivable by sight is of a sort distinct from motion perceivable by touch. The antecedent I prove thus: by touch he could not perceive any motion, but what was up or down, to the right or left, nearer or further from him; besides these, and their several varieties or complications, it is impossible he should have any idea of motion. He would not therefore think any thing to be motion, or give the name motion to any idea, which he could not range under some or other of those particular kinds thereof. But from Sect. XCV., it is plain that by the mere act of vision, he could not know motion upwards or downwards, to the right or left, or in any other possible direction. From which I conclude, he would not know motion at all at first sight. As for the idea of motion in abstract, I shall not waste paper about it, but leave it to my reader to make the best he can of it. To me it is perfectly unintelligible.

CXXXVIII. The consideration of motion may furnish a new field for inquiry: but since the manner wherein the mind apprehends by sight the motion of tangible objects, with the various degrees thereof, may be easily collected, from what hath been said concerning the manner wherein that sense doth suggest the various distances, magnitudes, and situations, I shall not enlarge any further on this subject, but proceed to inquire what may be alleged with greatest appearance of reason, against the proposition we have shown to be true: for where there is so much prejudice to be encountered, a bare and naked demonstration of the truth will scarce suffice. We must also satisfy the scruples that men may raise in favour of their preconceived notions, show whence the mistake arises, how it came to spread, and carefully disclose and root out those false persuasions that an early prejudice might have implanted in the mind.

CXXXIX. First, therefore, it will be demanded, how visible extension and figures come to be called by the same name with tangible extension and figures, if they are not of the same kind with them? It must be something more than humour or accident, that could occasion a custom so constant and universal as this, which has obtained in all ages and nations of the world, and amongst all ranks of men, the learned as well as the illiterate.

CXL. To which I answer, we can no more argue a visible and tangible square to be of the same species, from their being called by the same name, than we can, that a tangible square and the monosyllable consisting of six letters, whereby it is marked, are of the same species because they are both called by the same name. It is customary to call written words, and the

things they signify, by the same name: for words not being regarded in their own nature, or otherwise than as they are marks of things, it had been superfluous, and beside the design of language, to have given them names distinct from those of the things marked by them. The same reason holds here also. Visible figures are the marks of tangible figures, and from Sect. LIX. it is plain, that in themselves they are little regarded, or upon any other score than for their connexion with tangible figures, which by nature they are ordained to signify. And because this language of nature does not vary in different ages or nations, hence it is, that in all times and places, visible figures are called by the same names as the respective tangible figures suggested by them, and not because they are alike, or of the same sort with them.

CXLI. But, say you, surely a tangible square is liker to a visible square, than to a visible circle: it has four angles, and as many sides; so also has the visible square, but the visible circle has no such thing, being bounded by one uniform curve, without right lines or angles, which makes it unfit to represent the tangible square, but very fit to represent the tangible circle. Whence it clearly follows, that visible figures are patterns of, or of the same species with the respective tangible figures represented by them; that they are like unto them, and of their own nature fitted to represent them, as being of the same sort; and that they are in no respect arbitrary signs, as words.

CXLII. I answer, it must be acknowledged, the visible square is fitter than the visible circle, to represent the tangible square, but then it is not because it is liker, or more of a species with it; but because the visible square contains in it several distinct parts, whereby to mark the several distinct, corresponding parts of a tangible square, whereas the visible circle doth not. The square perceived by touch, hath four distinct, equal sides, so also hath it four distinct, equal angles. It is therefore necessary, that the visible figures which shall be most proper to mark it, contain four distinct, equal parts corresponding to the four sides of the tangible square; as likewise four other distinct and equal parts, whereby to denote the four equal angles of the tangible square. And accordingly we see the visible figures contain in them distinct visible parts, answering to the distinct tangible parts of the figures signified or suggested by them.

CXLIII. But it will not hence follow, that any visible figure is like unto, or of the same species with its corresponding tangible figure, unless it be also shown, that not only the number, but also the kind of the parts be the same in both. To illustrate this, I observe that visible figures represent tangible figures, much after the same manner that written words do sounds. Now in this respect words are not arbitrary, it not being indif-

ferent, what written word stands for any sound: but it is requisite, that each word contain in it so many distinct characters, as there are variations in the sound it stands for. Thus the single letter *a* is proper to mark one simple uniform sound; and the word *adultery* is accommodated to represent the sound annexed to it, in the formation whereof, there being eight different collisions, or modifications of the air by the organs of speech, each of which produces a difference of sound, it was fit the word representing it should consist of as many distinct characters, thereby to mark each particular difference or part of the whole sound: and yet nobody, I presume, will say, the single letter *a*, or the word *adultery*, are like unto, or of the same species with the respective sounds by them represented. It is indeed arbitrary that, in general, letters of any language represent sounds at all; but when that is once agreed, it is not arbitrary what combination of letters shall represent this or that particular sound. I leave this with the reader to pursue, and apply it in his own thoughts.

CXLIV. It must be confessed that we are not so apt to confound other signs with the things signified, or to think them of the same species, as we are visible and tangible ideas. But a little consideration will show us how this may be, without our supposing them of a like nature. These signs are constant and universal; their connexion with tangible ideas has been learnt at our first entrance into the world; and ever since, almost every moment of our lives, it has been occurring to our thoughts, and fastening and striking deeper on our minds. When we observe that signs are variable, and of human institution; when we remember, there was a time they were not connected in our minds, with those things they now so readily suggest; but that their signification was learned by the slow steps of experience; this preserves us from confounding them. But when we find the same signs suggest the same things all over the world; when we know they are not of human institution, and cannot remember that we ever learned their signification, but think that at first sight they would have suggested to us the same things they do now: all this persuades us they are of the same species as the things respectively represented by them, and that it is by a natural resemblance they suggest them to our minds.

CXLV. Add to this, that whenever we make a nice survey of any object, successively directing the optic axis to each point thereof; there are certain lines and figures described by the motion of the head or eye, which being in truth perceived by feeling, do nevertheless so mix themselves, as it were, with the ideas of sight, that we can scarce think but they appertain to that sense. Again, the ideas of sight enter into the mind, several at once, more distinct and unmingled, than is usual in the other

senses beside the touch. Sounds, for example, perceived at the same instant, are apt to coalesce, if I may so say, into one sound, but we can perceive at the same time great variety of visible objects, very separate and distinct from each other. Now tangible extension being made up of several distinct coexistent parts, we may hence gather another reason, that may dispose us to imagine a likeness or analogy between the immediate objects of sight and touch. But nothing, certainly, doth more contribute to blend and confound them together, than the strict and close connexion they have with each other. We cannot open our eyes, but the ideas of distance, bodies, and tangible figures are suggested by them. So swift, and sudden, and unperceived is the transition from visible to tangible ideas, that we can scarce forbear thinking them equally the immediate object of vision.

CXLVI. The prejudice, which is grounded on these, and whatever other causes may be assigned thereof, sticks so fast, that it is impossible, without obstinate striving and labour of the mind, to get entirely clear of it. But then the reluctancy we find, in rejecting any opinion, can be no argument of its truth, to whoever considers what has been already shown, with regard to the prejudices we entertain concerning the distance, magnitude, and situation of objects; prejudices so familiar to our minds, so confirmed and inveterate, as they will hardly give way to the clearest demonstration.

CXLVII. Upon the whole, I think we may fairly conclude, that the proper objects of vision constitute a universal language of the Author of nature, whereby we are instructed how to regulate our actions, in order to attain those things that are necessary to the preservation and well-being of our bodies, as also to avoid whatever may be hurtful and destructive of them. It is by their information that we are principally guided in all the transactions and concerns of life. And the manner wherein they signify, and mark unto us the objects which are at a distance, is the same with that of languages and signs of human appointment, which do not suggest the things signified, by any likeness or identity of nature, but only by an habitual connexion, that experience has made us to observe between them.

CXLVIII. Suppose one who had always continued blind, be told by his guide, that after he has advanced so many steps, he shall come to the brink of a precipice, or be stopped by a wall; must not this to him seem very admirable and surprising? He cannot conceive how it is possible for mortals to frame such predictions as these, which to him would seem as strange and unaccountable, as prophecy doth to others. Even they who are blessed with the visive faculty, may (though familiarity make it less observed) find therein sufficient cause of admiration. The wonderful art and contrivance wherewith it is adjusted to those ends

and purposes for which it was apparently designed, the vast extent, number, and variety of objects that are at once with so much ease, and quickness, and pleasure suggested by it: all these afford subject for much and pleasing speculation, and may, if any thing, give us some glimmering, analogous prenotion of things, which are placed beyond the certain discovery and comprehension of our present state.

CXLIX. I do not design to trouble myself with drawing corollaries from the doctrines I have hitherto laid down. If it bears the test, others may, so far as they shall think convenient, employ their thoughts in extending it further, and applying it to whatever purposes it may be subservient to: only, I cannot forbear making some inquiry concerning the object of geometry, which the subject we have been upon doth naturally lead one to. We have shown there is no such idea as that of extension in abstract, and that there are two kinds of sensible extension and figures, which are entirely distinct and heterogeneous from each other. Now, it is natural to inquire which of these is the object of geometry.

CL. Some things there are, which at first sight incline one to think geometry conversant about visible extension. The constant use of the eyes, both in the practical and speculative parts of that science, doth very much induce us thereto. It would, without doubt, seem odd to a mathematician to go about to convince him, the diagrams he saw upon paper were not the figures, or even the likeness of the figures, which make the subject of the demonstration. The contrary being held an unquestionable truth, not only by mathematicians, but also by those who apply themselves more particularly to the study of logic; I mean, who consider the nature of science, certainty, and demonstration: it being by them assigned as one reason of the extraordinary clearness and evidence of geometry, that in this science the reasonings are free from those inconveniencies which attend the use of arbitrary signs, the very ideas themselves being copied out, and exposed to view upon paper. But, by the bye, how well this agrees with what they likewise assert of abstract ideas, being the object of geometrical demonstration, I leave to be considered.

CLI. To come to a resolution in this point, we need only observe what hath been said in Sect. LIX., LX., LXI., where it is shown that visible extensions in themselves are little regarded, and have no settled determinate greatness, and that men measure altogether by the application of tangible extension to tangible extension. All which makes it evident, that visible extension and figures are not the object of geometry.

CLII. It is therefore plain that visible figures are of the same use in geometry, that words are; and the one may as well be accounted the object of that science, as the other; neither of them

being any otherwise concerned therein, than as they represent or suggest to the mind the particular tangible figures connected with them. There is indeed this difference between the signification of tangible figures by visible figures, and of ideas by words: that whereas the latter is variable and uncertain, depending altogether on the arbitrary appointment of men, the former is fixed and immutably the same in all times and places. A visible square, for instance, suggests to the mind the same tangible figure in Europe, that it doth in America. Hence it is that the voice of the Author of nature, which speaks to our eyes, is not liable to that misinterpretation and ambiguity, that languages of human contrivance are unavoidably subject to.

CLIII. Though what has been said may suffice to show what ought to be determined, with relation to the object of geometry; I shall nevertheless, for the fuller illustration thereof, consider the case of an intelligence, or unbodied spirit, which is supposed to see perfectly well, i. e. to have a clear perception of the proper and immediate objects of sight, but to have no sense of touch. Whether there be any such being in nature or no, is beside my purpose to inquire. It sufficeth, that the supposition contains no contradiction in it. Let us now examine, what proficiency such a one may be able to make in geometry. Which speculation will lead us more clearly to see, whether the ideas of sight can possibly be the object of that science.

CLIV. First, then, it is certain the aforesaid intelligence could have no idea of a solid, or quantity of three dimensions, which followeth from its not having any idea of distance. We indeed are prone to think, that we have by sight the ideas of space and solids, which ariseth from our imagining that we do, strictly speaking, see distance, and some parts of an object at a greater distance than others, which hath been demonstrated to be the effect of the experience we have had, what ideas of touch are connected with such and such ideas attending vision: but the intelligence here spoken of is supposed to have no experience of touch. He would not, therefore, judge as we do, nor have any idea of distance, outness, or profundity, nor consequently of space or body, either immediately or by suggestion. Whence it is plain, he can have no notion of those parts of geometry which relate to the mensuration of solids, and their convex or concave surfaces, and contemplate the properties of lines generated by the section of a solid; the conceiving of any part whereof, is beyond the reach of his faculties.

CLV. Further, he cannot comprehend the manner wherein geometers describe a right line or circle; the rule and compass, with their use, being things of which it is impossible he should have any notion: nor is it an easier matter for him to conceive the placing of one plane or angle on another, in order to prove

their equality: since that supposeth some idea of distance, or external space. All which makes it evident, our pure intelligence could never attain to know so much as the first elements of plane geometry. And perhaps, upon a nice inquiry, it will be found, he cannot even have an idea of plane figures any more than he can of solids; since some idea of distance is necessary, to form the idea of a geometrical plane, as will appear to whoever shall reflect a little on it.

CLVI. All that is properly perceived by the visive faculty amounts to no more than colours with their variations, and different proportions of light and shade: but the perpetual mutability and fleetingness of those immediate objects of sight, render them incapable of being managed after the manner of geometrical figures; nor is it in any degree useful that they should. It is true, there are divers of them perceived at once; and more of some, and less of others: but accurately to compute their magnitude, and assign precise determinate proportions, between things so variable and inconstant, if we suppose it possible to be done, must yet be a very trifling and insignificant labour.

CLVII. I must confess, it seems to be the opinion of some ingenious men, that flat or plane figures are immediate objects of sight, though they acknowledge solids are not. And this opinion of theirs is grounded on what is observed in painting, wherein (say they) the ideas immediately imprinted on the mind are only of planes variously coloured, which by a sudden act of the judgment are changed into solids: but, with a little attention we shall find the planes here mentioned, as the immediate objects of sight, are not visible, but tangible planes. For when we say that pictures are planes, we mean thereby, that they appear to the touch smooth and uniform. But then this smoothness and uniformity, or, in other words, this planeness of the picture, is not perceived immediately by vision: for it appeareth to the eye various and multiform.

CLVIII. From all which we may conclude, that planes are no more the immediate object of sight than solids. What we strictly see are not solids, nor yet planes variously coloured; they are only diversity of colours. And some of these suggest to the mind solids, and others plane figures; just as they have been experienced to be connected with the one, or the other: so that we see planes in the same way that we see solids; both being equally suggested by the immediate objects of sight, which accordingly are themselves denominated planes and solids: but though they are called by the same names with the things marked by them, they are nevertheless of a nature entirely different, as hath been demonstrated.

CLIX. What hath been said is, if I mistake not, sufficient to decide the question we propose to examine concerning the ability

of a pure spirit, such as we have described, to know geometry. It is, indeed, no easy matter for us to enter precisely into the thoughts of such an intelligence; because we cannot, without great pains, cleverly separate and disentangle in our thoughts the proper objects of sight from those of touch which are connected with them. This, indeed, in a complete degree, seems scarce possible to be performed; which will not seem strange to us, if we consider how hard it is, for any one to hear the words of his native language pronounced in his ears without understanding them. Though he endeavour to disunite the meaning from the sound, it will nevertheless intrude into his thoughts, and he shall find it extreme difficult, if not impossible, to put himself exactly in the posture of a foreigner, that never learned the language, so as to be affected barely with the sounds themselves, and not perceive the signification annexed to them.

CLX. By this time, I suppose, it is clear that neither abstract nor visible extension makes the object of geometry; the not discerning of which may, perhaps, have created some difficulty and useless labour in mathematics. Sure I am, that somewhat relating thereto has occurred to my thoughts, which, though after the most anxious and repeated examination I am forced to think it true, doth, nevertheless, seem so far out of the common road of geometry, that I know not whether it may not be thought presumption, if I should make it public in an age, wherein that science hath received such mighty improvements by new methods; great part whereof, as well as of the ancient discoveries, may perhaps lose their reputation, and much of that ardour with which men study the abstruse and fine geometry be abated, if what to me, and those few to whom I have imparted it, seems evidently true, should really prove to be so.

ALCIPHRON:

OR

THE MINUTE PHILOSOPHER:

IN SEVEN DIALOGUES;

CONTAINING

AN APOLOGY FOR THE CHRISTIAN RELIGION, AGAINST THOSE WHO ARE CALLED FREE-THINKERS.

ADVERTISEMENT.

THE author's design being to consider the free-thinker in the various lights of atheist, libertine, enthusiast, scorner, critic, metaphysician, fatalist, and sceptic, it must not therefore be imagined, that every one of these characters agrees with every individual free-thinker; no more being implied, than that each part agrees with some or other of the sect. There may possibly be a reader who shall think the character of atheist agrees with none; but though it hath been often said, there is no such thing as a speculative atheist; yet we must allow, there are several atheists who pretend to speculation. This the author knows to be true; and is well assured, that one of the most noted writers against Christianity in our times, declared, he had found out a demonstration against the being of a God. And he doubts not, whoever will be at the pains to inform himself, by a general conversation, as well as books, of the principles and tenets of our modern free-thinkers, will see too much cause to be persuaded, that nothing in the ensuing characters is beyond the life.

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THE MINUTE PHILOSOPHER.

THE FIRST DIALOGUE.

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I. I flattered himself, Theages, that before this time I might have been able to have sent you an agreeable account of the success of the affair, which brought me into this remote corner of the country. But instead of this, I should now give you the detail of its miscarriage, if I did not rather choose to entertain you with some amusing incidents, which have helped to make me easy under a circumstance I could neither obviate nor foresee. Events are not in our power; but it always is, to make a good use even of the very worst. And I must needs own, the the course and event of this affair gave opportunity for reflections, that make me some amends for a great loss of time, pains, and expense. A life of action, which takes its issue from the counsels, passions, and views of other men, if it doth not draw a man to imitate, will at least teach him to observe. And a mind at liberty to reflect on its own observations, if it produce nothing useful to the world, seldom fails of entertainment to itself. For several months past I have enjoyed such liberty and leisure in this distant retreat, far beyond the verge of that great whirlpool of business, faction, and pleasure, which is called the world. And a retreat in itself agreeable, after a long scene of trouble and disquiet, was made much more so by the conversation and good qualities of my host Euphranor, who unites in his own person the philosopher and the farmer, two characters not so inconsistent in nature as by custom they seem to be. Euphranor, from the time he left the university, hath lived in this small town, where he is possessed of a convenient house with a hundred acres of land adjoining to it; which being improved by his own labour, yield him a plentiful subsistence. He hath a good col-

lection, chiefly of old books, left him by a clergyman his uncle, under whose care he was brought up. And the business of his farm doth not hinder him from making good use of it. He hath read much, and thought more; his health and strength of body enabling him the better to bear fatigue of mind. He is of opinion that he could not carry on his studies with more advantage in the closet than the field, where his mind is seldom idle while he prunes the trees, follows the plough, or looks after his flocks. In the house of this honest friend I became acquainted with Crito, a neighbouring gentleman of distinguished merit and estate, who lives in great friendship with Euphranor. Last summer, Crito, whose parish church is in our town, dining on a Sunday at Euphranor's, I happened to inquire after his guests, whom we had seen at church with him the Sunday before. They are both well, said Crito, but, having once occasionally conformed, to see what sort of assembly our parish could afford, they had no further curiosity to gratify at church, and so chose to stay at home. How, said Euphranor, are they then dissenters? No, replied Crito, they are free-thinkers. Euphranor, who had never met with any of this species or sect of men, and but little of their writings, showed a great desire to know their principles or system. That is more, said Crito, than I will undertake to tell you. Their writers are of different opinions. Some go further, and explain themselves more freely than others. But the current general notions of the sect are best learned from conversation with those who profess themselves of it. Your curiosity may now be satisfied, if you and Dion would spend a week at my house with these gentlemen, who seem very ready to declare and propagate their opinions. Alciphron is above forty, and no stranger either to men or books. I knew him first at the Temple, which, upon an estate's falling to him, he quitted, to travel through the polite parts of Europe. Since his return he hath lived in the amusements of the town, which, being grown stale and tasteless to his palate, have flung him into a sort of splenetic indolence. The young gentleman, Lysicles, is a near kinsman of mine, one of lively parts, and a general insight into letters, who, after having passed the forms of education, and seen a little of the world, fell into an intimacy with men of pleasure, and free-thinkers, I am afraid much to the damage of his constitution and his fortune. But what I most regret, is the corruption of his mind by a set of pernicious principles, which, having been observed to survive the passions of youth, forestal even the remote hopes of amendment. They are both men of fashion, and would be agreeable enough, if they did not fancy themselves free-thinkers. But this, to speak the truth, has given them a certain air and manner, which a little too visibly declare they think themselves wiser than the rest of the world. I should

therefore be not at all displeased if my guests met with their match, where they least expected it, in a country farmer. I shall not, replied Euphranor, pretend to any more than barely to inform myself of their principles and opinions. For this end I propose to-morrow to set a week's task to my labourers, and accept your invitation, if Dion thinks good. To which I gave consent. Meanwhile, said Crito, I shall prepare my guests, and let them know that an honest neighbour hath a mind to discourse them on the subject of their free-thinking. And if I am not much mistaken, they will please themselves with the prospect of leaving a convert behind them, even in a country village. Next morning Euphranor rose early, and spent the forenoon in ordering his affairs. After dinner we took our walk to Crito's, which lay through half a dozen pleasant fields planted round with plane-trees, that are very common in this part of the country. We walked under the delicious shade of these trees for about an hour before we came to Crito's house, which stands in the middle of a small park, beautified with two fine groves of oak and walnut, and a winding stream of sweet and clear water. We met a servant at the door with a small basket of fruit which he was carrying into a grove, where he said his master was with the two strangers. We found them all three sitting under a shade. And after the usual forms at first meeting, Euphranor and I sat down by them. Our conversation began upon the beauty of this rural scene, the fine season of the year, and some late improvements which had been made in the adjacent country by new methods of agriculture. Whence Alciphron took occasion to observe, that the most valuable improvements came latest. I should have small temptation, said he, to live where men have neither polished manners nor improved minds, though the face of the country were ever so well improved. But I have long observed, that there is a gradual progress in human affairs. The first care of mankind is to supply the cravings of nature; in the next place they study the conveniences and comforts of life. But the subduing prejudices, and acquiring true knowledge, that Herculean labour is the last, being what demands the most perfect abilities, and to which all other advantages are preparative. Right, said Euphranor, Alciphron hath touched our true defect. It was always my opinion, that as soon as we had provided subsistence for the body, our next care should be to improve the mind. But the desire of wealth steps between and engrosseth men's thoughts.

II. *Alc.* Thought is that which we are told distinguisheth man from beast; and freedom of thought makes as great a difference between man and man. It is to the noble assertors of this privilege and perfection of human kind, the free-thinkers I mean, who have sprung up and multiplied of late years, that we are indebted

for all those important discoveries, that ocean of light which hath broke in and made its way, in spite of slavery and superstition. Euphranor, who is a sincere enemy to both, testified a great esteem for those worthies who had preserved their country from being ruined by them, having spread so much light and knowledge over the land. He added, that he liked the name and character of a free-thinker: but in his sense of the word, every honest inquirer after truth in any age or country was entitled to it. He therefore desired to know what this sect was that Alciphron had spoken of as newly sprung up; what were their tenets; what were their discoveries; and wherein they employed themselves, for the benefit of mankind. Of all which, he should think himself obliged, if Alciphron would inform him. That I shall very easily, replied Alciphron, for I profess myself one of the number, and my most intimate friends are some of the most considerable among them. And perceiving that Euphranor heard him with respect, he proceeded very fluently. You must know, said he, that the mind of man may be fitly compared to a piece of land. What stubbing, ploughing, digging, and harrowing is to the one, that thinking, reflecting, examining is to the other. Each hath its proper culture; and as land that is suffered to lie waste and wild for a long tract of time will be overspread with brushwood, brambles, thorns, and such vegetables which have neither use nor beauty; even so there will not fail to sprout up in a neglected, uncultivated mind, a great number of prejudices and absurd opinions, which owe their origin partly to the soil itself, the passions and imperfections of the mind of man, and partly to those seeds which chance to be scattered in it by every wind of doctrine, which the cunning of statesmen, the singularity of pedants, the superstition of fools, or the imposture of priests shall raise. Represent to yourself the man of mind, or human nature in general, that for so many ages had lain obnoxious to the frauds of designing, and the follies of weak men; how it must be overrun with prejudices and errors, what firm and deep roots they must have taken, and consequently how difficult a task it must be to extirpate them. And yet this work, no less difficult than glorious, is the employment of the modern free-thinkers. Alciphron having said this made a pause, and looked round on the company. Truly, said I, a very laudable undertaking! We think, said Euphranor, that it is praiseworthy to clear and subdue the earth, to tame brute animals, to fashion the outsides of men, provide sustenance for their bodies, and cure their maladies. But what is all this in comparison of that most excellent and useful undertaking to free mankind from their errors, and to improve and adorn their minds? For things of less merit towards the world, altars have been raised, and temples built, in ancient times. Too many in our

days, replied Alciphron, are such fools as not to know their best benefactors from their worst enemies. They have a blind respect for those who enslave them, and look upon their deliverers as a dangerous sort of men that would undermine received principles and opinions. *Euph.* It were a great pity such worthy ingenious men should meet with any discouragement. For my part I should think a man, who spent his time in such a painful, impartial search after truth, a better friend to mankind than the greatest statesman or hero, the advantage of whose labours is confined to a little part of the world, and a short space of time, whereas a ray of truth may enlighten the whole world and extend to future ages. *Alc.* It will be some time, I fear, before the common herd think as you do. But the better sort, the men of parts and polite education, pay a due regard to the patrons of light and truth.

III. *Euph.* The clergy, no doubt, are on all occasions ready to forward and applaud your worthy endeavours. Upon hearing this Lysicles could hardly refrain from laughing. And Alciphron with an air of pity told Euphranor, that he perceived he was unacquainted with the real character of those men. For, saith he, you must know that of all men living they are our greatest enemies. If it were possible, they would extinguish the very light of nature, turn the world into a dungeon, and keep mankind for ever in chains and darkness. *Euph.* I never imagined any thing like this of our protestant clergy, particularly those of the established church, whom, if I may be allowed to judge by what I have seen of them and their writings, I should have thought lovers of learning and useful knowledge. *Alc.* Take my word for it, priests of all religions are the same: wherever there are priests there will be priestcraft; and wherever there is priestcraft, there will be a persecuting spirit, which they never fail to exert to the utmost of their power against all those who have the courage to think for themselves, and will not submit to be hoodwinked and manacled by their reverend leaders. Those great masters of pedantry and jargon have coined several systems, which are all equally true, and of equal importance to the world. The contending sects are each alike fond of their own, and alike prone to discharge their fury upon all who dissent from them. Cruelty and ambition being the darling vices of priests and churchmen all the world over, they endeavour in all countries to get an ascendant over the rest of mankind; and the magistrate having a joint interest with the priest in subduing, amusing, and scaring the people, too often lends a hand to the hierarchy, who never think their authority and possessions secure, so long as those who differ from them in opinion are allowed to partake even in the common rights belonging to their birth or species. To represent the matter in a true light, figure

to yourselves a monster or spectre made up of superstition and enthusiasm, the joint issue of statecraft and priestcraft, rattling chains in one hand, and with the other brandishing a flaming sword over the land, and menacing destruction to all who shall dare to follow the dictates of reason and common sense. Do but consider this, and then say if there was not danger as well as difficulty in our undertaking. Yet, such is the generous ardour that truth inspires, our free-thinkers are neither overcome by the one nor daunted by the other. In spite of both we have already made so many proselytes among the better sort, and their numbers increase so fast, that we hope we shall be able to carry all before us, beat down the bulwarks of all tyranny, secular or ecclesiastical, break the fetters and chains of our countrymen, and restore the original inherent rights, liberties, and prerogatives of mankind. Euphranor heard this discourse with his mouth open and his eyes fixed upon Alciphron, who, having uttered it with no small emotion, stopped to draw breath and recover himself; but, finding that nobody made answer, he resumed the thread of his discourse, and, turning to Euphranor, spoke in a lower note what follows. The more innocent and honest a man is, the more liable is he to be imposed on by the specious pretences of other men. You have probably met with certain writings of our divines that treat of grace, virtue, goodness, and such matters fit to amuse and deceive a simple, honest mind. But believe me when I tell you, they are all at bottom (however they may gild their designs) united by one common principle in the same interest. I will not deny there may be here and there a poor half-witted man that means no mischief; but this I will be bold to say, that all the men of sense among them are true at bottom to these three pursuits of ambition, avarice, and revenge.

IV. While Alciphron was speaking, a servant came to tell him and Lysicles, that some men who were going to London waited to receive their orders. Whereupon they both rose up, and went towards the house. They were no sooner gone, but Euphranor, addressing himself to Crito, said, he believed that poor gentleman had been a great sufferer for his free-thinking, for that he seemed to express himself with the passion and resentment natural to men who have received very bad usage. I believe no such thing, answered Crito, but have often observed those of his sect run into two faults of conversation, declaiming and bantering, just as the tragic or the comic humour prevails. Sometimes they work themselves into high passions, and are frightened at spectres of their own raising. In those fits every country curate passes for an inquisitor. At other times they affect a sly, facetious manner, making use of hints and allusions, expressing little, insinuating much, and upon the whole seeming

to divert themselves with the subject and their adversaries. But if you would know their opinions, you must make them speak out and keep close to the point. Persecution for free-thinking is a topic they are apt to enlarge on, though without any just cause, every one being at full liberty to think what he pleases, there being no such thing in England that I know as persecution for opinion, sentiment, or thought. But in every country, I suppose, some care is taken to restrain petulant speech, and, whatever men's inward thoughts may be, to discourage an outward contempt of what the public esteemeth sacred. Whether this care in England hath of late been so excessive, as to distress the subjects of this once free and easy government, whether the free-thinkers can truly complain of any hardship upon the score of conscience or opinion, you will better be able to judge, when you hear from themselves an account of the numbers, progress, and notions of their sect; which I doubt not they will communicate fully and freely, provided nobody present seem shocked or offended: for in that case it is possible good manners may put them upon some reserve. Oh! said Euphranor, I am never angry with any man for his opinion; whether he be Jew, Turk, or idolater, he may speak his mind freely to me without fear of offending. I should even be glad to hear what he hath to say, provided he saith it in an ingenuous, candid manner. Whoever digs in the mine of truth I look on as my fellow-labourer: but if, while I am taking true pains, he diverts himself with teasing me and flinging dust in mine eyes, I shall soon be tired of him.

V. In the meantime Alciphron and Lysicles, having despatched what they went about, returned to us. Lysicles sat down where he had been before. But Alciphron stood over against us, with his arms folded across, and his head reclined on the left shoulder, in the posture of a man meditating. We sat silent, not to disturb his thoughts; and after two or three minutes he uttered these words, "Oh truth! oh liberty!" after which he remained musing as before. Upon this Euphranor took the freedom to interrupt him. Alciphron, said he, it is not fair to spend your time in soliloquies. The conversation of learned and knowing men is rarely to be met with in this corner, and the opportunity you have put into my hands I value too much not to make the best use of it. *Alc.* Are you then in earnest a votary of truth, and is it possible you should bear the liberty of a fair inquiry? *Euph.* It is what I desire of all things. *Alc.* What! upon every subject? upon the notions you first sucked in with your milk, and which have been ever since nursed by parents, pastors, tutors, religious assemblies, books of devotion, and such methods of prepossessing men's minds. *Euph.* I love information upon all subjects that come in my way, and especially upon those that are most important. *Alc.* If then you are in

earnest, hold fair and stand firm, while I probe your prejudices and extirpate your principles.

Dum veteres avias tibi de pulmone revello.

Having said thus, Alciphron knit his brows and made a short pause, after which he proceeded in the following manner. If we are at the pains to dive and penetrate into the bottom of things, and analyze opinions into their first principles, we shall find that those opinions which are thought of greatest consequence have the slightest original, being derived either from the casual customs of the country where we live, or from early instruction instilled into our tender minds, before we are able to discern between right and wrong, true and false. The vulgar (by whom I understand all those who do not make a free use of their reason) are apt to take these prejudices for things sacred and unquestionable, believing them to be imprinted on the hearts of men by God himself, or conveyed by revelation from heaven, or to carry with them so great light and evidence as must force an assent without any inquiry or examination. Thus the shallow vulgar have their heads furnished with sundry conceits, principles, and doctrines, religious, moral, and political, all which they maintain with a zeal proportionable to their want of reason. On the other hand, those who duly employ their faculties in the search of truth, take especial care to weed out of their minds, and extirpate all such notions or prejudices as were planted in them before they arrived at the free and entire use of reason. This difficult task hath been successfully performed by our modern free-thinkers, who have not only dissected with great sagacity the received systems, and traced every established prejudice to the fountain-head, the true and genuine motives of assent: but also, having been able to embrace in one comprehensive view the several parts and ages of the world, they observed a wonderful variety of customs and rites, of institutions religious and civil, of notions and opinions very unlike and even contrary one to another: a certain sign they cannot all be true. And yet they are all maintained by their several partizans with the same positive air and warm zeal, and, if examined, will be found to bottom on one and the same foundation, the strength of prejudice. By the help of these remarks and discoveries, they have broken through the bands of popular custom, and, having freed themselves from imposture, do now generously lend a hand to their fellow-subjects, to lead them into the same paths of light and liberty. Thus, gentlemen, I have given you a summary account of the views and endeavours of those men who are called free-thinkers. If in the course of what I have said or shall say hereafter, there be some things contrary to your preconceived opinions, and therefore shocking and disagreeable, you will pardon the freedom and plain-

ness of a philosopher, and consider that, whatever displeasure I give you of that kind, I do it in strict regard to truth and obedience to your own commands. I am very sensible, that eyes long kept in the dark cannot bear a sudden view of noon-day light, but must be brought to it by degrees. It is for this reason, the ingenious gentlemen of our profession are accustomed to proceed gradually, beginning with those prejudices to which men have the least attachment, and thence proceeding to undermine the rest by slow and insensible degrees, till they have demolished the whole fabric of human folly and superstition. But the little time I can propose to spend here obligeth me to take a shorter course, and be more direct and plain than possibly may be thought to suit with prudence and good manners. Upon this, we assured him he was at full liberty to speak his mind of things, persons, and opinions, without the least reserve. It is a liberty, replied Alciphron, that we free-thinkers are equally willing to give and take. We love to call things by their right names, and cannot endure that truth should suffer through complaisance. Let us therefore lay it down for a preliminary, that no offence be taken at any thing whatsoever shall be said on either side. To which we all agreed.

VI. In order then, said Alciphron, to find out the truth, we will suppose that I am bred up, for instance, in the church of England. When I come to maturity of judgment and reflect on the particular worship and opinions of this church, I do not remember when or by what means they first took possession of my mind, but there I find them from time immemorial. Then casting an eye on the education of children, from whence I can make a judgment of my own, I observe they are instructed in religious matters before they can reason about them, and consequently that all such instruction is nothing else but filling the tender mind of a child with prejudices. I do therefore reject all those religious notions, which I consider as the other follies of my childhood. I am confirmed in this way of thinking, when I look abroad into the world, where I observe papists, and several sects of dissenters, which do all agree in a general profession of belief in Christ, but differ vastly one from another in the particulars of faith and worship. I then enlarge my view so as to take in Jews and Mahometans, between whom and the Christians I perceive indeed some small agreement in the belief of one God; but then they have each their distinct laws and revelations, for which they express the same regard. But extending my view still further to heathenish and idolatrous nations, I discover an endless variety, not only in particular opinions and modes of worship, but even in the very notion of a deity, wherein they widely differ one from another, and from all the forementioned sects. Upon the whole, instead of truth simple and uniform, I

perceive nothing but discord, opposition, and wild pretensions, all springing from the same source, to wit, the prejudice of education. From such reasonings and reflections as these, thinking men have concluded that all religions are alike false and fabulous. One is a Christian, another a Jew, a third a Mahometan, a fourth an idolatrous Gentile, but all from one and the same reason, because they happen to be bred up each in his respective sect. In the same manner, therefore, as each of these contending parties condemns the rest, so an unprejudiced stander-by will condemn and reject them all together, observing that they all draw their origin from the same fallacious principle, and are carried on by the same artifice to answer the same ends of the priest and the magistrate.

VII. *Euph.* You hold then, that the magistrate concurs with the priest in imposing on the people. *Alc.* I do; and so must every one who considers things in a true light. For you must know, the magistrate's principal aim is to keep the people under him in awe. Now the public eye restrains men from open offences against the laws and government. But to prevent secret transgressions, a magistrate finds it expedient, that men should believe there is an eye of providence watching over their private actions and designs. And, to intimidate those who might otherwise be drawn into crimes by the prospect of pleasure and profit, he gives them to understand, that whoever escapes punishment in this life will be sure to find it in the next; and that so heavy and lasting, as infinitely to overbalance the pleasure and profit accruing from his crimes. Hence the belief of a God, the immortality of the soul, and a future state of rewards and punishments have been esteemed useful engines of government. And to the end that these notional airy doctrines might make a sensible impression, and be retained on the minds of men, skilful rulers have in the several civilized nations of the earth devised temples, sacrifices, churches, rites, ceremonies, habits, music, prayer, preaching, and the like spiritual trumpery, whereby the priest maketh temporal gains, and the magistrate findeth his account in frightening and subduing the people. This is the original of the combination between church and state, of religion by law established, of rights, immunities, and incomes of priests all over the world: there being no government but would have you fear God, that you may honour the king or civil power. And you will ever observe that politic princes keep up a good understanding with their clergy, to the end that they in return, by inculcating religion and loyalty into the minds of the people, may render them tame, timorous, and slavish. Crito and I heard this discourse of Alciphron with the utmost attention, though without any appearance of surprise, there being indeed nothing in it to us new or unexpected. But Euphranor, who had never

before been present at such conversation, could not help showing some astonishment; which Lysicles observing, asked him with a lively air, how he liked Alciphron's lecture. It is, said he, the first I believe that you ever heard of the kind, and requireth a strong stomach to digest it. *Euph.* I will own to you that my digestion is none of the quickest; but it hath sometimes, by degrees, been able to master things which at first appeared indigestible. At present I admire the free spirit and eloquence of Alciphron: but, to speak the truth, I am rather astonished, than convinced of the truth of his opinions. How (said he, turning to Alciphron), is it then possible you should not believe the being of a God? *Alc.* To be plain with you, I do not.

VIII. But this is what I foresaw, a flood of light let in at once upon the mind being apt to dazzle and disorder, rather than enlighten it. Was I not pinched in time, the regular way would be to have begun with the circumstantials of religion; next to have attacked the mysteries of Christianity; after that proceeded to the practical doctrines; and in the last place to have extirpated that which, of all other religious prejudices, being the first taught, and basis of the rest, hath taken the deepest root in our minds, I mean the belief of a God. I do not wonder it sticks with you, having known several very ingenious men who found it difficult to free themselves from this prejudice. *Euph.* All men have not the same alacrity and vigour in thinking: for my own part, I find it a hard matter to keep pace with you. *Alc.* To help you, I will go a little way back, and resume the thread of my reasoning. First, I must acquaint you, that having applied my mind to contemplate the idea of truth, I discovered it to be of a stable, permanent, and uniform nature; not various and changeable, like modes or fashions, and things depending on fancy. In the next place, having observed several sects and subdivisions of sects espousing very different and contrary opinions, and yet all professing Christianity, I rejected those points wherein they differed, retaining only that which was agreed to by all; and so became latitudinarian. Having afterwards, upon a more enlarged view of things, perceived that Christians, Jews, and Mahometans had each their different systems of faith, agreeing only in the belief of one God, I became a deist. Lastly, extending my view to all the other various nations which inhabit this globe, and finding they agreed in no one point of faith, but differed one from another, as well as from the forementioned sects, even in the notion of a God, in which there is as great diversity as in the methods of worship, I thereupon became an atheist: it being my opinion that a man of courage and sense should follow his argument wherever it leads him, and that nothing is more ridiculous than to be a free-thinker by halves. I approve the man who makes thorough work, and, not content with

lopping off the branches, extirpates the very root from which they sprung.

IX. Atheism therefore, that bugbear of women and fools, is the very top and perfection of free-thinking. It is the grand *arcanum* to which a true genius naturally riseth, by a certain climax or gradation of thought, and without which he can never possess his soul in absolute liberty and repose. For your thorough conviction in this main article, do but examine the notion of a God with the same freedom that you would other prejudices. Trace it to the fountain-head, and you shall not find that you had it by any of your senses, the only true means of discovering what is real and substantial in nature: you will find it lying amongst other old lumber in some obscure corner of the imagination, the proper receptacle of visions, fancies, and prejudices of all kinds; and if you are more attached to this than the rest, it is only because it is the oldest. This is all, take my word for it, and not mine only, but that of many more the most ingenious men of the age, who, I can assure you, think as I do on the subject of a deity. Though some of them hold it proper to proceed with more reserve in declaring to the world their opinion in this particular, than in most others. And it must be owned, there are still too many in England who retain a foolish prejudice against the name of atheist. But it lessens every day among the better sort: and when it is quite worn out, our free-thinkers may then (and not till then) be said to have given the finishing stroke to religion; it being evident that so long as the existence of God is believed, religion must subsist in some shape or other. But the root being once plucked up, the scions which shot from it will of course wither and decay. Such are all those whimsical notions of conscience, duty, principle, and the like, which fill a man's head with scruples, awe him with fears, and make him a more thorough slave than the horse he rides. A man had better a thousand things be hunted by bailiffs or messengers than haunted by these spectres, which embarrass and embitter all his pleasures, creating the most real and sore servitude upon earth. But the free-thinker, with a vigorous flight of thought, breaks through those airy springes, and asserts his original independency. Others indeed may talk, and write, and fight about liberty, and make an outward pretence to it; but the free-thinker alone is truly free. Alciphron having ended this discourse with an air of triumph, Euphranor spoke to him in the following manner: You make clear work. The gentlemen of your profession are, it seems, admirable weeders. You have rooted up a world of notions: I should be glad to see what fine things you have planted in their stead. *Alc.* Have patience, good Euphranor. I will show you in the first place, that whatever was sound and good we leave untouched, and encourage it

to grow in the mind of man. And secondly, I will show you what excellent things we have planted in it. You must know then, that pursuing our close and severe scrutiny, we do at last arrive at something solid and real, in which all mankind agree, to wit, the appetites, passions, and senses: these are founded in nature, are real, have real objects, and are attended with real and substantial pleasures; food, drink, sleep, and the like animal enjoyments being what all men like and love. And if we extend our view to other kinds of animals, we shall find them all agree in this, that they have certain natural appetites and senses, in the gratifying and satisfying of which they are constantly employed. Now these real natural good things, which include nothing of notion or fancy, we are so far from destroying, that we do all we can to cherish and improve them. According to us, every wise man looks upon himself, or his own bodily existence in this present world, as the centre and ultimate end of all his actions and regards. He considers his appetites as natural guides directing to his proper good, his passions and senses as the natural, true means of enjoying this good. Hence he endeavours to keep his appetites in high relish, his passions and senses strong and lively, and to provide the greatest quantity and variety of real objects suited to them, which he studieth to enjoy by all possible means, and in the highest perfection imaginable. And the man who can do this without restraint, remorse, or fear, is as happy as any other animal whatsoever, or as his nature is capable of being. Thus I have given you a succinct view of the principles, discoveries, and tenets of the select spirits of this enlightened age.

X. Crito remarked, that Alciphron had spoken his mind with great clearness. Yes, replied Euphranor, we are obliged to the gentleman for letting us at once into the tenets of his sect. But, if I may be allowed to speak my mind, Alciphron, though in compliance with my own request, hath given me no small uneasiness. You need, said Alciphron, make no apology for speaking freely what you think to one who professeth himself a free-thinker. I should be sorry to make one whom I meant to oblige uneasy. Pray let me know wherein I have offended. I am half ashamed, replied Euphranor, to own that I, who am no great genius, have a weakness incidental to little ones. I would say that I have favourite opinions, which you represent to be errors and prejudices. For instance, the immortality of the soul is a notion I am fond of, as what supports the mind with a very pleasing prospect. And if it be an error, I should perhaps be of Tully's mind, who in that case professed he should be sorry to know the truth, acknowledging no sort of obligation to certain philosophers in his days, who taught the soul of man was mortal. They were, it seems, predecessors to those who are now called free-thinkers; which name being too general and indefinite, inasmuch as it com-

prehends all those who think for themselves, whether they agree in opinion with these gentlemen or no, it should not seem amiss to assign them a specific appellation or peculiar name, whereby to distinguish them from other philosophers, at least in our present conference. For I cannot bear to argue against free-thinking and free-thinkers. *Alc.* In the eyes of a wise man words are of small moment. We do not think truth attached to a name. *Euph.* If you please then, to avoid confusion, let us call your sect by the same name that Tully (who understood the force of language) bestowed upon them. *Alc.* With all my heart. Pray what might that name be? *Euph.* Why he calls them minute philosophers. Right, said Crito, the modern free-thinkers are the very same with those Cicero called minute philosophers, which name admirably suits them, they being a sort of sect which diminish all the most valuable things, the thoughts, views, and hopes of men: all the knowledge, notions, and theories of the mind they reduce to sense; human nature they contract and degrade to the narrow, low standard of animal life, and assign us only a small pittance of time instead of immortality. Alciphron very gravely remarked, that the gentlemen of his sect had done no injury to man, and that if he be a little, short-lived, contemptible animal, it was not their saying it made him so: and they were no more to blame for whatever defects they discover, than a faithful glass for making the wrinkles which it only shows. As to what you observe, said he, of those we now call free-thinkers having been anciently termed minute philosophers, it is my opinion this appellation might be derived from their considering things minutely, and not swallowing them in the gross, as other men are used to do. Besides, we all know the best eyes are necessary to discern the minutest objects; it seems therefore, that minute philosophers might have been so called from their distinguished perspicacity. *Euph.* O Alciphron! these minute philosophers (since that is their true name) are a sort of pirates who plunder all that come in their way. I consider myself as a man left stripped and desolate on a bleak beach.

XI. But who are these profound and learned men that of late years have demolished the whole fabric which lawgivers, philosophers, and divines had been erecting for so many ages? Lysicles hearing these words smiled, and said he believed Euphranor had figured to himself philosophers in square caps and long gowns: but, thanks to these happy times, the reign of pedantry was over. Our philosophers, said he, are of a very different kind from those awkward students, who think to come at knowledge by poring on dead languages, and old authors, or by sequestering themselves from the cares of the world to meditate in solitude and retirement. They are the best bred men of the age, men who know the world, men of pleasure, men of fashion, and fine

gentlemen. *Euph.* I have some small notion of the people you mention, but should never have taken them for philosophers. *Cri.* Nor would any one else till of late. The world, it seems, was long under a mistake about the way to knowledge, thinking it lay through a tedious course of academical education and study. But among the discoveries of the present age, one of the principal is the finding out that such a method doth rather retard and obstruct, than promote knowledge. *Alc.* Academical study may be comprised in two points, reading and meditation. Their reading is chiefly employed on ancient authors in dead languages: so that a great part of their time is spent in learning words; which, when they have mastered with infinite pains, what do they get by it but old and obsolete notions, that are now quite exploded and out of use? Then, as to their meditations, what can they possibly be good for? He that wants the proper materials of thought, may think and meditate for ever to no purpose: those cobwebs spun by scholars out of their own brains being alike unserviceable, either for use or ornament. Proper ideas or materials are only to be got by frequenting good company. I know several gentlemen, who, since their appearance in the world, have spent as much time in rubbing off the rust and pedantry of a college education, as they had done before in acquiring it. *Lys.* I'll undertake, a lad of fourteen, bred in the modern way, shall make a better figure, and be more considered in any drawing-room or assembly of polite people, than one of four and twenty, who hath lain by a long time at school and college. He shall say better things, in a better manner, and be more liked by good judges. *Euph.* Where doth he pick up all this improvement? *Cri.* Where our grave ancestors would never have looked for it, in a drawing-room, a coffee-house, a chocolate-house, at the tavern, or groom-porter's. In these and the like fashionable places of resort, it is the custom for polite persons to speak freely on all subjects, religious, moral, or political. So that a young gentleman who frequents them is in the way of hearing many instructive lectures, seasoned with wit and raillery, and uttered with spirit. Three or four sentences from a man of quality spoken with a good air, make more impression, and convey more knowledge, than a dozen dissertations in a dry academical way. *Euph.* There is then no method or course of studies in those places. *Lys.* None but an easy free conversation, which takes in every thing that offers, without any rule or design. *Euph.* I always thought that some order was necessary to attain any useful degree of knowledge; that haste and confusion begat a conceited ignorance; that to make our advances sure, they should be gradual, and those points first learned which might cast a light on what was to follow. *Alc.* So long as learning was to be obtained only by that slow formal course of study, few

of the better sort knew much of it: but now it is grown an amusement, our young gentry and nobility imbibe it insensibly amidst their diversions, and make a considerable progress. *Euph.* Hence probably the great number of minute philosophers. *Cri.* I is to this that sect is owing for so many ingenious proficients of both sexes. You may now commonly see (what no former age ever saw) a young lady or a *petit maître* nonplus a divine or an old-fashioned gentleman, who hath read many a Greek and Latin author, and spent much time in hard methodical study. *Euph.* It should seem then that method, exactness, and industry are a disadvantage. Here Alciphron, turning to Lysicles, said he could make the point very clear, if Euphranor had any notion of painting. *Euph.* I never saw a first-rate picture in my life, but have a tolerable collection of prints, and have seen some good drawings. *Alc.* You know then the difference between the Dutch and the Italian manner. *Euph.* I have some notion of it. *Alc.* Suppose now a drawing finished by the nice and laborious touches of a Dutch pencil, and another off hand scratched out in the free manner of a great Italian master. The Dutch piece, which hath cost so much pains and time, will be exact indeed, but without that force, spirit, or grace, which appear in the other, and are the effects of an easy, free pencil. Do but apply this, and the point will be clear. *Euph.* Pray inform me, did those great Italian masters begin and proceed in their art without any choice of method or subject, and always draw with the same ease and freedom? Or did they observe some method, beginning with simple and elementary parts, an eye, a nose, a finger, which they drew with great pains and care, often drawing the same thing, in order to draw it correctly, and so proceeding with patience and industry, till after a considerable length of time they arrived at the free masterly manner you speak of? If this were the case, I leave you to make the application. *Alc.* You may dispute the matter if you please. But a man of parts is one thing, and a pedant another. Pains and method may do for some sort of people. A man must be a long time kindling wet straw into a vile smothering flame, but spirits blaze out at once. *Euph.* The minute philosophers have, it seems, better parts than other men, which qualifies them for a different education. *Alc.* Tell me, Euphranor, what is it that gives one man a better mien than another; more politeness in dress, speech, and motion? Nothing but frequenting good company. By the same means men get insensibly a delicate taste, a refined judgment, a certain politeness in thinking and expressing one's self. No wonder if you countrymen are strangers to the advantage of polite conversation, which constantly keeps the mind awake and active, exercising its faculties, and calling forth all its strength and spirit on a thousand different occasions and subjects, that never came in the way of a

book-worm in a college, no more than of a ploughman. *Cri.* Hence those lively faculties, that quickness of apprehension, that slyness of ridicule, that egregious talent of wit and humour which distinguish the gentlemen of your profession. *Euph.* It should seem then that your sect is made up of what you call fine gentlemen. *Lys.* Not altogether, for we have among us some contemplative spirits of a coarser education, who, from observing the behaviour and proceedings of apprentices, watermen, porters, and the assemblies of rabble in the streets, have arrived at a profound knowledge of human nature, and made great discoveries about the principles, springs, and motives of moral actions. These have demolished the received systems, and done a world of good in the city. *Alc.* I tell you we have men of all sorts and professions, plodding citizens, thriving stockjobbers, skilful men in business, polite courtiers, gallant men of the army; but our chief strength and flower of the flock are those promising young men who have the advantage of a modern education. These are the growing hopes of our sect, by whose credit and influence in a few years we expect to see those great things accomplished that we have in view. *Euph.* I could never have imagined your sect so considerable. *Alc.* There are in England many honest folk as much in the dark about these matters as yourselves.

XII. To judge of the prevailing opinion among people of fashion, by what a senator saith in the house, a judge upon the bench, or a priest in the pulpit, who all speak according to law, that is, to the reverend prejudices of our forefathers, would be wrong. You should go into good company, and mind what men of parts and breeding say, those who are best heard and most admired, as well in public places of resort as in private visits. He only who hath these opportunities, can know our real strength, our numbers, and the figure that we make. *Euph.* By your account there must be many minute philosophers among the men of rank and fortune. *Alc.* Take my word for it, not a few, and they do much contribute to the spreading our notions. For he who knows the world must observe, that fashions constantly descend. It is therefore the right way to propagate an opinion from the upper end. Not to say, that the patronage of such men is an encouragement to our authors. *Euph.* It seems then you have authors among you. *Lys.* That we have, several, and those very great men, who have obliged the world with many useful and profound discoveries. *Cri.* Moschon, for instance, hath proved that man and beast are really of the same nature: that consequently a man need only indulge his senses and appetites to be as happy as a brute. Gorgias hath gone further, demonstrating man to be a piece of clock-work or machine; and that thought or reason are the same thing as the impulse of

one ball against another. Cimon hath made noble use of these discoveries, proving as clearly as any proposition in mathematics, that conscience is a whim, and morality a prejudice; and that a man is no more accountable for his actions than a clock is for striking. Tryphon hath written irrefragably on the usefulness of vice. Thrasenor hath confuted the foolish prejudice men had against atheism, showing that a republic of atheists might live very happily together. Demylus hath made a jest of loyalty, and convinced the world there is nothing in it: to him and another philosopher of the same stamp, this age is indebted for discovering, that public spirit is an idle enthusiasm which seizeth only on weak minds. It would be endless to recount the discoveries made by writers of this sect. *Lys.* But the masterpiece and finishing stroke is a learned anecdote of our great Diagoras, containing a demonstration against the being of God; which, it is conceived, the public is not yet ripe for. But I am assured by some judicious friends who have seen it, that it is as clear as day-light, and will do a world of good, at one blow demolishing the whole system of religion. These discoveries are published by our philosophers, sometimes in just volumes, but often in pamphlets and loose papers, for their readier conveyance through the kingdom. And to them must be ascribed that absolute and independent freedom, which groweth so fast to the terror of all bigots. Even the dull and ignorant begin to open their eyes, and be influenced by the example and authority of so many ingenious men. *Euph.* It should seem by this account, that your sect extend their discoveries beyond religion; and that loyalty to his prince, or reverence for the laws, are but mean things in the eye of a minute philosopher. *Lys.* Very mean: we are too wise to think there is any thing sacred either in king or constitution, or indeed in any thing else. A man of sense may perhaps seem to pay an occasional regard to his prince; but this is no more at bottom than what he pays to God, when he kneels at the sacrament to qualify himself for an office. Fear God, and honour the king, are a pair of slavish maxims, which had for a long time cramped human nature, and awed, not only weak minds, but even men of good understanding, till their eyes, as I observed before, were opened by our philosophers. *Euph.* Methinks I can easily comprehend that, when the fear of God is quite extinguished, the mind must be very easy with respect to other duties, which become outward pretences and formalities, from the moment that they quit their hold upon the conscience, and conscience always supposeth the being of a God. But I still thought that Englishmen of all denominations (how widely soever they differ as to some particular points) agreed in the belief of a God, and of so much at least as is called natural religion. *Alc.* I have already told you my own opinion of those

matters, and what I know to be the opinion of many more. *Cri.* Probably, Euphranor, by the title of *deists*, which is sometimes given to minute philosophers, you have been misled to imagine they believe and worship a God according to the light of nature: but by living among them, you may soon be convinced of the contrary. They have neither time, nor place, nor form of divine worship; they offer neither prayers nor praises to God in public; and in their private practice show a contempt or dislike even of the duties of natural religion. For instance, the saying grace before and after meals is a plain point of natural worship, and was once universally practised; but in proportion as this sect prevailed it hath been laid aside, not only by the minute philosophers themselves, who would be infinitely ashamed of such a weakness as to beg God's blessing, or give God thanks for their daily food; but also by others who are afraid of being thought fools by the minute philosophers. *Euph.* Is it possible that men, who really believe a God, should yet decline paying so easy and reasonable a duty for fear of incurring the contempt of atheists? *Cri.* I tell you there are many, who believing in their hearts the truth of religion, are yet afraid or ashamed to own it, lest they should forfeit their reputation with those who have the good luck to pass for great wits and men of genius. *Alc.* O Euphranor, we must make allowance for Crito's prejudice: he is a worthy gentleman, and means well. But doth it not look like prejudice to ascribe the respect that is paid our ingenious free-thinkers rather to good luck than to merit? *Euph.* I acknowledge their merit to be very wonderful, and that those authors must needs be great men who are able to prove such paradoxes: for example, that so knowing a man as a minute philosopher should be a mere machine, or at best no better than a brute. *Alc.* It is a true maxim, that a man should think with the learned and speak with the vulgar. I should be loath to place a gentleman of merit in such a light, before prejudiced and ignorant men. The tenets of our philosophy have this in common with many other truths, in metaphysics, geometry, astronomy, and natural philosophy, that vulgar ears cannot bear them. All our discoveries and notions are in themselves true and certain; but they are at present known only to the better sort, and would sound strange and odd among the vulgar. But this, it is to be hoped, will wear off with time. *Euph.* I do not wonder that vulgar minds should be startled at the notions of your philosophy. *Cri.* Truly a very curious sort of philosophy, and much to be admired.

XIII. The profound thinkers of this way have taken a direct contrary course to all the great philosophers of former ages, who made it their endeavour to raise and refine human kind, and remove it as far as possible from the brute; to moderate and

subdue men's appetites; to remind them of the dignity of their nature; to awaken and improve their superior faculties and direct them to the noblest objects; to possess men's minds with a high sense of the Divinity, of the supreme good, and the immortality of the soul. They took great pains to strengthen the obligations to virtue, and upon all those subjects have wrought out noble theories, and treated with singular force of reason. But it seems our minute philosophers act the reverse of all other wise and thinking men; it being their end and aim to erase the principles of all that is great and good from the mind of man, to unhinge all order of civil life, to undermine the foundations of morality, and, instead of improving and ennobling our natures, to bring us down to the maxims and way of thinking of the most uneducated and barbarous nations, and even to degrade human kind to a level with brute beasts. And all the while they would pass upon the world for men of deep knowledge. But in effect what is all this negative knowledge better than downright savage ignorance? That there is no Providence, no spirit, no future state, no moral duty: truly a fine system for an honest man to own, or an ingenious man to value himself upon! Alciphron, who heard this discourse with some uneasiness, very gravely replied: Disputes are not to be decided by the weight of authority, but by the force of reason. You may pass, indeed, general reflections on our notions, and call them brutal and barbarous if you please: but it is such brutality and such barbarism as few could have attained to if men of the greatest genius had not broken the ice, there being nothing more difficult than to get the better of education, and conquer old prejudices. To remove and cast off a heap of rubbish that has been gathering upon the soul from our very infancy, requires great courage and great strength of faculties. Our philosophers, therefore, do well deserve the name of *esprits forts*, men of strong heads, free-thinkers, and such like appellations betokening great force and liberty of mind. It is very possible, the heroic labours of these men may be represented (for what is not capable of misrepresentation?) as a piratical plundering and stripping the mind of its wealth and ornaments, when it is in truth the divesting it only of its prejudices, and reducing it to its untainted original state of nature. Oh nature! the genuine beauty of pure nature! *Euph.* You seem very much taken with the beauty of nature. Be pleased to tell me, Alciphron, what those things are which you esteem natural, or by what mark I may know them.

XIV. *Alc.* For a thing to be natural, for instance to the mind of man, it must appear originally therein, it must be universally in all men, it must be invariably the same in all nations and ages. These limitations of original, universal, and invariable, exclude all those notions found in the human mind, which are the

effect of custom and education. The case is the same with respect to all other species of beings. A cat, for example, hath a natural inclination to pursue a mouse, because it agrees with the forementioned marks. But if a cat be taught to play tricks, you will not say those tricks are natural. For the same reason, if upon a plum-tree peaches and apricots are engrafted, nobody will say they are the natural growth of the plum-tree. *Euph.* But to return to *man:* it seems you allow those things alone to be natural to him, which show themselves upon his first entrance into the world; to wit the senses and such passions and appetites as are discovered upon the first application of their respective objects. *Alc.* That is my opinion. *Euph.* Tell me, Alciphron, if from a young apple-tree after a certain period of time there should shoot forth leaves, blossoms, and apples; would you deny these things to be natural, because they did not discover and display themselves in the tender bud? *Alc.* I would not. *Euph.* And suppose that in a man, after a certain season, the appetite of lust or the faculty of reason shall shoot forth, open, and display themselves as leaves and blossoms do in a tree; would you therefore deny them to be natural to him, because they did not appear in his original infancy? *Alc.* I acknowledge I would not. *Euph.* It seems therefore, that the first mark of a thing's being natural to the mind was not warily laid down by you; to wit, that it should appear originally in it. *Alc.* It seems so. *Euph.* Again, inform me, Alciphron, whether you do not think it natural for an orange-plant to produce oranges? *Alc.* I do. *Euph.* But plant it in the north end of Great Britain, and it shall with care produce, perhaps, a good sallad; in the southern parts of the same island, it may with much pains and culture thrive and produce indifferent fruit; but in Portugal or Naples it will produce much better with little or no pains. Is this true or not? *Alc.* It is true. *Euph.* The plant being the same in all places doth not produce the same fruit, sun, soil, and cultivation making a difference. *Alc.* I grant it. *Euph.* And since the case is, you say, the same with respect to all species, why may we not conclude by a parity of reason that things may be natural to human kind, and yet neither found in all men, nor invariably the same where they are found? *Alc.* Hold, Euphranor, you must explain yourself further. I shall not be over hasty in my concessions. *Lys.* You are in the right, Alciphron, to stand upon your guard. I do not like these ensnaring questions. *Euph.* I desire you to make no concessions in complaisance to me, but only to tell me your opinion upon each particular, that we may understand one another, know wherein we agree, and proceed jointly in finding out the truth. But (added Euphranor, turning to Crito and me) if the gentlemen are against a free and fair inquiry, I shall give them no further

trouble. *Alc.* Our opinions will stand the test. We fear no trial: proceed as you please. *Euph.* It seems then that from what you have granted it should follow, things may be natural to men, although they do not actually show themselves in all men, nor in equal perfection; there being as great difference of culture and every other advantage with respect to human nature, as is to be found with respect to the vegetable nature of plants, to use your own similitude: is it so or not? *Alc.* It is. *Euph.* Answer me, Alciphron, do not men in all times and places, when they arrive at a certain age, express their thoughts by speech? *Alc.* They do. *Euph.* Should it not seem then that language is natural? *Alc.* It should. *Euph.* And yet there is a great variety of languages. *Alc.* I acknowledge there is. *Euph.* From all this will it not follow, a thing may be natural and yet admit of variety? *Alc.* I grant it will. *Euph.* Should it not seem therefore to follow, that a thing may be natural to mankind, though it have not those marks or conditions assigned; though it be not original, universal, and invariable? *Alc.* It should. *Euph.* And that consequently religious worship and civil government may be natural to man, notwithstanding they admit of sundry forms and different degrees of perfection? *Alc.* It seems so. *Euph.* You have granted already that reason is natural to mankind. *Alc.* I have. *Euph.* Whatever therefore is agreeable to reason is agreeable to the nature of man. *Alc.* It is. *Euph.* Will it not follow from hence that truth and virtue are natural to man? *Alc.* Whatever is reasonable I admit to be natural. *Euph.* And as those fruits which grow from the most generous and mature stock, in the choicest soil, and with the best culture, are most esteemed; even so ought we not to think, those sublime truths which are the fruits of mature thought, and have been rationally deduced by men of the best and most improved understandings, to be the choicest productions of the rational nature of man? And if so, being in fact reasonable, natural, and true, they ought not to be esteemed unnatural whims, errors of education, and groundless prejudices, because they are raised and forwarded by manuring and cultivating our tender minds, because they take early root and sprout forth betimes by the care and diligence of our instructors. *Alc.* Agreed, provided still they may be rationally deduced: but to take this for granted of what men vulgarly call the truths of morality and religion, would be begging the question. *Euph.* You are in the right: I do not, therefore, take for granted that they are rationally deduced. I only suppose that, if they are, they must be allowed natural to man, or in other words agreeable to, and growing from, the most excellent and peculiar part of human nature. *Alc.* I have nothing to object to this. *Euph.* What shall we think then of your former assertions; that nothing is natural to man but what may be found in

all men, in all nations and ages of the world; that to obtain a genuine view of human nature, we must extirpate all the effects of education and instruction, and regard only the senses, appetites, and passions which are to be found originally in all mankind; that, therefore, the notion of a God can have no foundation in nature, as not being originally in the mind, nor the same in all men? Be pleased to reconcile these things with your late concessions, which the force of truth seems to have extorted from you.

XV. *Alc.* Tell me, Euphranor, whether truth be not one and the same uniform, invariable thing: and, if so, whether the many different and inconsistent notions which men entertain of God and duty be not a plain proof there is no truth in them? *Euph.* That truth is constant and uniform I freely own, and that consequently opinions repugnant to each other cannot be true: but I think it will not hence follow they are all alike false. If among various opinions about the same thing, one be grounded on clear and evident reasons, that is to be thought true, and others only so far as they consist with it. Reason is the same, and rightly applied will lead to the same conclusions in all times and places. Socrates two thousand years ago seems to have reasoned himself into the same notion of a God, which is entertained by the philosophers of our days, if you will allow that name to any who are not atheists. And the remark of Confucius, that a man should guard in his youth against lust, in manhood against faction, and in old age against covetousness, is as current morality in Europe as in China. *Alc.* But still it would be a satisfaction if all men thought the same way, difference of opinions implying uncertainty. *Euph.* Tell me, Alciphron, what you take to be the cause of a lunar eclipse. *Alc.* The shadow of the earth interposing between the sun and moon. *Euph.* Are you assured of this? *Alc.* Undoubtedly. *Euph.* Are all mankind agreed in this truth? *Alc.* By no means. Ignorant and barbarous people assign different ridiculous causes of this appearance. *Euph.* It seems then there are different opinions about the nature of an eclipse. *Alc.* There are. *Euph.* And nevertheless one of these opinions is true. *Alc.* It is. *Euph.* Diversity therefore of opinions about a thing doth not hinder but that the thing may be, and one of the opinions concerning it may be true. *Alc.* I acknowledge it. *Euph.* It should seem, therefore, that your argument against the belief of a God from the variety of opinions about his nature is not conclusive. Nor do I see how you can conclude against the truth of any moral or religious tenet, from the various opinions of men upon the same subject. Might not a man as well argue, that no historical account of a matter of fact can be true, when different relations are given of it? Or may we not as well infer, that because the

several sects of philosophy maintain different opinions, none of them can be in the right, not even the minute philosophers themselves? During this conversation Lysicles seemed uneasy, like one that wished in his heart there was no God. Alciphron, said he, methinks you sit by very tamely, while Euphranor saps the foundation of your tenets. Be of good courage, replied Alciphron: a skilful gamester has been known to ruin his adversary by yielding him some advantage at first. I am glad, said he, turning to Euphranor, that you are drawn in to argue and make your appeals to reason. For my part, wherever reason leads I shall not be afraid to follow. Know then, Euphranor, that I freely give up what you now contend for. I do not value the success of a few crude notions thrown out in a loose discourse, any more than the Turks do the loss of that vile infantry they place in the front of their armies, for no other end but to waste the powder and blunt the swords of their enemies. Be assured I have in reserve a body of other-guess arguments, which I am ready to produce. I will undertake to prove—— *Euph.* O Alciphron! I do not doubt your faculty of proving. But before I put you to the trouble of any further proofs, I should be glad to know whether the notions of your minute philosophy are worth proving. I mean, whether they are of use and service to mankind?

XVI. *Alc.* As to that, give me leave to tell you, a thing may be useful to one man's views, and not to another's: but truth is truth, whether useful or not, and must not be measured by the convenience of this or that man, or party of men. *Euph.* But is not the general good of mankind to be regarded as a rule and measure of moral truths, of all such truths as direct or influence the moral actions of men? *Alc.* That point is not clear to me. I know, indeed, that legislators, and divines, and politicians have always alleged, that it is necessary to the well-being of mankind, that they should be kept in awe by the slavish notions of religion and morality. But granting all this, how will it prove these notions to be true? Convenience is one thing, and truth is another. A genuine philosopher, therefore, will overlook all advantages and consider only truth itself, as such. *Eph.* Tell me, Alciphron, is your genuine philosopher a wise man, or a fool? *Alc.* Without question, the wisest of men. *Euph.* Which is to be thought the wise man, he who acts with design, or he who acts at random? *Alc.* He who acts with design. *Euph.* Whoever acts with design, acts for some end: doth he not? *Alc.* He doth. *Euph.* And a wise man for a good end? *Alc.* True. *Euph.* And he showeth his wisdom in making choice of fit means to obtain his end. *Alc.* I acknowledge it. *Euph.* By how much therefore the end proposed is more excellent, and by how much fitter the means employed are to obtain it, so much the wiser is

the agent to be esteemed. *Alc.* This seems to be true. *Euph.* Can a rational agent propose a more excellent end than happiness? *Alc.* He cannot. *Euph.* Of good things, the greater good is most excellent. *Alc.* Doubtless. *Euph.* Is not the general happiness of mankind a greater good than the private happiness of one man, or of some certain men? *Alc.* It is. *Euph.* Is it not therefore the most excellent end? *Alc.* It seems so. *Euph.* Are not then those who pursue this end by the properest methods to be thought the wisest men? *Alc.* I grant they are. *Euph.* Which is a wise man governed by, wise or foolish notions? *Alc.* By wise, doubtless. *Euph.* It seems then to follow, that he who promotes the general well-being of mankind by the proper necessary means, is truly wise, and acts upon wise grounds. *Alc.* It should seem so. *Euph.* And is not folly of an opposite nature to wisdom? *Alc.* It is. *Euph.* Might it not therefore be inferred, that those men are foolish who go about to unhinge such principles as have a necessary connexion with the general good of mankind? *Alc.* Perhaps this might be granted: but at the same time I must observe, that it is in my power to deny it. *Euph.* How! you will not surely deny the conclusion, when you admit the premises. *Alc.* I would fain know upon what terms we argue; whether in this progress of question and answer, if a man makes a slip, it be utterly irretrievable. For if you are on the catch to lay hold of every advantage, without allowing for surprise or inattention, I must tell you this is not the way to convince my judgment. *Euph.* O Alciphron! I aim not at triumph, but at truth. You are therefore at full liberty to unravel all that hath been said, and to recover or correct any slip you have made. But then you must distinctly point it out: otherwise it will be impossible ever to arrive at any conclusion. *Alc.* I agree with you upon these terms jointly to proceed in search of truth, for to that I am sincerely devoted. In the progress of our present inquiry I was, it seems, guilty of an oversight, in acknowledging the general happiness of mankind to be a greater good than the particular happiness of one man. For in fact, the individual happiness of every man alone, constitutes his own entire good. The happiness of other men making no part of mine, is not with respect to me a good: I mean a true natural good. It cannot therefore be a reasonable end to be proposed by me in truth and nature (for I do not speak of political pretences), since no wise man will pursue an end which doth not concern him. This is the voice of nature. O nature! thou art the fountain, original, and pattern of all that is good and wise. *Euph.* You would like then to follow nature, and propose her as a guide and pattern for your imitation. *Alc.* Of all things. *Euph.* Whence do you gather this respect for nature? *Alc.* From the excellency of her pro-

ductions. *Euph.* In a vegetable, for instance, you say there is use and excellency, because the several parts of it are so connected and fitted to each other, as to protect and nourish the whole, make the individual grow, and propagate the kind, and because in its fruits or qualities it is adapted to please the sense, or contribute to the benefit of man. *Alc.* Even so. *Euph.* In like manner, do you not infer the excellency of animal bodies from observing the frame and fitness of their several parts, by which they mutually conspire to the well-being of each other as well as of the whole? Do you not also observe a natural union and consent between animals of the same kind, and that even different kinds of animals have certain qualities and instincts whereby they contribute to the exercise, nourishment, and delight of each other? Even the inanimate, unorganized elements seem to have an excellence relative to each other. Where was the excellency of water, if it did not cause herbs and vegetables to spring from the earth, and put forth flowers and fruits? And what would become of the beauty of the earth, if it was not warmed by the sun, moistened by water, and fanned by air? Throughout the whole system of the visible and natural world, do you not perceive a mutual connexion and correspondence of parts? And is it not from hence that you frame an idea of the perfection, and order, and beauty of nature? *Alc.* All this I grant. *Euph.* And have not the Stoics heretofore said (who were no more bigots than you are), and did you not yourself say, this pattern of order was worthy the imitation of rational agents? *Alc.* I do not deny this to be true. *Euph.* Ought we not therefore to infer the same union, order, and regularity in the moral world that we perceive to be in the natural? *Alc.* We ought. *Euph.* Should it not therefore seem to follow that reasonable creatures were, as the philosophical emperor* observes, made one for another: and consequently that man ought not to consider himself as an independent individual, whose happiness is not connected with that of other men; but rather as the part of a whole, to the common good of which he ought to conspire, and order his ways and actions suitably, if he would live according to nature? *Alc.* Supposing this to be true, what then? *Euph.* Will it not follow that a wise man should consider and pursue his private good, with regard to, and in conjunction with, that of other men? in granting of which, you thought yourself guilty of an oversight. Though, indeed, the sympathy of pain and pleasure, and the mutual affections by which mankind are knit together, have been always allowed a plain proof of this point: and though it was the constant doctrine of those, who were esteemed the wisest and most thinking men among the ancients, as the Platonists, Peripatetics, and Stoics; to say nothing of

* M. Antonin. l. 4.

Christians, whom you pronounce to be an unthinking, prejudiced sort of people. *Alc.* I shall not dispute this point with you. *Euph.* Since therefore we are so far agreed, should it not seem to follow from the premises, that the belief of a God, of a future state, and of moral duties, are the only wise, right, and genuine principles of human conduct, in case they have a necessary connexion with the well-being of mankind? This conclusion you have been led to by your own concessions and by the analogy of nature. *Alc.* I have been drawn into it step by step through several preliminaries, which I cannot well call to mind: but one thing I observe, that you build on the necessary connexion those principles have with the well-being of mankind, which is a point neither proved nor granted. *Lys.* This I take to be a grand fundamental prejudice, as I doubt not, if I had time, I could make appear. But it is now late, and we will, if you think fit, defer this subject till to-morrow. Upon which motion of Lysicles, we put an end to our conversation for that evening.

THE SECOND DIALOGUE.

I. Vulgar error, that vice is hurtful. II. The benefit of drunkenness, gaming, and whoring. III. Prejudice against vice wearing off. IV. Its usefulness illustrated in the instances of Callicles and Telesilla. V. The reasoning of Lysicles in behalf of vice, examined. VI. Wrong to punish actions, when the doctrines whence they flow are tolerated. VII. Hazardous experiment of the minute philosophers. VIII. Their doctrine of circulation and revolution. IX. Their sense of a reformation. X. Riches alone not the public weal. XI. Authority of minute philosophers: their prejudice against religion. XII. Effects of luxury: virtue, whether notional. XIII. Pleasure of sense. XIV. What sort of pleasure most natural to man. XV. Dignity of human nature. XVI. Pleasure mistaken. XVII. Amusements, misery, and cowardice of minute philosophers. XVIII. Rakes cannot reckon. XIX. Abilities and success of minute philosophers. XX. Happy effects of the minute philosophy in particular instances. XXI. Their free notions about government. XXII. England the proper soil for minute philosophy. XXIII. The policy and address of its professors. XXIV. Merit of minute philosophers towards the public. XXV. Their notions and character. XXVI. Their tendency towards popery and slavery.

I. Next morning, Alciphron and Lysicles said the weather was so fine they had a mind to spend the day abroad, and take a cold dinner under a shade in some pleasant part of the country. Whereupon, after breakfast, we went down to a beach about half a mile off; where we walked on the smooth sand, with the ocean on one hand, and on the other wild broken rocks, intermixed with shady trees and springs of water, till the sun began to be uneasy. We then withdrew into a hollow glade, between two rocks, where we had no sooner seated ourselves but Lysicles addressing himself to Euphranor, said: I am now ready to perform what I undertook last evening, which was to show, there is nothing in

that necessary connexion which some men imagine between those principles you contend for, and the public good. I freely own, that if this question was to be decided by the authority of legislators or philosophers, it must go against us. For those men generally take it for granted, that vice is pernicious to the public; and that men cannot be kept from vice but by the fear of God, and the sense of a future state; whence they are induced to think the belief of such things necessary to the well-being of human kind. This false notion hath prevailed for many ages in the world, and done an infinite deal of mischief, being in truth the cause of religious establishments, and gaining the protection and encouragement of laws and magistrates to the clergy and their superstitions. Even some of the wisest among the ancients, who agreed with our sect in denying a providence and the immortality of the soul, had nevertheless the weakness to lie under the common prejudice that vice was hurtful to societies of men. But England hath of late produced great philosophers who have undeceived the world, and proved to a demonstration that private vices are public benefits. This discovery was reserved to our times, and our sect hath the glory of it. *Cri.* It is possible some men of fine understanding might in former ages have had a glimpse of this important truth; but it may be presumed they lived in ignorant times and bigoted countries, which were not ripe for such a discovery. *Lys.* Men of narrow capacities and short sight, being able to see no further than one link in a chain of consequences, are shocked at small evils which attend upon vice. But those who can enlarge their view, and look through a long series of events, may behold happiness resulting from vice, and good springing out of evil in a thousand instances. To prove my point I shall not trouble you with authorities or far-fetched arguments, but bring you to plain matter of fact. Do but take a view of each particular vice, and trace it through its effects and consequences, and then you will clearly perceive the advantage it brings to the public.

II. Drunkenness, for instance, is by your sober moralists thought a pernicious vice; but it is for want of considering the good effects that flow from it. For in the first place, it increases the malt-tax, a principal branch of his majesty's revenue, and thereby promotes the safety, strength, and glory of the nation. Secondly, it employs a great number of hands, the brewer, the maltster, the ploughman, the dealer in hops, the smith, the carpenter, the brazier, the joiner, with all other artificers necessary to supply those enumerated with their respective instruments and utensils. All which advantages are procured from drunkenness in the vulgar way, by strong beer. This point is so clear it will admit of no dispute. But while you are forced to allow thus much, I foresee you are ready to object against drunkenness

occasioned by wine and spirits, as exporting wealth into foreign countries. But you do not reflect upon the number of hands which even this sets on work at home: the distillers, the vintners, the merchants, the sailors, the shipwrights, with all those who are employed towards victualling and fitting out ships, which upon a nice computation will be found to include an incredible variety of trades and callings. Then for freighting our ships to answer these foreign importations, all our manufacturers throughout the kingdom are employed, the spinners, the weavers, the dyers, the wool-combers, the carriers, the packers. And the same may be said of many other manufactures, as well as the woollen. And if it be further considered, how many men are enriched by all the forementioned ways of trade and business, and the expenses of these men and their families, in all the several articles of convenient and fashionable living, whereby all sorts of trades and callings, not only at home, but throughout all parts wherever our commerce reaches, are kept in employment; you will be amazed at the wonderfully extended scene of benefits which arise from the single vice of drunkenness, so much run down and declaimed against by all grave reformers. With as much judgment your half-witted folk are accustomed to censure gaming. And indeed (such is the ignorance and folly of mankind) a gamester and a drunkard are thought no better than public nuisances, when in truth they do each in their way greatly conduce to the public benefit. If you look only on the surface and first appearance of things, you will no doubt think playing at cards a very idle and fruitless occupation. But dive deeper, and you shall perceive this idle amusement employs the card-maker, and he sets the paper-mills at work, by which the poor rag-man is supported; not to mention the builders and workers in wood and iron that are employed in erecting and furnishing those mills. Look still deeper, and you shall find that candles and chair-hire employ the industrious and the poor, who by these means come to be relieved by sharpers and gentlemen, who would not give one penny in charity. But you will say that many gentlemen and ladies are ruined by play, without considering that what one man loses another gets, and that consequently as many are made as ruined: money changeth hands, and in this circulation the life of business and commerce consists. When money is spent, it is all one to the public who spends it. Suppose a fool of quality becomes the dupe of a man of mean birth and circumstances, who has more wit: in this case what harm doth the public sustain? Poverty is relieved, ingenuity is rewarded, the money stays at home, and has a lively circulation, the ingenious sharper being enabled to set up an equipage and spend handsomely, which cannot be done without employing a world of people. But you will perhaps object, that a man re-

duced by play may be put upon desperate courses, hurtful to the public. Suppose the worst, and that he turns highwayman; such men have a short life and a merry. While he lives, he spends, and for one that he robs makes twenty the better for his expense. And when his time is come, a poor family may be relieved by fifty or a hundred pounds set upon his head. A vulgar eye looks on many a man as an idle or mischievous fellow, whom a true philosopher, viewing in another light, considers as a man of pleasant occupation who diverts himself, and benefits the public; and that with so much ease, that he employs a multitude of men, and sets an infinite machine in motion, without knowing the good he does, or even intending to do any: which is peculiar to the gentleman-like way of doing good by vice. I was considering play, and that insensibly led me to the advantages which attend robbing on the high-way. Oh the beautiful and never enough admired connexion of vices! It would take too much time to show how they all hang together, and what an infinite deal of good takes its rise from every one of them. One word for a favourite vice, and I shall leave you to make out the rest yourself, by applying the same way of reasoning to all other vices. A poor girl, who might not have the spending of half a crown a week in what you call an honest way, no sooner hath the good fortune to be a kept mistress, but she employs milliners, laundresses, tire-women, mercers, and a number of other trades, to the benefit of her country. It would be endless to trace and pursue every particular vice through its consequences and effects, and show the vast advantage they all are of to the public. The true springs that actuate the great machine of commerce, and make a flourishing state, have been hitherto little understood. Your moralists and divines have for so many ages been corrupting the genuine sense of mankind, and filling their heads with such absurd principles, that it is in the power of few men to contemplate real life with an unprejudiced eye. And fewer still have sufficient parts and sagacity to pursue a long train of consequences, relations, and dependencies, which must be done in order to form a just and entire notion of the public weal. But, as I said before, our sect hath produced men capable of these discoveries, who have displayed them in full light, and made them public for the benefit of their country.

III. Oh! said Euphranor, who heard this discourse with great attention, you, Lysicles, are the very man I wanted, eloquent and ingenious, knowing in the principles of your sect, and willing to impart them. Pray tell me, do these principles find an easy admission in the world? *Lys.* They do among ingenious men and people of fashion, though you will sometimes meet with strong prejudices against them in the middle sort, an effect of ordinary talents and mean breeding. *Euph.* I should wonder if

men were not shocked at notions of such a surprising nature, so contrary to all laws, education, and religion. *Lys.* They would be shocked much more if it had not been for the skilful address of our philosophers, who, considering that most men are influenced by names rather than things, have introduced a certain polite way of speaking, which lessens much of the abhorrence and prejudice towards vice. *Euph.* Explain me this. *Lys.* Thus in our dialect a vicious man is a man of pleasure, a sharper is one that plays the whole game, a lady is said to have an affair, a gentleman to be a gallant, a rogue in business to be one that knows the world. By this means we have no such things as sots, debauchees, whores, rogues, or the like in the *beau monde*, who may enjoy their vices without incurring disagreeable appellations. *Euph.* Vice then is, it seems, a fine thing with an ugly name. *Lys.* Be assured it is. *Euph.* It should seem then, that Plato's fearing lest youth might be corrupted by those fables which represented the gods vicious, was an effect of his weakness and ignorance. *Lys.* It was, take my word for it. *Euph.* And yet Plato had kept good company and lived in a court. And Cicero, who knew the world well, had a profound esteem for him. *Cri.* I tell you, Euphranor, that Plato and Tully might perhaps make a figure in Athens or Rome: but were they to revive in our days, they would pass but for underbred pedants, there being at most coffee-houses in London, several able men who could convince them they knew nothing in—what they are valued so much for—morals and politics. *Lys.* How many long-headed men do I know both in the court-end and the city with five times Plato's sense, who care not one straw what notions their sons have of God or virtue.

IV. *Cri.* I can illustrate this doctrine of Lysicles by examples that will make you perceive its force. Cleophon, a minute philosopher, took strict care of his son's education, and entered him betimes in the principles of his sect. Callicles (that was his son's name) being a youth of parts, made a notable progress: insomuch that before he became of age he killed his old covetous father with vexation, and ruined the estate he left behind him; or, in other words, made a present of it to the public, spreading the dunghill collected by his ancestors over the face of the nation, and making out of one overgrown estate several pretty fortunes for ingenious men, who live by the vices of the great. Telesilla, though a woman of quality and spirit, made no figure in the world, till she was instructed by her husband in the tenets of minute philosophy, which she wisely thought would prevent her giving any thing in charity. From that time she took a turn towards expensive diversions, particularly deep play, by which means she soon transferred a considerable share of his fortune to several acute men skilled in that mystery, who wanted it more,

and circulate it quicker than her husband would have done, who in return hath got an heir to his estate, having never had a child before. That same Telesilla, who was good for nothing as long as she believed her catechism, now shines in all public places, is a lady of gallantry and fashion, and has by her extravagant parade in lace and fine clothes raised a spirit of expense in other ladies, very much to the public benefit, though it must be owned to the mortification of many frugal husbands. While Crito related these facts with a grave face, I could not forbear smiling, which Lysicles observing—Superficial minds, said he, may perhaps find something to ridicule in these accounts; but all who are masters of a just way of thinking must needs see that those maxims, the benefit whereof is universal, and the damage only particular to private persons or families, ought to be encouraged in a wise commonwealth. For my part, said Euphranor, I confess myself to be rather dazzled and confounded than convinced by your reasoning; which, as you observed yourself, taking in the connexion of many distant points, requires great extent of thought to comprehend it. I must therefore entreat you to bear with my defects, suffer me to take to pieces what is too big to be received at once; and where I cannot keep pace with you, permit me to follow you step by step, as fast as I can. *Lys.* There is reason in what you say. Every one cannot suddenly take a long concatenation of arguments.

Euph. Your several arguments seem to centre in this, that vice circulates money and promotes industry, which causeth a people to flourish: is it not so? *Lys.* It is. *Euph.* And the reason that vice produceth this effect is, because it causeth an extravagant consumption which is the most beneficial to the manufacturers, their encouragement consisting in a quick demand and high price. *Lys.* True. *Euph.* Hence you think a drunkard most beneficial to the brewer and the vintner, as causing a quick consumption of liquor, inasmuch as he drinks more than other men. *Lys.* Without doubt. *Euph.* Say, Lysicles, who drinks most, a sick man or a healthy? *Lys.* A healthy. *Euph.* And which is healthiest, a sober man or a drunkard? *Lys.* A sober man. *Euph.* A sober man therefore in health may drink more than a drunkard when he is sick. *Lys.* He may. *Euph.* What think you, will a man consume more meat and drink in a long life or a short one? *Lys.* In a long. *Euph.* A sober, healthy man, therefore, in a long life may circulate more money by eating and drinking, than a glutton or drunkard in a short one. *Lys.* What then? *Euph.* Why then it should seem, that he may be more beneficial to the public even in this way of eating and drinking. *Lys.* I shall never own that temperance is the way to promote drinking. *Euph.* But you will own that sickness lessens, and death puts an end to all drinking. The

same argument will hold, for aught I can see, with respect to all other vices that impair men's health and shorten their lives. And if we admit this, it will not be so clear a point that vice hath merit towards the public. *Lys.* But admitting that some artificers or traders might be as well encouraged by the sober men as the vicious; what shall we say of those who subsist altogether by vice and vanity? *Euph.* If such there are, may they not be otherwise employed without loss to the public? Tell me, Lysicles, is there any thing in the nature of vice, as such, that renders it a public blessing, or is it only the consumption it occasions? *Lys.* I have already shown how it benefits the nation by the consumption of its manufactures. *Euph.* And you have granted that a long and healthy life consumes more than a short and sickly one; and you will not deny that many consume more than one. Upon the whole then compute and say, which is most likely to promote the industry of his countrymen, a virtuous married man with a healthy, numerous offspring, and who feeds and clothes the orphans in his neighbourhood, or a fashionable rake about town. I would fain know whether money spent innocently, doth not circulate as well as that spent upon vice. And if so, whether by your own rule it doth not benefit the public as much? *Lys.* What I have proved I proved plainly, and there is no need of more words about it. *Euph.* You seem to me to have proved nothing, unless you can make it out that it is impossible to spend a fortune innocently. I should think the public weal of a nation consists in the number and good condition of its inhabitants; have you any thing to object to this? *Lys.* I think not. *Euph.* To this end which would most conduce, the employing men in open air and manly exercise, or in sedentary business within doors? *Lys.* The former I suppose. *Euph.* Should it not seem therefore, that building, gardening, and agriculture would employ men more usefully to the public, than if tailors, barbers, perfumers, distillers, and such arts were multiplied. *Lys.* All this I grant; but it makes against you. For what moves men to build and plant but vanity, and what is vanity but vice? *Euph.* But if a man should do those things for his convenience or pleasure, and in proportion to his fortune, without a foolish ostentation or over-rating them beyond their due value, they would not then be the effect of vice; and how do you know but this may be the case? *Cri.* One thing I know, that the readiest way to quicken that sort of industry, and employ carpenters, masons, smiths, and all such trades, would be to put in practice the happy hint of a celebrated minute philosopher, who by profound thinking has discovered that burning the city of London would be no such bad action, as silly prejudiced people might possibly imagine: inasmuch as it would produce a quick circulation of property, transferring it from the rich to the poor, and employing a great number of

artificers of all kinds. This at least cannot be denied, that it hath opened a new way of thinking to our incendiaries, of which the public hath of late begun to reap the benefit. *Euph.* I cannot sufficiently admire this ingenious thought.

VI. But methinks it would be dangerous to make it public. *Cri.* Dangerous to whom? *Euph.* In the first place to the publisher. *Cri.* That is a mistake; for the notion hath been published, and met with due applause in this most wise and happy age of free-thinking, free speaking, free writing, and free acting. *Euph.* How! may a man then publish and practise such things with impunity? *Cri.* To speak the truth, I am not so clear as to the practic part. An unlucky accident now and then befalls an ingenious man. The minute philosopher Magirus, being desirous to benefit the public, by circulating an estate possessed by a near relation who had not the heart to spend it, soon convinced himself, upon these principles, that it would be a very worthy action to despatch out of the way such a useless fellow, to whom he was next heir. But for this laudable attempt, he had the misfortune to be hanged by an underbred judge and jury. Could any thing be more unjust? *Euph.* Why unjust? *Cri.* Is it not unjust to punish actions, when the principles from which they directly follow are tolerated and applauded by the public? Can any thing be more inconsistent than to condemn in practice what is approved in speculation? Truth is one and the same, it being impossible a thing should be practically wrong and speculatively right. Thus much is certain, Magirus was perfect master of all this theory, and argued most acutely about it with a friend of mine, a little before he did the fact for which he died. *Lys.* The best of it is, the world every day grows wiser. *Cri.* You mistake, Euphranor, if you think the minute philosophers idle theorists; they are men of practical views. *Euph.* As much as I love liberty, I should be afraid to live among such people; it would be, as Seneca somewhere expresseth it, *in libertate bellis ac tyrannis sæviore.* *Lys.* What do you mean by quoting Plato and Seneca? Can you imagine a free-thinker is to be influenced by the authority of such old-fashioned writers? *Euph.* You, Lysicles, and your friend have often quoted to me ingenious moderns, profound fine gentlemen, with new names of authors in the minute philosophy, to whose merits I am a perfect stranger. Suffer me in my turn to cite such authorities as I know, and have passed for many ages upon the world.

VII. But, authority apart, what do you say to experience? My observation can reach as far as a private family; and some wise men have thought, a family may be considered as a small kingdom, or a kingdom as a great family. Do you admit this to be true? *Lys.* If I say *yes*, you will make an inference, and if

I say *no*, you will demand a reason. The best way is to say nothing at all. There is, I see, no end of answering. *Euph.* If you give up the point you undertook to prove, there is an end at once: but if you hope to convince me you must answer my questions, and allow me the liberty to argue and infer. *Lys.* Well, suppose I admit that a kingdom may be considered as a great family. *Euph.* I shall ask you then, whether ever you knew private families thrive by those vices you think so beneficial to the public? *Lys.* Suppose I have not. *Euph.* Might not a man therefore by a parity of reason suspect their being of that benefit to the public? *Lys.* Fear not; the next age will thrive and flourish. *Euph.* Pray tell me, Lysicles; suppose you saw a fruit of a new, untried kind, would you recommend it to your own family to make a full meal of? *Lys.* I would not. *Euph.* Why then would you try upon your own country these maxims which were never admitted in any other? *Lys.* The experiment must begin somewhere; and we are resolved our own country shall have the honour and advantage of it. *Euph.* O Lysicles, hath not old England subsisted for many ages without the help of your notions? *Lys.* She has. *Euph.* And made some figure. *Lys.* I grant it. *Euph.* Why then should you make her run the risk of a new experiment, when it is certain she may do without it? *Lys.* But we would make her do better. We would produce a change in her that never was seen in any nation. *Euph.* Sallust observes, that a little before the downfall of the Roman empire, avarice (the effect of luxury) had erased the good old principles of probity and justice; had produced a contempt for religion, and made every thing venal, while ambition bred dissimulation, and caused men to unite in clubs and parties, not from honourable motives, but narrow and interested views. The same historian observes of that great freethinker Catiline, that he made it his business to insinuate himself into the acquaintance of young men, whose minds, unimproved by years and experience, were more easily seduced. I know not how it happens, but these passages have occurred to my thoughts more than once during this conversation. *Lys.* Sallust was a sententious pedant. *Euph.* But consult any historian, look into any writer. See, for instance, what Xenophon and Livy say of Sparta and Rome, and then tell me if vice be not the likeliest way to ruin and enslave a people. *Lys.* When a point is clear by its own evidence, I never think it worth while to consult old authors about it. *Cri.* It requires much thought and delicate observation to go to the bottom of things. But one who hath come at truth with difficulty can impart it with ease. I will, therefore, Euphranor, explain to you in three words (what none of your old writers ever dreamt of) the true cause of ruin to those states. You must know that vice and virtue,

being opposite and contradictory principles, both working at once in a state, will produce contrary effects, which intestine discord must needs tend to the dissolution and ruin of the whole. But it is the design of our minute philosophers, by making men wicked upon principle, a thing unknown to the ancients, so to weaken and destroy the force of virtue, that its effects shall not be felt in the public. In which case, vice being uncontrolled without let or impediment of principle, pure and genuine without allay of virtue, the nation must doubtless be very flourishing and triumphant. *Euph.* Truly, a noble scheme! *Cri.* And in a fair way to take effect. For our young proficients in the minute philosophy, having, by a rare felicity of education, no tincture of bigotry or prejudice, do far outgo the old standers and professors of the sect; who, though men of admirable parts, yet having had the misfortune to be imbued in their childhood with some religious notions, could never after get entirely rid of them; but still retain some small grains of conscience and superstition, which are a check upon the noblest genius. In proof of this, I remember that the famous minute philosopher, old Demodicus, came one day, from conversation upon business with Timander, a young gentleman of the same sect, full of astonishment. I am surprised, said he, to see so young, and withal so complete a villain; and, such was the force of prejudice, spoke of Timander with abhorrence, not considering that he was only the more egregious and profound philosopher of the two.

VIII. *Euph.* Though much may be hoped from the unprejudiced education of young gentlemen, yet it seems we are not to expect a settled and entire happiness, before vice reigns pure and unmixed: till then, much is to be feared from the dangerous struggle between vice and virtue, which may perchance overturn and dissolve this government, as it hath done others. *Lys.* No matter for that, if a better comes in its place. We have cleared the land of all prejudices towards government or constitution, and made them fly like other phantasms before the light of reason and good sense. Men who think deeply cannot see any reason why power should not change hands as well as property; or why the fashion of a government should not be changed as easy as that of a garment. The perpetual circulating and revolving of wealth and power, no matter through what or whose hands, is that which keeps up life and spirit in a state. Those who are even slightly read in our philosophy, know that of all prejudices the silliest is an attachment to forms. *Cri.* To say no more upon so clear a point, the overturning a government may be justified upon the same principles as the burning a town, would produce parallel effects, and equally contribute to the public good. In both cases, the natural springs of action are forcibly exerted: and in this general industry what one loses