

New Essays on Human Understanding

Book II: Ideas

G. W. Leibniz

Copyright © Jonathan Bennett 2017. All rights reserved

[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth.—Longer omissions are [explained] as they occur. Very small bold unbracketed numerals indicate the corresponding section number in Locke's *Essay*; most of these are provided by Leibniz. This version does not follow Leibniz's practice of always avoiding Locke's name in favour of 'this author', 'our gifted author', etc.

First launched: February 2005

Last amended: April 2008

Contents

Chapter i: Ideas in general, and the question 'Does the soul of man always think?'	35
Chapter ii: Simple ideas	41
Chapter iii: Ideas of one sense	41
Chapter iv: Solidity	42
Chapter v: Simple ideas of more than one sense	45
Chapter vi: Simple ideas of reflection	46

Chapter vii: Ideas of both sensation and reflection	46
Chapter viii: More considerations about simple ideas	46
Chapter ix: Perception	49
Chapter x: Retention	53
Chapter xi: Discerning, or the ability to distinguish ideas	53
Chapter xii: Complex ideas	55
Chapter xiii: Simple modes, starting with the simple modes of space	56
Chapter xiv: Duration and its simple modes	59
Chapter xv: Duration and expansion considered together	61
Chapter xvi: Number	62
Chapter xvii: Infinity	63
Chapter xviii: Other simple modes	65
Chapter xix: The modes of thinking	65

Chapter i: Ideas in general, and the question ‘Does the soul of man always think?’

Philalethes: 1 Having examined whether ideas are innate, let us consider what they are like and what varieties of them there are. Isn't it true that an idea is the object of thinking?

Theophilus: I agree about that, provided that you add that

- an idea is an immediate inner object, and that
- this object expresses the nature or qualities of things.

If the idea were the *form* of the thought—i.e. if it were the case that *thinking of a certain idea* is just *thinking in a certain manner* rather than *aiming one's thought at a certain object*—the idea would come into and go out of existence with the actual thoughts that correspond to it; but since the idea is the *object* of thought it can exist before and after the thoughts. Outer things that we perceive by our senses are mediate objects, ·not immediate ones·, because they can't act immediately on the soul. God is the only immediate outer object—the only thing outside us that acts immediately on our souls.. One might say that the soul itself is its own immediate inner object; but it is an *object* of thought only to the extent that it contains ideas—I can't direct my thought immediately onto *my soul* other than by directing it onto *the ideas that my soul contains*. Those ideas correspond to things. For the soul is a little world in which distinct ideas represent God and confused ones represent the universe.

Phil: 2 Taking the soul to be initially a blank page with no writing on it, i.e. with no ideas, Locke asks: How does it come to be furnished? Where does it get its vast store ·of ideas· from? To this he answers: from *experience*.

Theo: This empty page of which one hears so much is a fiction, in my view. Nature doesn't allow of any such thing, and it's purely a product of philosophers' *incomplete*

notions—such as

- vacuum, •atoms, •the state of rest (one thing not moving, or two things not moving in relation to one another), and •prime matter, which is supposed to have *no form*.

Things that are uniform, containing no variety, are *always* mere abstractions: for instance, time, space and the other entities of pure mathematics. There is no body whose parts are at rest, and no substance that doesn't have something distinguishing it from every other. Human souls differ not only from non-human ones but also from one another.... And I think I can demonstrate that every substantial thing, whether a soul or a body, differs from every other substantial thing

in respect of how it *relates* to everything else, and also in respect of its *intrinsic* (·non-relational·) nature.

And another point: those who hold forth about the ·mind as an· empty page can't say what is left of it once the ideas have been taken away—like the Scholastics whose 'prime matter' has nothing left in it ·after its 'form' has been removed·. It may be said that this 'empty page' of the philosophers means that the soul naturally and inherently possesses nothing but bare *faculties* or capacities. But inactive faculties....are also mere fictions: you can have an abstract thought of them, but they don't occur in nature. For where in the world will one ever find a faculty consisting in sheer •power without performing any •act? There is always a particular disposition to action, and towards one action rather than another. And as well as the •disposition there is an •endeavour towards action—indeed there is an infinity of them in any thing at any moment, and these endeavours are never without some

effect. I admit that experience is necessary if the soul is to be given such-and-such ·specific· thoughts, and if it is to *attend to* the ideas that are within us. But how could experience and the senses *provide* the ideas? Does the soul have windows? Is it similar to writing-paper or like wax? Clearly, those who take this view of the soul are treating it as basically a material thing. You may confront me with this accepted philosophical axiom: *There is nothing in the soul that doesn't come from the senses.* But an exception must be made of the soul itself and its states:

Nihil est in intellectu quod non fuerit in sensu, excipe:
nisi ipse intellectus.

[The 'philosophical axiom' was a Scholastic slogan, which is why Theophilus gives it in Latin. In English: Nothing is in the intellect that wasn't ·first· in the senses—except the intellect itself.] Now, the soul includes *being, substance, one, same, cause, perception, reasoning,* and many other notions that the senses cannot provide. That agrees pretty well with Locke, for he looks for a good proportion of ideas in the mind's reflection on its own nature.

Phil: I hope then that you will concede to him that all ideas come through sensation or through reflection; that is, through our observation either of ·external, sensible objects or ·the internal operations of our soul.

Theo: In order to keep away from an argument on which we have already spent too long, let me say in advance that when you say that *ideas* come from one or other of those causes, I shall take that to mean ·that the senses prompt· the *actual perception of the ideas* ·but don't provide the ideas themselves·. For I think I have shown that in so far as they have something distinct about them they are in us before we are aware of them.

Phil: With that in mind, let us see when the soul should

be said to start perceiving and actually thinking of ideas. **9** Some philosophers have held that the soul always thinks, and that ·actual thinking is as inseparable from the ·soul as ·actual extension is from the ·body. **10** But I can't see that it is any more necessary for ·the soul always to think than it is for ·the body always to move; the perception of ideas is to the soul what motion is to the body, ·namely, something that comes and goes. That appears to me quite reasonable, anyway, and I would greatly like to have your opinion on it.

Theo: You have said it! Action is no more ·and no less· inseparable from the soul than it is from the body, ·because it is utterly essential to each. It seems to me that a ·thoughtless state of the soul and ·absolute rest [= 'immobility'] in a body are equally contrary to nature, and never occur in the world. A substance that is in action at some time will be in action forever after, for all the effects linger on, merely being mixed with new ones. When you strike a body you cause (or rather *induce*) an infinity of swirls, as in a liquid—for fundamentally every solid is in some degree liquid, every liquid in some degree solid—and there's no way of ever entirely stopping this internal turbulence. Now, given that the body is never without movement it is credible that the soul that corresponds to it is never without perception. . . .

Phil: There is something in us that has a power to think. But that doesn't imply that thinking is always occurring in us.

Theo: True powers are never mere possibilities; there is always endeavour, and action.

Phil: But that the soul always thinks is not a self-evident proposition.

Theo: I don't say that it is. Digging it out requires a little attention and reasoning: the common man is no more aware

of it than of the pressure of the air or the roundness of the earth.

Phil: The question ‘Did I think all through last night?’ is a question about a matter of fact, and must be settled by sensible experience.

Theo: We settle it in the same way that we prove that there are imperceptible bodies and invisible movements, though some people make fun of them, ·namely by showing how much they strengthen theories·. In the same way there are countless inconspicuous perceptions which don’t stand out enough for one to be aware of them or remember them but which show themselves through their consequences.

Phil: One author has objected that we ·Lockeans· maintain that the soul goes out of existence ·each night· because we aren’t aware of its existence while we sleep. But that objection can only arise from a strange misconception. We don’t say there is no soul in a man because he isn’t aware of it in his sleep; but we do say that he cannot think without being aware of it.

Theo: I haven’t read the book where that objection occurs. But there would have been nothing wrong with objecting against you in this way:

Thought needn’t stop just because one isn’t aware of it; for if it did, then by parity of argument we could say that there is no soul while one isn’t aware of it.

To meet *that* objection you must show that it is of the essence of thought *in particular* that one must be aware of it.

Phil: 11 It is hard to conceive that anything should think and not be conscious of it.

Theo: That is undoubtedly the crux of the matter—the difficulty that has troubled some able people. But the way to escape from it is to bear in mind that we *do* think of many

things all at once while attending only to the thoughts that stand out most distinctly. That is inevitable; to take note of everything we would have to direct our attention to an infinity of things at the same time—things that impress themselves on our senses and are all sensed by us. And I would go further: something remains of all our past thoughts, none of which can ever be entirely wiped out. When we are in dreamless sleep, or when we are dazed by some blow or a fall or a symptom of an illness or other mishap, an infinity of small, confused sensations occur in us. Death itself can’t affect the souls of animals in any way but that; they must certainly regain their distinct perceptions sooner or later, for in nature everything is orderly. I admit that in that confused ·unnoticing· state the soul would be without pleasure and pain, for they are *noticeable* perceptions.

Phil: 12 Isn’t it true that the men we are dealing with here, namely the Cartesians who believe that the soul always thinks, hold that non-human animals are *alive* but don’t have a thinking and knowing soul? And that they see no difficulty in saying that the soul can think without being joined to a body?

Theo: My own view is different. I share the Cartesians’ view that the soul always thinks, but I part company with them on the other two points. I believe that beasts have imperishable souls, and that no soul—human or otherwise—is ever without some body. I hold that God alone is entirely exempt from this because he is pure •act, ·and having a body involves being in some respect •passive·.

Phil: If you had accepted ·all three items in· the Cartesian view, I would have drawn the following conclusion from your position. Since •the bodies of Castor and of Pollux can stay alive while sometimes having a soul and sometimes not, and since •a soul can stay in existence while sometimes being

in a given body and sometimes out of it, one might suppose that •Castor and Pollux shared a single soul which acted in their bodies by turn, with each being asleep while the other was awake. In that case, that •one soul would make •two persons as distinct as Castor and Hercules could be.

Theo: Here is a different imagined case—one that seems to be less fanciful. Don't we have to agree that after some passage of time or some great change a person might suffer a total failure of memory?.... Now, suppose that such a man were made young again, and learned everything anew—would that make him a different man? ·Obviously not!· So it isn't memory that makes the very same man. But as for the fiction about a soul that animates different bodies turn about, with the things that happen to it in one body being of no concern to it in the other: that is one of those fictions that go against the nature of things—like space without body, and body without motion—arising from the incomplete notions of philosophers. These fictions vanish when one goes a little deeper. Bear in mind that each soul retains all its previous impressions, and *couldn't* be separated into two halves in the manner you have described: within each substance there is a perfect bond between the future and the past, which is what creates the identity of the individual. Memory isn't necessary for this, however, and sometimes it isn't even possible because *so many* past and present impressions jointly contribute to our present thoughts....

Phil: 13 No-one can be convinced that his thoughts were busy during a period when he was asleep and not dreaming.

Theo: While one is asleep, even without dreams, one always has some faint *sensing* going on. Waking up is itself a sign of this: when someone is easy to wake, that is because he has more sense of what is going on around him, even when

it isn't strong enough to cause him to wake.

Phil: 14 It seems very hard to conceive that the soul in a sleeping man could be at one moment busy thinking and the next moment, just after he has woken, not be remembered.

Theo: Not only is it easy to •conceive, but something like it can be •observed every day of our waking lives! There are *always* objects that affect our eyes and ears, and therefore touch our souls as well, without our attending to them. Our attention is held by other objects, until a given object becomes powerful enough to attract our attention its way, either by acting more strongly on us or in some other way. It is as though we had been *selectively asleep* with regard to that object; and when we withdraw our attention from everything all at once the sleep becomes general. It is also a way of getting to sleep—dividing one's attention so as to weaken it.

Phil: 15 Thinking often without retaining for a single moment the memory of what one thinks—a useless sort of thinking!

Theo: Every impression has an effect, but the effects aren't always noticeable. When I turn one way rather than another it is often because of a series of tiny impressions that I am not aware of but which make one movement slightly harder than the other. All our casual unplanned actions result from a conjunction of tiny perceptions; and even our customs and passions, which have so much influence when we *do* plan and decide, come from the same source. For these ·behavioural· tendencies come into being gradually, and so without our tiny perceptions we wouldn't have acquired these noticeable dispositions. I have already remarked that anyone who excluded these effects from moral philosophy would be copying the ill-informed people who exclude insensible corpuscles from natural science....

Phil: Perhaps it will be said that when a man is awake his body plays a part in his thinking, and that the memory is preserved by traces in the brain; whereas when he sleeps the soul has its thoughts separately, in itself.

Theo: I would say nothing of the sort, since I think that there is always a perfect correspondence between the body and the soul, and since I use bodily impressions of which one isn't aware, whether in sleep or waking states, to prove that there are similar impressions in the soul. I even maintain that something happens in the soul corresponding to the circulation of the blood and to every internal movement of the viscera, although one is unaware of such happenings, just as those who live near a water-mill are unaware of the noise it makes. The fact is that if during sleep or waking there were impressions in the body that didn't touch or affect the soul in any way at all, ·and others that did·, there would have to be limits to the union of body and soul, as though bodily impressions needed a certain shape or size if the soul was to be able to feel them. And that is indefensible if the soul is not a material thing, for there is no way of bringing an ·immaterial substance and a ·portion of matter under a common measure that would let us say that a certain state of the ·matter wasn't adequate for a certain event in the ·immaterial substance. In short, many errors can flow from the belief that the only perceptions in the soul are the ones of which it is aware.

Phil: 17 Since you are so confident that the soul always actually thinks, I wish that you would tell me what ideas there are in the soul of a child just *before* or just *at* its union with the child's body, before it has received any through sensation.

Theo: It is easy to satisfy you on my principles. The perceptions of the soul always correspond naturally to the state of

the body; and when there are many confused and indistinct motions in the brain, as happens with those who have had little experience, it naturally follows that the thoughts of the soul can't be distinct either. But the soul is never deprived of the aid of sensation; for it always expresses its body, and this body is always affected in infinitely many ways by surrounding things, though often they provide only a confused impression.

Phil: 18 Here is another question of Locke's: 'To those who so ·confidently maintain that the human soul always thinks, or (the same thing) that a man always thinks, I say: How do you know this?'

Theo: [What follows somewhat expands Theophilus's answer, in ways that ·small dots· can't easily indicate.] I suggest that it needs even *more* ·confidence to maintain that nothing happens in the soul that we aren't aware of. For anything that *is* noticeable must be made up of parts that *are not*. One reason for saying this is that nothing, whether thought or motion, can come into existence ·suddenly; from which it follows that a barely-noticeable perception must ·gradually build up in the mind from earlier, lesser stages of itself, and these must be unnoticeable perceptions. In short, we know there are mental events of which one isn't aware because their existence is required to make sense of the given facts. The question of how we know this is like the question 'How do we know about insensible *particles*?', and these days no intelligent person wants to ask *that*.

Phil: 19 I don't remember anyone who says that *the soul* always thinks telling us that *a man* always thinks.

Theo: I suppose that is because they are talking not just about the embodied soul but also about the soul that is separated from its body, and that they would readily admit

that the man always thinks while his soul and body are united. As for my own views: I have reason to hold that the soul is never completely separated from all body, so I think it can be said outright that the man does and will always think.

Phil: ‘A body is extended without having parts’—‘Something thinks without being aware that it does so’—these two assertions seem equally unintelligible.

Theo: . . . Your contention that there is nothing in the soul of which it isn’t aware has already held sway all through our first meeting, when you tried to use it to tear down innate ideas and truths. If I conceded it, I would not only be flying in the face of experience and of reason, but would also be giving up my own view—a view for which I think I have made a good enough case—without having any reason to do so. My opponents, accomplished as they are, have offered no proof of their own firmly and frequently repeated contention on this matter; and anyway there is an easy way of showing them that they are wrong, i.e. that it is *impossible* that we should always reflect explicitly on all our thoughts. If we did, the mind would reflect on each reflection, ad infinitum, without ever being able to move on to a new thought. For example, in being aware of some present feeling, I should have always to think that I think about that feeling, and further to think that I think of thinking about it, and so on ad infinitum. It *must* be that I stop reflecting on all these reflections, and that eventually some thought is allowed to occur without being thought about; otherwise I would dwell for ever on the same thing.

Phil: But wouldn’t it be just as reasonable to say that *a man is always hungry*, adding that he can be hungry without

being aware of it?

Theo: There is a big difference: hunger arises from special conditions that don’t always obtain. Still, it is true that even when one is hungry one doesn’t think about the hunger all the time; but when one thinks about it, one is aware of it, for it is a very noticeable disposition: there are always disturbances in the stomach, but they don’t cause hunger unless they become strong enough. One should always observe this distinction between thoughts in general and noticeable thoughts. Thus, a point that you offered in mockery of my view really serves to confirm it.

Phil: 23 ‘When does a man begin to have any ideas?’ The right reply, it seems to me, is *When he first has any sensation*.

Theo: That is my view too, though only for a somewhat special reason. For I think we are never without ideas, never without thoughts, and never without sensations either. But I distinguish ideas from thoughts. For we always have all our pure or distinct ideas independently of the senses, but thoughts always correspond to some sensation.

Phil: 25 But the mind is merely passive in the perception of simple ideas, which are the beginnings or materials of knowledge; whereas in the forming of composite ideas it is active.

Theo: How can it be wholly passive in the perception of all simple ideas, when by your own admission some simple ideas are perceived through *reflection*? The mind must at least give itself its thoughts of reflection, since it is the mind that reflects. . . .

Chapter ii: Simple ideas

Philalethes: 1 I hope you'll still agree that some ideas are simple and some composite. Thus, the warmth and softness of wax, the hardness and coldness of ice, provide simple ideas; for of these the soul has a uniform ·or same-all-over· conception that isn't distinguishable into different ideas.

Theophilus: I think it can be maintained that these sensible ideas *appear* simple because they are confused and thus don't provide the mind with any way of separately noticing their ·different· parts; just like distant things that appear rounded because one can't see their angles, even though one is receiving some confused impression from them. It is obvi-

ous that green, for instance, comes from a mixture of blue and yellow; which makes it credible that the idea of green is composed of the ideas of those two colours, although the idea of green appears to us as simple as that of blue, or as that of warmth. So these ideas of blue and of warmth should *also* be regarded as simple only in appearance. I freely admit that we treat them as simple ideas, because we aren't aware of any divisions within them; but we try to analyse them—thus revealing their so-far-hidden complexities—doing this by means of •further experiments, and by means of •reason insofar as we can make them more capable of being treated by the intellect.

Chapter iii: Ideas of one sense

Philalethes: 1 Now we can classify simple ideas according to how we come to perceive them, namely (1) by one sense only, (2) by more senses than one, (3) by reflection, or (4) by all the ways of sensation and reflection. The simple ideas that get in through just one sense that is specially adapted to receive them are:

light and colours that come in only by the eyes,
all kinds of noises, sounds, and tones only by the ears,
the various tastes only by the palate, and
smells only by the nose.

The organs or nerves convey them to the brain, and if one of the organs comes to be out of order, the sensations belonging

to that organ can't reach the brain by any detour. The most considerable of the ideas belonging to the ·sense of· touch are heat and cold, and solidity. The rest consist either in the arrangement of sensible parts, as smooth and rough; or else in the way the parts hold together—e.g. hard and soft, tough and brittle.

Theophilus: I'm pretty much in agreement with what you say. But I might remark that it seems, judging by Mariotte's experiment on the blind spot in the region of the optic nerve, that •membranes receive the sensation more than •nerves do; and that there *is* a detour for hearing and for taste, since the

teeth and the cranium contribute to the hearing of sounds, and tastes can be experienced in a fashion through the nose

because the organs are connected.

Chapter iv: Solidity

Philalethes: 1 No doubt you'll also agree that the sensation of solidity arises from our finding that each body resists letting any other body into the place that it is occupying until it has moved out of it. So 'solidity' is the name I give to that which stops two bodies that are moving towards one another from going the whole way ·and merging into one another·. If anyone prefers to call this 'impenetrability', he has my consent; but I prefer 'solidity' because it has more of the sense of something *positive*. This idea [here = 'quality'] ·of solidity· seems to be one that is the most intimately connected with *body* and is indeed *essential* to body; and we find it only in matter.

Theophilus: It is true that we find resistance in the sense of touch when we have difficulty getting another body to make way for our own body. It's also true that bodies ·in general· are reluctant jointly to occupy a single place. Yet some people think it may be possible for this reluctance to be overcome; and—a quite different point—it is worth bearing in mind that the resistance that occurs in matter arises from it in more than one way, and for rather different reasons. One body x resists another body y when x either ·has to leave the place it is already in or ·fails to enter the place it was about to enter, because y is exerting itself to enter there too; and in that case it can happen that neither

x nor y gives way and each brings the other to a halt or pushes it back. The resistance shows up in the change in the body that is resisted—consisting in its slowing down or changing direction or both. Now, it can be said in a general way that this resistance comes from the reluctance of two bodies to share the same place, which can be called 'impenetrability'; for when one body exerts itself to enter the ·disputed· place it also exerts itself to drive the other out or prevent it from entering. But granted that there is ·this kind of incompatibility that makes one or both bodies yield, there are also several ·other sources for a body's resistance to another body that tries to make it give way. Some lie in the body itself, the others in neighbouring bodies. Within the body itself there are two.

(1) One is ·passive and ·constant, and I follow Kepler and Descartes in calling it **inertia**. It makes matter resistant to motion, so that force must be expended to move a body, independently of its having weight or being bonded to other things.

Thus a body that seeks to drive another along must encounter such resistance as a result.

(2) The other is ·active and ·changing. It consists in the body's own **impetus**: the body won't yield without resistance at a time when its own impetus is carrying it to a given place.

These sources of resistance show up in the neighbouring bodies also, when the resisting body can't give way without making others give way in their turn. But now a new element enters the picture, namely (3) **firmness**, or the bonding of one body to another. This bonding often brings it about that you can't push one body without at the same time pushing another that is bonded to it, so that there is a kind of *traction*—a kind of *pulling*—of the second body. Because of this (3) bonding, there would be resistance even if there were no (1) inertia or manifest (2) impetus. For if space is conceived as full of perfectly fluid matter that has neither inertia nor impetus, and a single hard body is placed in it, there won't be any resistance to that body's being moved; but if space were full of small cubes, a hard body would encounter resistance to its being moved among them. This is because the little cubes—just because they were hard, i.e. because their parts were bonded together—would be difficult to split up finely enough to permit circular movement in which the place a moving body leaves would immediately be refilled by something else. [The point about *circular* movement is just that as body A moved, its place would be taken by body B, whose place would be taken by body C..., and so on, either *to infinity* or *only finitely because the series of place-takers would come to an end with body A which is what we started with*; in which case there would be if not necessarily a circle at least a closed *loop*.] But if two bodies were simultaneously inserted into the two open ends of a tube into which each of them fitted tightly, the matter that was already in the tube, however fluid it might be, would resist just because of (4) its sheer **impenetrability**. So the phenomenon of resistance that we are considering involves:

- inertia,
- impetus,
- bonding, and
- impenetrability.

It's true that in my opinion this bonding of bodies results •not from basic forces of *attraction*, but rather• from very small movements of bodies towards one another; but •this is disputable, so it oughtn't to be assumed from the start. Nor, for •the same reason, should it be initially assumed that there is an inherent, *essential* solidity such that...any two bodies are perfectly impenetrable with respect to one another—not just fairly impenetrable or very impenetrable. This is in dispute because some people say that perceptible solidity may be due to a body's having •a certain reluctance—but not •an unconquerable reluctance—to share a place with another body. What people? Well, all the ordinary Aristotelians, and also some others; they think that what they call *rarefaction* and *condensation* can occur, i.e. that the very same matter could occupy more or less space: not merely •in appearance (as when water is squeezed from a sponge), but •really.... That's not my view, but I don't think we should assume its contradictory from the start.... •Don't think that it must be either perfect impenetrability or no impenetrability, on the grounds that there's no conceivable basis on which bodies could be *somewhat* impenetrable. There is such a possible basis: someone could claim that bodies' resistance to compression is due to an effort by their parts to spread out when they are squeezed inwards, •and efforts can be *more or less* strong.. And, lastly: in detecting these qualities, the eyes can very usefully come to the aid of the sense of touch....

Phil: 4 We are in agreement, at least, that a body's •solidity consists in its filling a space in such a way that it utterly excludes other bodies out of that space, unless it can find some new space for itself; whereas •hardness...is a firm holding together of the parts of a mass of matter, so that the whole doesn't easily change its shape.

Theo: As I have already remarked [page 8], the special role of rigidity is to make it difficult to move one part of a body without also moving the remainder, so that when one part x is pushed the other part y is also taken in the same direction by a kind of traction, although it isn't itself pushed and doesn't lie on the line along which the push is exercised. And this works in both directions: if y meets an obstacle that holds it still or forces it back, it will pass this effect back to x, pulling it back or holding it still. The same thing happens sometimes with two bodies that aren't in contact and aren't adjoining parts of a single continuous body; for even then it can happen that when one body is pushed it makes the other move without pushing it (so far as our senses can tell). Examples of this are provided by the magnet, electrical attraction, and the attraction that used to be explained through nature's 'fear of a vacuum'.

Phil: It seems that in general 'hard' and 'soft' are descriptions that we apply to things only in relation to the constitutions of our own bodies.

Theo: If that were right, there wouldn't be many philosophers attributing hardness to the 'atoms' that they believe in! The *notion* of hardness doesn't depend on the senses: the possibility of it can be conceived through reason, although it's the senses that convince us that it also actually occurs in nature. However, rather than the word 'hardness' I would prefer 'firmness', if I may be allowed to use it in this sense, for there is always some firmness even in soft bodies. I would even look for a broader and more general word such as stability or cohesion [= 'holding together']. Thus, I would offer

hard—soft

as one contrast, and

firm—fluid

as another. For wax is soft, but unless melted by heat it isn't

fluid; and even in fluids there is usually some cohesion—and thus a degree of hardness—as can be seen in drops of water and of mercury. I think that all bodies have a degree of cohesion, just as I think that they all have at least some degree of fluidity. So that in my view the atoms of Epicurus, which are supposed to be unconquerably hard, can't exist, any more than can the rarefied and perfectly fluid matter of the Cartesians. But this isn't the place to defend this view or to explain what gives rise to cohesion.

Phil: There seems to be experimental proof that bodies are perfectly solid. For example, in Florence a golden globe filled with water was put into a press; the water couldn't give way, and so it passed out through the pores of the globe.

Theo: There is something to be said about the conclusion you draw from what happened to the water in that experiment. Air is a body just as much as water is, and yet the same thing would not happen to air, since it—at least so far as the senses can tell—*can* be compressed. And those who ·reject perfect solidity because they· believe in genuine rarefaction and condensation will say that water is already too compressed to yield to our machines, just as very compressed air resists further compression. On the other hand, if some tiny change were noticed in the volume of the water, one could reconcile that with perfect solidity by ascribing the change to the air that the water contains. But I shan't now discuss the question of whether pure water is itself compressible, as it is found to be expansible when it evaporates. Still, basically I share the view of those who think that bodies are perfectly impenetrable, and that there is only apparent rarefaction and condensation. But this can't be proved by the sort of experiment you have described, any more than the Torricellian tube or Guericke's machine can prove there is a perfect vacuum.

Phil: If body could be strictly rarefied or compressed, it could change its volume or its extension; but since that can't happen, a body will always be equal to the same amount of space. 5 Yet its extension will always be distinct from the extension of the space.

Theo: . . . It's true that in conceiving body one conceives something in addition to space, but that doesn't imply that there are two extensions—the extension of space and the extension of body. Similarly, in conceiving several things at once one conceives something in addition to the number, namely the things numbered; but there aren't two pluralities, an abstract one for the number and a concrete one for the things numbered! In the same way, there is no need to postulate two extensions, an abstract one for space and a concrete one for body. ·In each case· the concrete item is as it is only by virtue of the abstract item. ·In each case? With number and with extension? Yes!· The fact that

bodies pass from one position in space to another,
i.e. change how they are ordered in relation to one

another
should be compared with the fact that
things pass from one position to another within an ordering or enumeration—as when the first becomes the second, the second becomes the third, etc.

In fact, time and place are only kinds of order; and if there were an empty place within one of these orders it would indicate the mere possibility of the missing item and how it relates to the actual. ·For example, an empty place in this enumeration—

1. opera
2. symphony
3. concerto
- 4.
5. sonata

merely indicates the possibility of including (say) *quartet* in the list, and putting it after *concerto* and before *sonata*. Similarly with an empty portion of space, if there were such a thing; our name for it is, of course, 'vacuum'

Chapter v: Simple ideas of more than one sense

Philalethes: The ideas that we come to perceive through more than one sense are those of space (or extension), shape, rest and motion.

Theophilus: These ideas that are said to come from more than one sense—such as those of space, shape, motion,

rest—really come from. . . . the mind itself; for they are ideas of the pure understanding (though the senses make us perceive them—they relate to the external world). So they can be defined and can enter into demonstrations, ·which means that they aren't 'simple' in your sense..

Chapter vi: Simple ideas of reflection

Philalethes: 1–2 The simple ideas that come through reflection are the ideas of *the understanding* and of *the will*; for we are aware of these when we reflect on ourselves.

Theophilus: It is doubtful whether these are all simple ideas;

for it is evident for instance that the idea of the will *includes* that of the understanding—because someone's *willing* to do A involves his having a *thought* of doing A—and that the idea of movement contains the idea of shape.

Chapter vii: Ideas of both sensation and reflection

Philalethes: 1 There are simple ideas that come to be perceived in the mind through all the ways of sensation and reflection, namely *pleasure*, *pain*, *power*, *existence*, and *unity*.

Theophilus: It seems that the senses couldn't convince us

of the existence of sensible things without help from reason. So I would say that the thought of existence comes from reflection, that those of power and unity come from the same source, and that these are of a quite different nature from the perceptions of pleasure and pain.

Chapter viii: More considerations about simple ideas

Philalethes: 2 What shall we say about negative qualities? It seems to me that the ideas of *rest*, *darkness* and *cold* are just as positive as those of *motion*, *light* and *heat*. 6 · I have said that these positive ideas may have negative causes, but what I have assigned for them are merely what are commonly believed to be their negative causes. In fact it will be hard to settle whether there are *really* any ideas from a

negative cause until it is settled whether rest is any more a privation—a lack, a negative state of affairs—than motion.

Theophilus: I had never thought there could be any reason to doubt the negative nature of rest. All it involves is a denial of motion in the body. For motion, on the other hand, it isn't enough to deny rest; something else must be added to determine the degree of motion, for motion is essentially a

matter of more and less, whereas all states of rest are equal. It is different when the *cause* of rest is in question, for that must be positive. . . . But I should still think that the *idea* of rest consists only in negation. It's true that the act of denial is something positive.

Phil: 8 The qualities of things are their abilities to produce in us the perception of ideas. 9 We should distinguish them into •primary qualities and •secondary qualities. Extension, solidity, shape, number and mobility are what I call primary qualities: they are the basic qualities of bodies, and a body can't be without them. 10 And I designate as secondary qualities the faculties or powers that bodies have to produce •certain sensations in us, or •certain effects in other bodies such as the effect of fire on wax that it melts.

Theo: I think it could be said that a power should be included among the •primary qualities if it can be grasped by the intellect and clearly explained, and among the •secondary qualities it is known only through the senses and yields only a confused idea.

Phil: 11 These primary qualities show how bodies operate one on another. Bodies act only by pushing, at least so far as we can conceive; for we can't make sense of the supposition that a body might *act on something it doesn't touch*, which amounts to supposing it to *act where it isn't!*

Theo: I also think that bodies act only by pushing, but there is a problem about the argument you have just given. For •attraction sometimes involves •touching: one can touch something and draw it along apparently without pushing, as I showed earlier in discussing hardness [pages 8, 43]. If one part of an Epicurean atom (supposing there were such things) were pushed, it would draw the rest along with it, being in contact with it while setting it into motion without

pushing; and when there is an attraction between two contiguous things, the one that draws the other along with it cannot be said to 'act where it isn't'. This argument would be valid only against attraction *at a distance*. . . .

Phil: 13 Now, when certain particles strike our organs in various ways, they cause in us certain sensations of colours or of tastes, or of other secondary qualities that have the power to produce those sensations. Is it conceivable that God should link the •idea of *heat* (for instance) to •motions that don't in any way resemble the idea? Yes, just as it is conceivable that he should link the •idea of *pain* to the motion of a piece of steel dividing our flesh—a motion that in no way resembles the idea!

Theo: It mustn't be thought that ideas such as those of colour and pain are arbitrary, with no relation or natural connection between them and their causes; it isn't God's way to act in such a disorderly and unreasoned fashion. I hold that there *is* a resemblance •between those ideas and the motions that cause them—a resemblance *of a kind*—not a perfect one that holds all the way through, but a resemblance in which one thing expresses another through some orderly relationship between them. Thus an ellipse. . . . has some resemblance to the circle of which it is a projection on a plane, since there is a certain precise and natural relationship between what is projected and the projection that is made from it, with each point on the one corresponding through a certain relation with a point on the other. This is something that the Cartesians missed; and on this occasion you have deferred to them more than you usually do and more than you had grounds for doing.

Phil: I tell you what appears to me true; and it appears to be the case that 15 the ideas of primary qualities of bodies resemble those qualities, whereas the ideas produced in us

by the secondary qualities don't resemble them at all.

Theo: I have just pointed out how there *is* a resemblance, i.e. a precise relationship, in the case of secondary qualities as well as of primary. ·I can't *prove* this, but· it is thoroughly reasonable that the effect should correspond to the cause; and we could never be sure that it doesn't, because we have no distinct knowledge either of the sensation of blue (for instance) or of the motions that produce it. It's true that pain doesn't resemble the movement of a pin; but it might thoroughly resemble the motions that the pin causes in our body, and might represent them in the soul; and I haven't the least doubt that it does. That's why we say that the pain is in our body and not in the pin, although we say that the light is in the fire; because there are motions in the fire that the senses can't clearly detect individually, but which form a confusion—a running together—which is brought within reach of the senses and is represented to us by the idea of light.

Phil: 21 But if the relation between the object and the sensation were a natural one how could it happen, as we see it does, that the same water can appear cold to one hand and warm to the other? That phenomenon shows that the warmth is no more in the water than pain is in the pin.

Theo: The most that it shows is that warmth isn't a sensible quality (i.e. a power of being sensorily detected) of an entirely absolute kind, but rather depends on the associated organs; for a movement in the hand itself can combine with that of warmth, altering its appearance. Again, light doesn't appear to malformed eyes, and when eyes are full of bright light they can't see a dimmer light. Even the 'primary qualities' (as you call them), such as *unity* and *number*, can fail to appear as they should; for, as Descartes noted, a globe appears double when it is touched with the fingers in a certain way, and

an object is multiplied when seen in a mirror or through a glass into which facets have been cut. So, from the fact that something doesn't always appear the same, it doesn't follow that •it isn't a quality of the object, or that •its image doesn't resemble it. As for warmth: when our hand is very warm, the lesser warmth of the water doesn't make itself felt, and serves rather to moderate the warmth of the hand, so that the water appears to us to be cold; just as salt water from the Baltic, when mixed with water from the Sea of Portugal, lessens its degree of salinity even though it is itself saline. So there's a sense in which the warmth can be said to be *in the water* in a bath, even if the water appears cold to someone; just as we describe honey in absolute terms as sweet, and silver as white, even though to certain invalids one appears sour and the other yellow; for things are named according to what is most usual. [Here and in other places, 'absolute' is opposed to 'relative': We say 'That fruit is sweet' (absolute) rather than 'That fruit is sweet *to me*' or '... sweet *to most people*' (relative).] None of this alters the fact that when the organ and the intervening medium are properly constituted, •the motions inside our body and •the ideas that represent them to our soul resemble •the motions in the object that cause the colour, the warmth, the pain etc. In this context, *resembling* the object is *expressing it through some rather precise relationship*; though we don't get a clear view of this relation because we can't disentangle this multitude of minute impressions—in our soul, in our body, and in what lies outside us.

Phil: 24 We regard the sun's qualities of whitening and softening wax or hardening mud merely as simple *powers*, without thinking that anything in the sun resembles this whiteness, softness, or hardness. Yet warmth and light are commonly thought of as real qualities of the sun, although really these qualities of light and warmth, which are percep-

tions in me, are no more *in the sun* than the changes the sun makes in the wax are in the sun.

Theo: Some believers in this doctrine have tried to persuade us that if someone could touch the sun he would find no heat in it! The counterfeit sun that can be felt at the focus of a mirror or a burning glass should cure them of that. As for the comparison between the sun's power to warm and its power to whiten: I venture to say that if the melted or whitened wax were sentient, it too would feel something like

what we feel when the sun warms us, and if it could speak it would say that the sun is hot. This isn't because the wax's whiteness resembles the sun, for in that case the brown of a face tanned by the sun would also resemble it; but because at that time there are motions in the wax that have a relationship with the motions in the sun that cause them. There could be some other cause for the wax's whiteness, but not for the motions that it has undergone in receiving whiteness from the sun.

Chapter ix: Perception

Philalethes: 1 The topic of perception brings us to ideas of *reflection*. Just as perception is the first [here = 'most basic'] •power of the soul to relate to our ideas, so also it is the first and simplest •idea we have from reflection. 'Thinking' often signifies the mind's *active* dealings with its ideas, in which it considers things with some degree of *voluntary* attention. But in what is called 'perception' the mind is mostly passive; it can't help perceiving the things it perceives.

Theophilus: It might perhaps be added that beasts have perception, and that they don't necessarily have thought, i.e. have reflection or anything that could be the object of reflection. If that is right, then your tying of perception to reflection, even if it holds for humans, doesn't hold for all perceiving beings.. We too have tiny perceptions of which we aren't aware in our present state. We could in fact become thoroughly aware of them and reflect on them, if our attention weren't scattered by the sheer number of them,

and if bigger ones didn't obliterate them or rather put them in the shade.

Phil: 4 I admit that while the mind is focussing its thought on something, it isn't aware of impressions that certain bodies make on the organ of hearing. They may be exerting enough force on the organ, but because it isn't observed by the soul no perception arises from it.

Theo: I would prefer to distinguish 'perceiving' from 'being aware'. For instance, when we are aware of a perception of light or colour, it is made up of many tiny perceptions of which we are not aware; and a noise that we perceive but don't attend to is brought within reach of our awareness by a tiny increase or addition. If the previous noise had no effect on the soul, this very small addition wouldn't have any either, nor would the total....

Phil: 8 Ideas that are received by sensation are often altered

by the judgment of the mind in grown people, without their being aware of it. The idea of a globe of some uniform colour is of a flat circle variously shadowed and lighted. But as we are accustomed to distinguish the appearances of bodies, and the alterations in the reflections of light according to the shapes of their surfaces, we substitute •the globe for •the idea of it, i.e. •the cause of the image for •what actually appears to us; and so we mix up *judging* ·that it is a globe· with *seeing* ·the globe·.

Theo: That is perfectly true: this is how a painting can deceive us, by means of the skillful use of perspective. When bodies have flat surfaces they can be depicted merely by means of their outlines, without use of shading. . . . This is how drawings of medallions are usually done, so that the draftsman can stay closer to the exact outlines of the originals. But such a drawing, unaided by shading, can't distinguish a flat circular surface from a spherical one, since neither contains any distinct points or distinguishing features. . . . So when we are deceived by a painting, we make two wrong judgments. (1) We substitute the cause for the effect, and believe that we immediately see ·the painting, i.e. the thing that causes the image—a bit like a dog barking at a mirror. For strictly we see only the ·mental· image, and are affected only by rays of light. Since rays of light need time—however little—to reach us, the painting could have gone out of existence while the light was getting from it to our eye; and something that doesn't exist *now* can't be what I am seeing *now*. (2) We are further deceived when we substitute one cause for another and believe that what comes merely from a flat painting actually comes from a body—e.g. mistaking a *trompe l'oeil* painting of a door for a door. . . . This confusion of the effect with the real or the supposed cause frequently occurs in other sorts of judgments too. This

is how we come to believe that it is by direct causal real influence that we sense our bodies and the things that touch them, and move our arms, taking this influence to constitute the interaction between the soul and the body; whereas really all that we sense or alter in that way is what is within us, ·i.e. within our souls·.

Phil: Here is a problem for you, which. . . .Mr Molyneux sent to Mr Locke. This is pretty much how he worded it:

Suppose that someone who was born blind has learned through the sense of touch to distinguish a cube from a sphere, so that when confronted with both he can tell by touch which is the cube and which the sphere. Now suppose he becomes able to see, and has before him a cube and a sphere sitting on a table. **Question:** Could this man tell which is the sphere and which the cube, just by looking at them and not touching them?

Now, please tell me what your view is about this.

Theo: That's an interesting one, and I'd like to think about it for a while. But since you urge me to reply at once I will risk saying (just between the two of us!) that I believe that *if the blind man knows that the two shapes that he sees are those of a cube and a sphere*, he will be able to identify them and to say, without touching them, that this one is the sphere and that one the cube.

Phil: I'm afraid I have to include you among the many who have given Mr Molyneux the wrong answer. He reports that having been prompted by Locke's *Essay* to put the question to various able men, hardly any of them gave at first the answer that he thinks is right, though after hearing his reasons they were convinced of their mistake. His answer is negative, and he defends it as follows: Although this blind man has had experience of how a globe feels and of how a

cube feels, he doesn't yet know that what •affects his touch *thus must* •affect his sight so... . Locke has declared that he entirely agrees.

Theo: Molyneux and Locke may be closer to my opinion than at first appears. The reasons for their view—apparently contained in Molyneux's letter, it appears, and successfully used by him to convince people of their mistake—may have been deliberately suppressed by Locke so as to make his readers think the harder. If you will just consider my reply, you will see that I have included in it a condition:....namely •that the blind man has been told that the two shaped bodies that are before him are a cube and a sphere, and •that he merely has the problem of telling *which is which*. Given this condition, it seems to me beyond question that the newly sighted man could discern them by applying rational principles to the sensory knowledge that he has already acquired by touch. (I'm not talking about what he might actually do on the spot, when he is dazzled and confused by the strangeness—or, one should add, unaccustomed to making inferences.) My view rests on the fact that in the case of the sphere there are no distinguished points on the surface of the sphere taken in itself, since everything there is uniform and without angles, whereas in the case of the cube there are eight points that are distinguished from all the others. If there weren't that way of recognising shapes, a blind man couldn't learn the rudiments of geometry by touch, nor could a sighted person learn them by sight without touch. However, we find that men born blind *can* learn geometry, and indeed always have some rudiments of a natural geometry; and we find that geometry is mostly learned by sight alone without employing touch, as *must* be done by a paralytic or by anyone else to whom touch is virtually denied. These two geometries, the blind man's and the paralytic's, must come together,

and agree, and indeed basically rest on the same •ideas, even though they have no •images in common. (Which shows yet again how essential it is to distinguish images from exact ideas that are composed of definitions.) It would indeed be very interesting and even informative to investigate thoroughly the ideas of someone born blind, and to hear how he would describe shapes. For he could achieve that, and could even understand optical theory in so far as it rests on •distinct mathematical *ideas*, though he wouldn't be able to conceive of the •vivid-confused, i.e. of the *image* of light and colours. That is why one congenitally blind man who had heard lessons in optics and appeared to understand them quite well, when he was asked what he believed light was, replied that he supposed it must be something pleasant like sugar! Similarly, it would be very important to investigate the ideas that a man born deaf and dumb can have about things without shapes: we ordinarily have the description of such things in words, but he would have to have it in an entirely different manner—though it might be equivalent to ours.... [He presents some real-life anecdotes about men who were born deaf.]

But to return to the man born blind who begins to see, and to what he would judge about the sphere and the cube when he saw but didn't touch them:.... I grant that if he isn't told in advance that of the two appearances or perceptions he has of them one belongs to the sphere and the other to the cube, it won't immediately occur to him that these paintings of them (as it were) that he forms at the back of his eyes—which could come from a flat painting on the table—represent •bodies •at all, let alone that they represent a sphere and a cube.. *That* will occur to him only •when he becomes convinced of it by the sense of touch or •when he comes, through applying principles of optics to the light rays, to understand from the evidence of the lights and

shadows that there is something blocking the rays and that it must be precisely the same thing that resists his touch. He will eventually come to understand this •when he sees the sphere and cube rolling, with consequent changes in their appearances and in the shadows they cast; or when, with the two bodies remaining still, the source of the light falling on them is moved or the position of his eyes changes. For these are pretty much the means that we *do* have for distinguishing at a distance between a picture representing an object and the real object.

Phil: 11 Let us return to perception in general. It is what distinguishes the animal kingdom from inferior beings •such as plants and inanimate objects:

Theo: There is so much likeness between plants and animals that I'm inclined to think that there is some perception and appetite [= 'something along the lines of *desire*'] even in plants. . . . All the same, everything that happens in the bodies of plants and animals except their initial formation is to be explained in terms of mechanism. So I agree that the movements of so-called 'sensitive plants' result from mechanism, and I don't approve of bringing in *the soul* when plant and animal phenomena have to be explained in detail.

Phil: 13–14 Indeed, I can't help thinking that there is some small dull perception even in such animals as oysters and

cockles. •It is bound to be small and dull•, for acuteness of sensation would only be an inconvenience to an animal that has to lie still wherever chance has placed it, and there be awash in such water as happens to come its way—colder or warmer, clean or polluted.

Theo: Very good, and almost the same could be said about plants, I think. In man's case, however, perceptions are accompanied by the power to reflect, which turns into actual reflection when there are the means for that. But a man may be reduced to a •state where it is as though he were in a coma, having almost no feeling; and in that state he loses reflection and awareness, and gives no thought to general truths. Yet his powers and dispositions, both innate and acquired, and even the impressions that he receives in this •state of confusion, still continue: they aren't obliterated, though they are forgotten. Some day their turn will come to contribute to some noticeable result; for

nothing in nature is useless,
all confusion must be sorted out, and
even the animals that have sunk into stupor must
eventually return to perceptions of a higher degree.

It is wrong to judge of eternity from a few years, •and *eternity* is what we are dealing with here•, for simple substances last for ever.

Chapter x: Retention

Philalethes: 1 The next power of the mind, taking it closer to knowledge of things than simple perception does, is what I call 'retention', or the preserving of those items of knowledge that the mind has received through the senses or through reflection. This retention is done in two ways: by keeping the idea •actually in view ('contemplation') and 2 by keeping the •power to bring ideas back before the mind ('memory').

Theophilus: We also retain and contemplate *innate* knowledge, and very often we can't distinguish the innate from the acquired. There is also perception of images, both those we have had for some time and those that have newly come into being in us.

Phil: But we followers of Locke believe that •these images or ideas go out of existence when there is no perception of them, and that •this talk of 'storing ideas in the repository of the memory' means merely that the soul often has a power to revive perceptions that it has once had, accompanied by

a feeling that convinces it that it has had these sorts of perceptions before.

Theo If ideas were only the forms of thoughts, ways of thinking, they would cease when the thoughts ceased; but you have accepted that they are the inner *objects* of thoughts, and as such they can persist •after the thoughts have stopped. I'm surprised that you can constantly rest content with bare 'powers' and 'faculties', which you apparently won't accept from the scholastic philosophers! What's needed is somewhat clearer explanation of what this faculty consists in and how it is exercised: that would show that there are dispositions that are the remains of past impressions in the soul as well as in the body, and that we are unaware of except when the memory has a use for them. If nothing were left of past thoughts the moment we ceased to think of them, there could be no account of how we could keep the memory of them; to resort to a bare 'faculty' to do the work is to talk unintelligibly.

Chapter xi: Discerning, or the ability to distinguish ideas

Philalethes: 1 The evidentialness and certainty of various propositions that are taken to be innate truths depend on our ability to discern ideas.

Theophilus: I grant that it requires discernment to think of these innate ideas and to sort them out, but that doesn't

make them any less innate.

Phil: 2 •Quickness of wit consists in the ready recall of ideas, but there is •judgment in setting them out precisely and separating them accurately.

Theo: It may be that each of those is quickness of imagina-

tion, and that judgment consists in the scrutiny of propositions in accordance with reason. . . .

Phil: 4 Another way in which the mind deals with its ideas is by *comparing* them with one another in respect of extent, degrees, time, place or any other circumstances. This is the basis for all the host of ideas that fall under the label 'relation'. [In Locke's time, 'comparing' two things could be simply *bringing them together in a single thought*, not necessarily a thought about their being alike. That usage lingers on today in one idiom, 'Let's get together and compare notes'.]

Theo: I take •relation to be more general than •comparison. There are relations of comparison, including resemblance, equality, inequality etc. But there are other relations not of comparison but of •concurrence; these involve some *connection*, such as that of cause and effect, whole and parts, position and order etc. . . .

Phil: 7 . . . Animals that have a numerous brood of young ones at once seem to have no knowledge of *how many* they are.

Theo: . . . Even human beings can know the numbers of things only by means of some artificial aid, such as •using numerals for counting, or •arranging things in patterns so that if one is missing its absence can be seen at a glance.

Phil: 10 The beasts don't make abstractions either.

Theo: That is my view too. They apparently recognize whiteness, and observe it in chalk as in snow; but this doesn't amount to abstraction, which requires attention to the general apart from the particular, and consequently involves knowledge of universal truths, which beasts don't have. It is also very well said ·by Locke· that •beasts that talk don't use speech to express general ideas, and that •men who are incapable of speech and of words still make other

general signs, ·a fact which marks them off from the beasts. I'm delighted to see you ·and Locke· so well aware, here and elsewhere, of the privileges of human nature.

Phil: 11 However, if beasts have any ideas at all, and aren't bare machines (as some people think they are), we can't deny that they have a certain degree of reason. It seems as evident to me that •they reason as that they •have senses; but they reason only with particular ideas, just as they received them from their senses.

Theo: Beasts pass from one imagining to another by means of a •link between them that they have previously experienced. For instance, when his master picks up a stick the dog anticipates being beaten. In many cases children, and for that matter grown men, move from thought to thought in just that way. This *could* be called 'inference' or 'reasoning' in a very broad sense. But I prefer to keep to accepted usage, reserving those two words for men, and restricting them to the knowledge of some *reason* for perceptions being •linked together. Mere sensations can't provide this: all they do is to cause one naturally to expect once more that same linking that has been observed previously, even though the reasons may no longer be the same. That's why those who are guided only by their senses are often disappointed.

Phil: 13 Imbeciles are deprived of reason by their lack of quickness, activity, and motion in the intellectual faculties, whereas madmen seem to suffer from the other extreme. It seems to me that they haven't lost the power to reason, but having joined together some ideas very wrongly they mistake them for truths; and they err in the manner of men who argue correctly from wrong premises. For example a madman thinks he is a king, from which he *rightly* infers that he should have courtiers, respect and obedience.

Theo: Imbeciles don't use reason at all. They differ from stupid people whose judgment is sound but who are looked down on and are a nuisance because they are so slow to grasp things.... I recall that an able man who had lost his memory through using certain drugs was reduced to that condition, but his judgment continued to be evident. A complete madman lacks judgment in almost every situation, though the liveliness of his imagination can make him entertaining. Some people are *selectively mad*: they acquire a ·madly· false conviction about some important aspect of their lives and then reason correctly from it, as you have rightly pointed out. [He gives details of an instance of this.]

Phil: 17 The understanding is rather like a room that is completely blocked off from light except for a few little openings that let in external visible images. If the images coming into such a dark room *stayed* there in an orderly arrangement that enabled them to be found when wanted, it would very closely resemble the understanding of a man.

Theo: We could increase the resemblance by postulating

that there is a screen in this dark room to receive the images, and that this screen or membrane

- isn't uniform but is diversified by folds representing items of innate knowledge,
- is under tension, giving it a kind of elasticity or active force, and
- acts (or reacts) in ways that are adapted both to past folds and to new ones brought about by newly arrived images.

This action would consist in certain vibrations or oscillations, like those we see when a cord under tension is plucked and gives off something of a musical sound. For not only do we receive images and traces in the brain, but we form new ones from them when we bring complex ideas to mind; and so the screen that represents our brain must be active and elastic. This analogy would explain reasonably well what goes on in *the brain*. As for *the soul*, which is a simple substance or monad: without being extended it *represents* these various extended masses and has perceptions of them.

Chapter xii: Complex ideas

Philalethes: 3 Complex ideas are either of modes or of substances or of relations.

Theophilus: This division of the objects of our thoughts into substances, modes and relations is pretty much to my liking. I believe that qualities are just modifications of substances and that relations are added by the understanding. More follows from this than people think. [In this passage, calling

qualities 'modifications' is way of saying that they are •ways that substances are, •states that they are in, and not extra items, additional to the substances, that are *in* the substances.]

Phil: 5 Modes are either •simple (such as a dozen, a score, which are made from simple ideas of the same kind, i.e. from units), or •mixed (such as beauty) which contain simple ideas of different kinds.

Theo: It may be that *dozen* and *score* are merely relations, and · therefore· exist only with respect to the understanding. The units are separate and the understanding takes them together, however scattered they may be. However, although relations are the work of the understanding they aren't baseless and unreal. ·You might think that an item must be unreal if its source or basis is mental, but that is wrong for at least two reasons.. **(1)** The primordial understanding ·of God· is the source of ·all· things. **(2)** For any item x other than a simple substance, what it is for x to be *real* is for there to be a foundation for certain perceptions had by simple substances. Many of the ·items that you call· 'mixed modes' ought also to be treated rather as relations.

Phil: 6 The ideas of substances are combinations of simple ideas that are taken to represent distinct particular things existing •in their own right—·rather than existing •in dependence on something else, as qualities or modes do·. What is always considered to be the first and chief ingredient in any idea of a substance is the obscure notion of *substance*; ·e.g. the notion of *gold* is the notion of *substance* that is heavy, yellow, fusible,....etc.. Whatever substance may be in itself,

we •postulate it without •knowing anything about it.

Theo: The idea of substance isn't as obscure as it is thought to be. We can know about it the things that have to be the case, and the ones that are found to be the case through other things; indeed knowledge of •concrete things is always prior to that of •abstract ones—•hot things are better known than •heat.

Phil: Of substances also there are two sorts of ideas: one of single substances, as of a man, or a sheep; the other of several of those put together, as an army of men, or flock of sheep. These collections also form a single idea.

Theo: This unity of the idea of an aggregate is a very genuine one; but basically we have to admit that this unity that collections have is merely a respect or relation, whose basis lies in what is the case within each of the individual substances taken alone. So the only perfect unity that these entities by aggregation have is a mental one, and consequently their very being is also in a way mental, or phenomenal, like that of the rainbow.

Chapter xiii: Simple modes, starting with the simple modes of space

Philalethes: 3 Space considered in relation to the length between any two beings, is called 'distance'; if considered in relation to length, breadth, and thickness, it may be called 'capacity'.

Theophilus: To put it more clearly, the •distance between

two fixed things—whether points or extended objects—is the •size of the shortest possible line that can be drawn from one to the other. This distance can be taken either absolutely or relative to some figure that contains the two distant things. For instance, a straight line is absolutely *the*

distance between two points; but if these two points both lie on the same spherical surface, *the distance between them on that surface* will be the length of the smaller arc of the great circle that can be drawn from one to the other. It is also worth noticing that there are distances not only between bodies but also between surfaces, lines and points. . . .

Phil: 4 In addition to what nature provides, men have settled in their minds the ideas of certain determinate lengths, such as an inch and a foot.

Theo: They can't have! It's impossible to have the idea of an exact determinate length: no-one can say or grasp in his mind ·precisely· what an inch or a foot is. And the meanings of these terms can be retained only by means of real standards of measure that are assumed to be unchanging, through which they can always be re-established. . . .

Phil: 5 Observing how the extremities are bounded either by straight lines that meet at distinct angles, or by curved lines in which no angles can be perceived, we form the idea of *shape*.

Theo: A shape on a surface is bounded by a line or lines, but the shape of a body can be limited without determinate lines, as in the case of a sphere. A single straight line or plane surface can't enclose a space or form any shape. But a single line can enclose a shape on a surface—a circle or oval, for instance—just as a single curved surface can enclose a solid shape such as a sphere or spheroid. Still, not only several straight lines or plane surfaces, but also several curved lines or several curved surfaces can meet and can even form angles with each other when one isn't tangent to the other. It is difficult to give a general definition of 'shape' as geometers use the term. To say that

shape is what is extended and limited

would be too general, since a straight line, for instance, though bounded by its two ends, isn't a shape; nor, for that matter, can two straight lines form a shape. To say that
shape is what is extended and limited by something extended

is not general enough, since a whole spherical surface is a shape and yet it isn't limited by anything extended. Again, one might say that

shape is what is extended and limited and contains an infinite number of paths from one point to another.

This includes limited surfaces lacking boundary lines, which the previous definition didn't cover, and it excludes lines, because from one point to another on a line there is only one path or a determinate number of paths. But it would be better still to say that

a shape is what is extended and limited and •has an extended cross-section,

or simply that it •has breadth, another term whose definition hasn't been given until now.

Phil: 6 All shapes, at least, are nothing but simple modes of space.

Theo: Simple modes, on your account of them, repeat the same idea; but shapes don't always involve repetition of the same thing. Curves are quite different from straight lines and from one another. So I don't see how the definition of simple mode can apply here.

Phil: Our definitions shouldn't be taken too strictly. But let us move on from shape to place. 8 When we find all the chess-men standing on the same squares of the chess-board where we left them, we say they are all 'in the same place' even if the chess-board has been moved. We also say that the chess-board is 'in the same place' if it stays in the same part of the cabin, even if the ship has moved; and the ship is also

said to be 'in the same place' if it has kept the same distance from the parts of the neighbouring land, even though the earth has turned.

Theo: Place is either particular, as considered in relation to this or that body, or universal; the latter is related to everything, and in terms of it all changes of every body whatsoever are taken into account. If there were nothing fixed in the universe, the place of each thing would still be determined by reasoning, if there were a means of keeping a record of all the changes or if the memory of a created being were adequate to retain them. . . . However, what we can't grasp is nevertheless determinate in the truth of things.

Phil: 15 If anyone asks me 'What is space?' I will tell him when he tells me what extension is.

Theo: The nature of extension can be explained quite well (I wish I could explain the nature of fever as well!). Extension is an abstraction from the extended, and the extended is a continuum whose parts are coexistent, i.e. exist at the same time.

Phil: 17 If anyone asks whether space with no body in it is •substance or •accident [here = 'property'], I shall freely admit that I don't know.

Theo: I'm afraid I'll be accused of vanity in trying to settle something that you admit you don't know. But there are grounds for thinking that you know more about it than you think you do. Some people have thought that God is the place of objects. . . .; but that makes •place involve something over and above what we attribute to •space, because we don't regard space as being active in anyway, ·whereas obviously God is active·. Taken as being entirely inactive, space is no more a substance than time is, and ·anyway· if it has parts it can't be God. It is a relationship: an order, not only

among existing things but also among possibles as though they existed. But its truth and reality are grounded in God, like all eternal truths.

Phil: I am not far from your view. You know the passage in St Paul which says that in God we live, move and have our being. So that, depending on how one looks at the matter, one could say that space is God or that it is only an order or relation.

Theo: Then the best way of putting it is that space is an order but that God is its source.

Phil: To know whether space is a substance, however, we'd have to know the nature of substance in general. 18 That raises the following difficulty. If God, finite spirits, and body all have the same common nature of *substance*, won't it follow that they differ only in having different modifications of that substance? [This means, roughly: 'Won't it follow that they are all things of a single basic kind, *substance*, and differ only in being different varieties of it—comparable with different varieties of apples, or of houses, or of birds?']

Theo: If that inference were valid, it would also follow that since God, finite spirits and bodies have the same common nature of *being*, they will differ only in having different modifications of that being!

Phil: 19 The people who first stumbled onto the notion of *accidents* as a sort of real beings that needed something to inhere in, were forced to find out the word 'substance' to support them

Theo: Do you then believe that accidents can exist out of substance? Or do you not regard them as real beings? You seem to be creating needless problems; as I have already pointed out, substances and concrete things are conceived before accidents and abstractions are.

Phil: 20 In my opinion the words ‘substance’ and ‘accident’ aren’t of much use in philosophy.

Theo: I confess to holding a different view. I believe that the concept of substance is of the greatest importance and fruitfulness for philosophy.

Phil: We have been discussing substance only incidentally, in asking whether space is a substance. But all that matters here is that space isn’t a body. 21 Thus no-one will venture to affirm that •body is infinite, as •space is.

Theo: Yet Descartes and his followers, in making the world out to be ‘indefinite’ so that we can’t conceive of any end to it, have said that matter has no limits. They have some reason for replacing the term ‘infinite’ by ‘indefinite’, for there is never an *infinite whole* in the world, though for any given whole there is always another that is greater, and so on ad infinitum. As I have shown elsewhere, the universe itself cannot be considered to be a whole.

Phil: Those who take •matter and •what is extended to be one and the same thing claim that the inner surfaces of an empty hollow body would touch. But the space that

lies between two bodies is enough to prevent their mutual contact.

Theo: I agree with you; for although I deny that there is any vacuum, I distinguish matter from extension, and I grant that if there *were* a vacuum inside a sphere the opposite poles within the hollow still wouldn’t touch. But I don’t think that God’s perfection permits such a situation to occur.

Phil: 23 Yet it seems that motion proves the existence of vacuum. Even if a body could be divided into parts as small as a mustard seed (but no smaller), the parts of the divided body couldn’t move freely unless there were a portion of empty space as big as a mustard seed. If it is divided into particles of matter a hundred million times smaller than a mustard seed, the same argument applies.

Theo: If the world were full of hard particles that couldn’t be bent or divided. . . .then motion would indeed be impossible. But in fact hardness isn’t basic; on the contrary fluidity is the basic condition, and the division into bodies is carried out—there being no obstacle to it—according to our need. That takes all the force away from the argument that there must be a vacuum because there is motion.

Chapter xiv: Duration and its simple modes

Philalethes: 1 Corresponding to extension (·spatial·) there is duration (·temporal·). 10 A part of duration in which we don’t perceive any change in our ideas is what we may call ‘an instant’.

Theophilus: This definition ought (I believe) to be taken as applying to the everyday notion of ‘instant’, like the ordinary man’s notion of a ‘point’ ·as something extended but extremely small·. For strictly speaking points and instants

aren't parts of time or space, and don't have parts either. They are only termini. ·A line ends *at* a point; the point isn't a tiny portion of the line.·

Phil: 16 What gives us the idea of *duration* is not ·motion but ·a constant sequence of ideas.

Theo: A sequence of perceptions *awakens* the idea of duration in us, but it doesn't *create* it. The way our ·perceptions follow one another is never constant and regular enough to correspond to the passing of ·time, which is a simple and uniform continuum like a straight line. Changes in our perceptions prompt us to think of time, and we measure it by means of uniform changes. But even if nothing in nature were uniform, time could still be determined, just as place could still be determined even if there were no fixed and motionless bodies. Knowing the rules governing non-uniform motions, we can always analyse them into comprehensible uniform motions, which enables us to predict what will happen through various motions in combination. In this sense time is the measure of motion, i.e. uniform motion is the measure of non-uniform motion.

Phil: 21 One can't know for certain that two parts of duration are equal; and it must be admitted that astronomical observations can yield only approximations. Exact research has revealed that the daily revolutions of the sun are not exactly equal, and for all we know the same may be true of its yearly revolutions.

Theo: The pendulum has revealed the inequality between days, as measured from one noon to the next. . . . We already knew this, of course, and we knew that there are rules governing the inequality. As for the annual rotation, which evens out the inequalities of the solar days, it could change in the course of time. The earth's rotation on its axis. . . . is

the best measure we have so far, and clocks and watches enable us to divide it up. Yet this same daily rotation of the earth could also change in the course of time; and if some pyramid could last long enough or were replaced by newly built ones, men could be aware of that change through keeping records—in terms of the pyramids—of the length of pendulums that now swing a known number of times during one rotation. . . .

Phil: Our measurement of time would be more accurate if we could keep a past day for comparison with days to come, as we keep spatial measures.

Theo: Instead of which we have to keep and consult bodies that go through their motions in more or less equal times. But we certainly can't say either that a ·physical· measure of space, such as a yard that is kept in wood or metal, remains *perfectly* the same.

Phil: 22 Obviously, everyone has measured time by the motion of the heavenly bodies, ·which amounts to making motion the measure of time·; so it is very strange that 'time' should be defined ·by Aristotle· as 'the measure of motion'.

Theo: I have just explained in 16 how that should be understood. In fact, Aristotle said that time is the ·number of motion, not its *measure*. Indeed we could say that a duration is known by the ·number of equal periodic motions ·that take place in it. . . . for instance by so many revolutions of the earth or the stars.

Phil: 24 And yet we anticipate [here = 'extrapolate'] these revolutions. Although the 'Julian period' is supposed to have begun several hundred years before there were really either days, nights or years marked out by any revolutions of the sun, the statement 'Abraham was born in the 2712th year of the Julian period' is perfectly intelligible, just as it would

be to say how long after the beginning of the world he was born.

Theo: This vacuum that can be conceived in time—namely, the eventless period that is supposed to have elapsed between the beginning of the Julian period and the beginning of the world—indicates that time pertains as much to possibles as to existents. Similarly with the vacuum that can be conceived in space. I would add that counting years from the beginning of the world is the least suitable of all systems of dating, for several reasons, including the great disparity between the Greek and Hebrew texts ·recounting the beginning of the world·.

Phil: 26 One can conceive •the beginning of motion, though one can't make sense of •a beginning of all duration. Similarly, one may set limits to •body but not to •space.

Theo: As I have just said, time and space indicate *possibilities* beyond any that might be supposed to be actual. Time and space are of the nature of eternal truths, which equally

concern the possible and the actual.

Phil: 27 The ideas of time and of eternity really have a common source, for we can in our thoughts add certain lengths of duration to one another, doing this as often as we please.

Theo: But to derive the notion of eternity from this ·repeated addition· we must have the thought of a single principle that at each stage takes one to the next stage—a principle such as 'Add 1'. . What yields the notion of the •infinite, or the •indefinite, is this thought of a possible progression generated by a principle. Thus the senses unaided can't enable us to form •these notions. In the nature of things the idea of the absolute (·e.g. the idea of infinity·) is more basic than the idea of any limits that we might contribute (·e.g. the idea of a thousand·), but the process that brings infinity *to our attention* starts with limited things that strike our senses.

Chapter xv: Duration and expansion considered together

Philalethes: 4 We have no trouble envisaging an infinite duration of •time, because we think of God as lasting for ever; but an infinite expanse of •place is harder to conceive, because we attribute extension only to *matter*, which is finite—and we call spaces beyond the limits of the · material· universe 'imaginary'....

Theophilus: If God were ·spatially· extended he would have

parts. But his having duration—i.e. his stretching through time—implies that *his operations* have parts but not that *he* does. However, where space is in question we must attribute immensity to God, and this also gives parts and order to his immediate operations. He is the source of •possibilities through his •essence, and of •existents through his •will. Thus, space like time derives its reality only from him, and

he can fill up the void whenever he pleases. It is in this way that he is omnipresent.

Phil: 11 What spirits have to do with space, and how (if at all) they occupy any of it, we don't know. But we do know that they last through time.

Theo: Every finite spirit is always joined to an organic body, and represents other bodies to itself by their relation to its own body. Thus it is obviously related to space as bodies are. Finally, before leaving this topic, I will add a comparison of my own to those that you have given between time and space. If there were a vacuum in space (for instance, if a sphere were empty inside), one could establish its size.

But if there were a vacuum in time, i.e. a duration without change, it would be impossible to establish its length. It follows from this that we can refute someone who says that if there is a vacuum between two bodies then they touch, since two opposite poles within an empty sphere cannot touch—geometry forbids it. But we couldn't refute anyone who said that two successive worlds are contiguous in time so that one necessarily begins as soon as the other ceases, with no possible interval between them. We couldn't refute him, I say, because that interval is indeterminable. If space were only a line and bodies were immobile, it would also be impossible to establish the length of the vacuum between two bodies.

Chapter xvi: Number

Philalethes: 4 The ideas of numbers are more precise than ideas of extension, and easier to distinguish from one another. When we are dealing with extension it is not the case that every equality and every inequality is easy to observe and measure; because our thoughts about space can't arrive at a •minimum•, a certain determinate smallness beyond which it can't go, comparable to a •unit of number•.

Theophilus: That applies to whole numbers, ·but not to others·. For number in the broad sense—comprising fractions, irrationals, transcendental numbers and everything that can be found between two whole numbers—is analogous to a line, and doesn't admit of a minimum any more than the continuum does. So this definition of *number* as a *multitude*

of units is appropriate only for whole numbers. Precise distinctions amongst ideas of extension don't depend on size: for we can't distinctly recognize sizes without resorting to whole numbers, or to numbers that are known through whole ones; and so, where distinct knowledge of size is sought, we must leave continuous quantity and resort to discrete quantity. So if one doesn't use numbers, one can distinguish amongst the modifications of extension only through shape—taking that word broadly enough to cover everything that prevents two extended things from being geometrically similar to one another.

Phil: 5 By the repeating of the idea of a *unit* and joining it to another unit, we make a collective idea marked by the

name ‘two’. If you can do this, repeatedly adding a unit to the last collective idea and giving each new idea a name, you can count as far as you have a series of names that you can remember.

Theo: One couldn’t get far by that method alone. For the memory would become overloaded if it had to retain a completely new name for each addition of a new unit. For that reason there has to be a certain orderliness in these names—a certain repetitiveness, with each new start conforming to a certain progression.

Phil: Two modes of numbers can’t differ from one another in any way except by one’s being greater than the other. That is why they are *simple* modes, like those of extension.

Theo: You can say of •portions of time and •portions of a straight line that they can’t differ in any way except as greater or lesser. But this doesn’t hold for all shapes and still less of all numbers; for numbers can differ in other ways as well:

9 is unlike 11 in being divisible by 3
 5 is unlike 6 in being odd,
 4 is unlike 8 in being a square number,

and so on.... So you see that your idea of simple and of mixed modifications, or your way of applying it, stands in great need of amendment.

Phil: 6 You are right in your comment that numbers should be given names that are easy to remember. So I think it would be a good idea if in counting we abbreviated ‘million of millions’ to ‘billion’, and abbreviated ‘million of millions of millions’ or ‘million of billions’ to ‘trillion’, and so on up to *nonillions*; for one is hardly likely to have a use for anything higher.

Theo: These names are acceptable. Let x be equal to 10; then a million will be x^6 , a billion x^{12} , a trillion x^{18} ,... and so on up to a nonillion which will be x^{54} . [The standard British billion was 10^{12} until late in the 20th century, when the British shifted to the American usage in which one billion = 10^9 .]

Chapter xvii: Infinity

Philalethes: 1 One extremely important notion is that of finite and infinite, which are looked on as the modes of quantity.

Theophilus: It is perfectly correct to say that there is •an infinity of things, i.e. that there are always more of them than one can specify. But it is easy to demonstrate that

there is no •infinite number, and no infinite line or other infinite quantity if these are taken to be genuine wholes.... The true infinite, strictly speaking, is only in the absolute, which is more basic than any composition and isn’t formed by the addition of parts....

Phil: 2 I have been taking it as established that the mind

looks on finite and infinite as modifications of expansion and duration.

Theo: I don't consider that to have been established. The thought of finite and infinite is appropriate wherever there is magnitude or multiplicity, ·and thus isn't confined to space and time.· Also the genuine infinite isn't a modification: it is the absolute; and indeed it is precisely by modifying it that one limits oneself and forms a finite.

Phil: 3 It has been our belief that the mind gets its idea of infinite space from the fact that no change occurs in its power to go on enlarging its idea of space by further additions.

Theo: It is worth adding that it is because the same principle can be seen to apply at every stage. Let us take a straight line, and extend it to double its original length. It is clear that the second line, being perfectly similar to the first, can be doubled in its turn to yield a third line that is also similar to the preceding ones; and since the same principle is always applicable, it is impossible that we should ever be brought to a halt; and so the line can be lengthened to infinity. Accordingly, the thought of the infinite comes from the thought of ·likeness, or of the ·same principle, and it has the same origin as do universal necessary truths. That shows how our ability to carry through the conception of this idea comes from something within us, and couldn't come from sense-experience; just as necessary truths couldn't be proved by induction or through the senses. The idea of ·the absolute is internal to us, as is that of ·being: these absolutes are nothing but the attributes of God; and they may be said to be as much the source of ideas as God himself is the principle of beings. The idea of the absolute, with reference to space, is just the idea of the immensity of God and thus of other things. But it would be a mistake to try to suppose an absolute space that is an infinite whole

made up of parts. There is no such thing: it is a notion that implies a contradiction; and these infinite wholes, and their opposites the infinitesimals, are like imaginary roots in algebra in having no place except in calculations.

Phil: One can also conceive a magnitude without taking it to consist of parts lying side by side. 6 Consider the most perfect idea I have of the whitest whiteness; I can't add to this an idea of something more white than this; and if I add to it another idea of a less or equal whiteness, that doesn't increase or enlarge my idea in any way. That is why the different ideas of whiteness are called *degrees* ·of whiteness..

Theo: I can't see that this reasoning is cogent, for nothing prevents one from having the perception of a whiteness more brilliant than one at present conceives. The real reason why one has grounds for thinking that whiteness couldn't be increased to infinity is that it isn't a basic quality: the senses provide only a confused knowledge of it; and when we do achieve a distinct knowledge of it we shall find that it depends on structure, and that its limits are set by the structure of the visual organs. But where basic or distinctly knowable qualities are concerned, there are ways of going to infinity, not only in contexts involving extent. . . . , e.g. time and space, but also in ones involving intensity or degrees, e.g. with regard to speed.

Phil: 7 We don't have the idea of a space that is infinite; 8 and nothing is more evident than the absurdity of the actual idea of an infinite number.

Theo: That is my view too. But it isn't because we cannot have the idea of the infinite, but because an infinite cannot be a true whole.

Phil: 16 By the same token, we have no positive idea of an

infinite duration, i.e. of eternity, nor one of immensity.

Theo: I believe that we have a positive idea of each of these. This idea will be true provided that it is conceived not as an infinite whole but rather as an absolute, i.e. as an attribute

with no limits. In the case of eternity, it lies in the necessity of God's existence: there is no dependence on parts, nor is the notion of it formed by adding times. That shows once again that, as I have already remarked, the notion of infinity comes from the same source as do necessary truths.

Chapter xviii: Other simple modes

Philalethes: 1 There are many other simple modes that are formed out of simple ideas. For example 2 the modes of motion such as sliding and rolling; 3 those of sounds, which are modified by notes and tunes, 4 as colours are by shades; 5 not to mention tastes and smells. 6 There are not always measures and distinct names, any more than there are with complex modes, 7 because we are guided by what is useful.

We shall discuss this more fully when we come to consider words.

Theophilus: Most modes are not so very simple, and could be classified as complex. To explain what sliding or rolling is, for example, one would have to take into account not just motion but also surface friction.

Chapter xix: The modes of thinking

Philalethes: 1 Let us pass on from modes that come from the •senses to those that •reflection gives us. ·First, here is a classification with some terminology·.

•Sensation: when an idea comes into the mind through the senses.

- Remembrance: when the same idea recurs in the mind without any stimulus from the external senses.
- Self-communion: when the idea is sought after by the mind, and with some effort is found and brought again in view.

- Contemplation: when the idea is for a long time held in the mind and attentively considered.
- Reverie: when ideas float in our mind, as it were, without reflection or attention.
- Attention: when the ideas that offer themselves are taken notice of and, as it were, registered in the memory.
- Concentration of mind, or study: when the mind earnestly fixes its view on an idea, considers it on all sides, and won't let other ideas call it off from this one.
- Dreamless sleep: the cessation of all these.
- Dreaming: at a time when the external senses are not working, having ideas in the mind that are not suggested or prompted by any external objects, or by any known occasion, and are not voluntarily brought there by the understanding.

Is what we call 'ecstasy' *dreaming with the eyes open*? I leave that undecided.

Theophilus: It is good to sort out these notions, and I shall try to help. I shall say then that it is

- sensation when one is aware of an outer object,
- remembrance is the recurrence of it [=? the sensation] without the return of the object, and
- memory is remembrance when one knows that one has had it before.
- ‘Self-communion’ is usually understood to name a state in which one disengages oneself from practical matters in order to engage in meditation.

That is different from the sense that you give the term, but since there is no word that I know that does fit your notion, yours could be adapted for the purpose.

- Attention is picking on some objects in preference to

others.

- Consideration is the continuation of attention in the mind, whether or not the outer object is still observed, or even still exists.
- Contemplation is consideration that aims at knowledge without reference to action.
- Study is attention that aims at learning—i.e. acquiring knowledge in order to keep it.
- Meditating is considering with a view to planning some project.

Engaging in •reveries seems to consist merely in following certain thoughts for the sheer pleasure of them and with no other end in view. That is why reverie can lead to madness: one forgets oneself, forgets one's goals, drifts towards dreams and fantasies, builds castles in Spain. We can distinguish •dreams from sensations only because they aren't connected with sensations—they are like a separate world. •Sleep is a cessation of sensations, and thus •ecstasy is a very profound sleep from which the subject can't easily be waked, arising from a temporary internal cause. That last condition is added so as to exclude the deep sleep that arises from a drug or—as in a coma—from some prolonged impairment of one's functions. Ecstasies are sometimes accompanied by visions, but the latter can also occur without ecstasy; and it seems that a vision is nothing but a dream that is taken for a sensation as though it conveyed something true about objects. Divine visions do indeed contain truth, as can be discovered for instance when they contain detailed prophecies that are justified by events.

Phil: 4 From the fact that the mind can think more or less concentratedly, it follows that thinking is the action of the soul, not its essence.

Theo: No doubt thinking is an action, and cannot be the

essence; but it is an essential action, and such actions occur in all substances. I have shown above [page 38] that we always have an infinity of tiny perceptions without being aware of them. We are never without perceptions, but necessarily we are often without awareness, namely when none of our perceptions stand out. It is because that important point

has been neglected that so many good minds have been conquered by a loose philosophy—one as ignoble as it is flimsy—and that until very recently we have been ignorant of all that is finest in the soul. And that is why people have found so plausible the erroneous doctrine that souls are by nature perishable.