Appendix One

Denis Diderot, *Letter on the Blind for the Use of Those Who Can See* (1749)

Note on the Translation

This is the first English translation and edition of the *Lettre sur les aveugles* since the eighteenth century when it first appeared in 1770 as *A Letter on Blindness. For the Use of those who have their Sight* (see Figure 4).[1] That work was reprinted with some modifications and various appendices in 1780 and again in 1783 with the title, *An Essay on Blindness, in a Letter to a Person of Distinction*.[2] It also served as the basis for Margaret Jourdain's translation (1916),[3] which has recently been reproduced by David Adams in Denis Diderot, *Thoughts on the Interpretation of Nature and other Philosophical Works* (2000).[4]

Diderot was himself a translator of English into French and so is ***, who claims to have translated part of a fictitious work from English, the

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1 *A Letter on Blindness. For the Use of those who have their Sight* (London: printed for William Bingley, at the Britannia, No. 31, in Newgate Street, 1770). Yvon Belaval and Robert Niklaus claim that there were three translations, dating from 1754, 1762 and 1780 (DPV, 4, p. 10). I can find no evidence of the first two of these. For that of 1780, see note 2.

2 *An Essay on Blindness, in a Letter to a Person of Distinction; Reciting the most interesting Particulars relative to Persons born Blind and those who have lost their Sight. Being an Enquiry into the Nature of their Ideas, Knowledge of Sounds, Opinions concerning Morality and Religion, &c. Interspersed with several anecdotes of Sanderson, Milton, and others. With copper-plates elucidating Dr. Sanderson's method of working geometrical problems. Translated from the French of M. Diderot, Physician to His most Christian Majesty* (London: printed for Richard Dymott opposite Somerset-House, in the Strand, 1773). A second edition of this work appeared in London, probably in 1780, printed for J. Barker, No. 7, Little Russell-Court, Drury-Lane.

3 *The Letter on the* Blind, in *Diderot's Early Philosophical Works*, Margaret Jourdain (trans. and ed.) (Chicago and London: The Open Court, 1916), pp. 68–141. Jourdain states: 'This translation has been collated with an eighteenth-century translation, undated and anonymous, entitled *A Letter on Blindness*', p. 141.

4 See Denis Diderot, *Thoughts on the Interpretation of Nature and other Philosophical Works*, David Adams (intro. and ann.) (Manchester: Clinamen, 2000), pp. 149–90.

Life and Character of Dr Nicholas Saunderson, supposedly written by one William Inchlif Esq. *** observes that readers who are able to read the work in the original, 'y remarqueront un agrément, une force, une vérité, une douceur qu'on ne rencontre dans aucun autre récit, et que je ne me flatte pas de vous avoir rendus, malgré tous les efforts que j'ai faits pour les conserver dans ma traduction' [will remark in it a certain something that is charming, powerful, true and gentle, which is to be found in no other tale and which I do not flatter myself to have rendered for you, in spite of all the efforts I have made to preserve it in my translation]. ***'s claim is ironic, not least because it would seem that there is no real original to which the reader could compare his translation.[5] That is not the case for the readers of my translation and so the sentiments that *** expresses ironically are ones that I wish to express here for real.

The two footnotes are Diderot's, as is the Index. The endnotes are mine and have been kept to a minimum. Where the *Letter* makes reference to other works of the period, the endnotes refer, where available, to the standard English translation. Names are given in their modern spelling (e.g. 'Puiseaux' for 'Puisaux', 'Molyneux' for 'Molineux') or have been corrected (e.g. 'Raphson' for 'Rapson', 'Saunderson' for 'Saounderson'). The six plates are reproduced by courtesy of the University Librarian and Director, The John Rylands University Library, The University of Manchester.

5 See above, p. 45.

Letter on the Blind for the Use of Those Who Can See

Possunt, nec *posse videntur*[1]

(London, 1749)[2]

I had my doubts, Madame, about whether the blind girl whose cataracts Monsieur de Réaumur[3] has just had removed, would reveal to you what you wanted to know, but it had not occurred to me that it would be neither her fault nor yours. I have appealed to her benefactor in person and through his best friends, as well as by means of flattery, but to no avail, and the first dressing will be removed without you. Some highly distinguished people have shared with the philosophers the honour of being snubbed by him. In a word, he only wanted to perform the unveiling in front of eyes of no consequence.[4] Should you be curious to know why that talented Academician makes such a secret of his experiments, which cannot, in your view, have too many enlightened witnesses, I should reply that the observations of such a famous man do not so much need spectators while they are being performed as an audience once the performance is over. So, Madame, I have returned to my initial plan, and having no choice but to miss out on an experiment which I could not see would be instructive for either you or me, but which will doubtless serve Monsieur de Réaumur rather better, I began philosophizing with my friends on the important matter that it concerns. How delighted I should be were you to accept the account of one of our conversations as a substitute for the spectacle that I so rashly promised you!

The very day that the Prussian[5] was performing the cataract operation on Simoneau's daughter,[6] we went to question the man-born-blind of Puiseaux.* He is a man not lacking in good sense and with whom many people are acquainted. He knows a bit of chemistry and followed the botany lessons in the King's Garden quite successfully.[7] His father taught philosophy to much acclaim in the University of Paris and left him an honest fortune, which would easily have been enough to satisfy his remaining senses had his love of pleasure not led him astray in his youth. People took advantage of his inclinations, and he retired to a little town in the provinces whence he comes to Paris once a year, bringing with him liqueurs of his own distillation, which are much appreciated. There you have, Madame, some details which, though not very philosophical, are for that very reason all the more suitable for persuading you

* Small town in the Gâtinais.

that the character of whom I am speaking is not imaginary.[8]

We arrived at our blind man's house around five o'clock in the evening to find him using raised characters to teach his son to read. He had only been up for an hour, since, as you know, the day begins for him as it ends for us. His custom is to work and see to his domestic affairs while everyone else is asleep. At midnight, there is nothing to disturb him and he disturbs no one. The first task he undertakes is to put back in its place everything that has been moved during the day, and his wife usually wakes up to a tidy house. The difficulty the blind have in finding things that have been mislaid makes them fond of order, and I have noticed that people who are well acquainted with them share this quality, either owing to their good example or out of a feeling of empathy that we have for them. How unhappy the blind would be without the small acts of kindness of those around them! And how unhappy we would be too! Grand gestures are like large gold and silver coins that we rarely have any occasion to spend, but small gestures are the ready currency we always have to hand.

Our blind man is a very good judge of symmetry. Between us, symmetry is perhaps a pure convention, but between a blind man and the sighted, it is certainly so. By using his hands to study how the parts of a whole must be arranged such that we call it beautiful, a blind man can manage to apply this term correctly, but when he says *that's beautiful*, he is not judging it to be so; he is simply repeating the judgement of the sighted. And is that any different to what three quarters of people do when they judge a play they have listened to or a book they have read? To a blind man, beauty is nothing more than a word when it is separated from utility, and with one less sense organ, how many things are there, the utility of which escapes him? Are the blind not to be pitied for deeming beautiful only what is good? So many wonderful things are lost on them! The only compensation for their loss is the fact that their ideas of beauty, though much less broad in scope than ours, it is true, are much more precise than those of the clear-sighted philosophers who have written long treatises on the subject.

Our blind man constantly talks about mirrors. You are right in thinking he does not know what the word 'mirror' means, and yet he will never place a mirror face down. He expresses himself with as much sense as we do about the qualities and defects of the organ he lacks, and though he

does not attach any ideas to the terms he uses, he nonetheless has an advantage over most other men in that he never uses them incorrectly. He speaks so well and so accurately on so many things that are absolutely unknown to him, that conversing with him would undermine the inductive reasoning we all perform, though we have no idea why, which assumes that what goes on inside us is the same as what goes on inside others.

I asked him what he understood by a mirror: 'A machine,' he replied, 'that projects things in three dimensions at a distance from themselves if they are correctly placed in front of it. It is like my hand inasmuch as I mustn't place it to one side of an object if I want to feel it.' Had Descartes been born blind, he would, it seems to me, have congratulated himself on such a definition. Indeed consider, if you will, the subtlety with which he had to combine certain ideas in order to arrive at it. Our blind man knows objects only through touch. He knows on the basis of what other men have told him that it is by means of sight that we know objects just as they are known to him through touch. At least, that is the only notion he can have of sight. He also knows that we cannot see our own faces, though we can touch them. Sight, so he is bound to conclude, is a kind of touch that only applies to objects other than our faces and which are located at a distance from us. Moreover, touch only gives him the idea of three dimensions and so he will further believe that a mirror is a machine that projects us in three dimensions at a distance from ourselves. How many famous philosophers have employed less subtlety to arrive at notions that are equally false? How surprising must a mirror be for a blind man though? And he must have been even more astonished when we told him that there are other machines that enlarge objects and others still that, without duplicating the objects, make them change place, bring them closer, move them further away, make them visible and reveal their tiniest parts to naturalists' eyes, and that there are some that multiply objects by the thousand and others that seem to alter what they look like completely. He asked us hundreds of bizarre questions about these phenomena. For example, he asked if it was only people called naturalists who could see with a microscope, and whether astronomers were the only people who could see with a telescope, whether the machine that enlarges objects was larger than the object that makes them smaller, whether the one that brings them closer was shorter

than the one that moves them further away, and he was completely unable to understand how that other one of us who is, as he put it, repeated in three dimensions by the mirror, could elude the sense of touch. 'Here you have two senses', he said, 'that are made to contradict each other by means of a little machine. A better machine might perhaps make them agree with each other without the objects being any more real as a result; and perhaps a third, even better and less perfidious machine would make them disappear altogether and notify us of the error.'

'In your opinion, what are eyes?' Monsieur de . . . asked him. 'They are organs', replied the blind man, 'that are affected by the air in the same way as my hands are affected by my stick.' His reply took us aback, and as we stared at each other in wonder, he continued, 'That must be right because when I place my hand between an object and your eyes, you can see my hand but not the object. The same thing happens to me when I am looking for one thing with my stick and I come across something else instead.'

Madame, open Descartes' *Dioptrics* and there you will find the phenomena of vision related to those of touch, and optical plates full of men seeing with sticks.[9] Descartes and all those who have come after him have been unable to provide any clearer ideas of vision, and in this respect the great philosopher's superiority over our blind man was no greater than that of the common man who can see.

None of us thought to ask him about painting and writing, but it is clear that there is no question to which his comparison could not give a satisfactory answer, and I am in no doubt that he would have said that trying to read or see without eyes was like looking for a pin with a great big stick. We spoke to him only of those kinds of pictures that use perspective to give objects three dimensions and which are both so similar and so different to our mirrors, and we realized they confused as much as they confirmed his understanding of a mirror and that he was tempted to believe that since a mirror paints objects, a painter representing them would perhaps paint a mirror.

We saw him thread very small needles. Might I ask you, Madame, to look up from your reading here and imagine how you would proceed if you were he? In case you can't think how, I shall tell you what our blind man does. He places the needle long-ways between his lips with the eye of the needle facing outwards and then, sucking in with his


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Pl. 1.
Figure tirée de la Dioptrique de Descartes.

tongue, he pulls the thread through the eye, except when it is too thick, but in that case someone who can see is in no less difficulty than someone who can't.

He has an amazing memory for sounds, and faces afford us no greater diversity than voices do him. They present him with an infinite scale of delicate nuances, which elude us because we do not have as much interest in observing them as the blind man does. Such nuances are like our own faces inasmuch as, of all the faces we have ever seen, the one we recall the least well is our own. We only study faces to recognize people, and if we cannot remember our own, it is because we will never be in the position of mistaking ourselves for someone else nor someone else for ourselves. Moreover, the way the senses work together prevents each one from developing on its own. This will not be the only time I shall make this observation.

On this matter, our blind man told us that he might have thought himself to be pitied for lacking our advantages and have been tempted to see us as superior beings, had he not on hundreds of occasions felt how much we deferred to him in other ways. This remark prompted us to make another. This blind man, we said to ourselves, has as high a regard for himself as he does for those of us who can see, perhaps even higher. Why then if an animal has reason, which we can hardly doubt, and if it weighed up its advantages over those of man, which it knows better than man's over it, would it not pass a similar judgement? He has arms, the fly might say, but I have wings. Though he has weapons, says the lion, do we not have claws? The elephant will see us as insects; and while all animals are happy to grant us our reason, which leaves us in great need of their instinct, they claim to be possessed of an instinct, which gives them no need for our reason. We have such a strong tendency to overstate our qualities and underplay our faults that it would almost seem as though man should be the one to do the treatise on strength, and animals the one on reason.

One of us decided to ask our blind man whether he would like to have eyes. He replied, 'If I wasn't so curious, I'd just as well have long arms, as it seems to me that my hands could teach me more about what's happening on the moon than your eyes or telescopes can, and besides, eyes stop seeing well before hands stop touching. It would be just as good to improve the organ I already have, as to grant me the one I lack.'

Our blind man locates noises or voices so accurately that I have no doubt that, with practice, blind people could become highly skilled and highly dangerous. I shall tell you a story that will convince you how wrong we would be to stay still were he to throw a stone at us or fire a pistol, regardless of how little practice he might have had with a firearm. In his youth, he had a fight with one of his brothers who came out of it very badly. Angered by some unpleasant remarks that his brother directed at him, he seized the first object that came to hand, threw it at him, hit him right in the middle of his forehead and laid him out on the ground.

This affair and some others made him known to the police. The visible signs of authority that affect us so powerfully do not impress the blind. Our blind man appeared before the magistrate as if before his equal. Threats did not intimidate him. 'What will you do to me?' he asked Monsieur Hérault.[10] 'I shall throw you in the dungeon', replied the magistrate. 'Oh, Sir,' replied the blind man, 'that's where I've been for twenty-five years.' What a reply, Madame! And what a line for a man who likes moralising as much as I do! We depart this life as though it were an enchanting spectacle, whereas the blind man departs it as though it were a prison, and although we enjoy living more than he does, you must agree he has many fewer regrets in dying.

The man-born-blind of Puiseaux works out how close he is to the fire by how hot it is, how full a receptacle is by the sound liquid makes as he decants it, and how near he is to other bodies by the way the air feels on his face. He is so sensitive to the most minor changes in the atmosphere that he can tell a street from a cul-de-sac. He can guess with astonishing accuracy how much something weighs and how much a bottle can hold, and his arms make such precise scales and his fingers such experienced compasses that, in matters of statics, I would always back our blind man against twenty sighted people. The surface of the skin is no less subtly differentiated to him than the sound of the voice, and there is no reason to fear that he might mistake his wife for another woman, unless he stood to gain by it. It would very much appear, however, that in a land of the blind, either wives would be communal or its adultery laws would be very strict. It would be very easy for wives to deceive their husbands by using a sign they had agreed with their lovers.

He judges beauty by touch. That is understandable, but what is not so easy to grasp is that he also bases his

judgement on the sound of a person's voice and the way they pronounce words. We would need an anatomist to explain whether there is some relationship between the parts of the mouth and palate and the external shape of the face. He can make little things by turning them on a lathe and do small pieces of needlework; he can level using a set square; he can take ordinary machines apart and put them back together; and he knows enough music to be able to play a piece if he is told the notes and their relative values. He is able to judge the duration of time much more precisely than we can by the sequence of actions and thoughts. The beauty of someone's skin, their firm, plump curves, the sweet smell of their breath and the charming sound of their voice and diction are qualities by which he sets great store.

He married so as to have eyes of his own. He had previously intended to marry a deaf woman who would have lent him her sight and to whom he would have lent his hearing.[11] Nothing surprised me so much as his singular ability to do a great number of things, but when we revealed our surprise, he said: 'It is clear to me, Gentlemen, that you are not blind, since you are surprised at what I can do. So why aren't you also amazed that I can speak?' There is, I believe, more philosophy in that reply than he intended. It is surprising how easily we learn to speak. We only succeed in attaching an idea to a large number of terms that cannot be represented by sensible objects and which have, as it were, no body, by means of a series of subtle and profound analogies which we perceive between these non-sensible objects and the ideas they excite in us. As a result, we must admit that a blind man is bound to find it more difficult to learn to speak, since the number of non-sensible objects is much greater for him than it is for other people, and so he has much less scope for comparing and combining. How can we expect the word 'physiognomy', for example, to become fixed in his memory? It is a charming kind of quality consisting of things that are so barely perceptible to a blind man and hardly more so to those of us who can see, that we would have great trouble saying exactly what it is to be possessed of a physiognomy. If it is in the eyes, touch is unable to grasp it; and in any case, what are blank eyes, lively eyes, intelligent eyes, etc. to a blind man?

From this, I conclude that we are well served by the ways in which our different senses and sense organs cooperate. But it would be a very different thing if we exercised each

one separately and never used two together when one on its own would suffice. To add touch to sight when the eyes are sufficient on their own is like taking two already very lively horses and harnessing a third to them at ninety degrees so that one pulls in one direction while the other two pull in the other.

Since I have never doubted the great influence of our senses and organs on our metaphysics and morals, nor that our most purely intellectual ideas, if I may call them that, are closely related to the organisation of our bodies, I began to ask our blind man about vice and virtue. First I learnt that he had an extraordinary aversion to theft, which was caused in him by two things: the ease with which other people could steal from him without him noticing and, perhaps even more importantly, the ease with which they could see him stealing from them. It's not that he doesn't know perfectly well how to guard himself against the additional sense he knows us to have nor that he is unaware of how best to cover up a theft. He sets little store by modesty. If it weren't for the protection they afforded from draughts, he could hardly comprehend why we wear clothes, and he openly admits to being unable to work out why we cover one part of our bodies rather than others, and is even less able to grasp our bizarre practice of covering particular parts of the body, whose functions, combined with the disorders to which they are prone, ought to require them to be kept free. Although we live in a century in which the philosophical spirit has rid us of a great number of prejudices, I don't think we will ever go so far as to misunderstand the prerogatives of modesty quite as completely as my blind man. To him, Diogenes would not have been a philosopher.[12]

Since of all the external signs that evoke ideas of sympathy and pain in us, the blind are only affected by the sound of suffering, I suspect them, in general, of being inhumane. What difference can there be for a blind man between a man urinating and a man shedding blood without a whimper? Don't we too stop sympathising when something is so far away or so small that we can't see it any more clearly than a blind man can? How dependent virtue is on our way of feeling and on the degree to which we are affected by external things! Consequently I don't doubt that, were it not for the fear of punishment, many people would find it less difficult to kill a man, were he far enough away that he looked as small as a swallow, than to kill a bull with their

bare hands. If we feel compassion for a horse in pain and squash an ant without giving it a moment's thought, are we not following the same principle? Madame, how different blind morality is to ours! And how different again a deaf man's is to a blind man's, and how imperfect, to say the least, would our morality seem to a being who had one more sense than we do!

Our metaphysics are no more in line with theirs. How many of our principles are absurd to the blind, and vice versa! I could go into detail about that here, which would no doubt be to your amusement, but some people who see crime everywhere would have no hesitation in accusing me of irreligion, as though it were down to me to make the blind perceive things in a manner other than that in which they perceive them. I shall be content to make one observation with which I believe everyone must agree, namely that the grand argument that is derived from nature's marvels is very weak for the blind. The ease with which we create, as it were, new objects by means of a little mirror is something more incomprehensible to them than the stars, which they have been condemned never to see. That luminous globe that moves from east to west is less astonishing to them than a little fire which they can increase or decrease at their own convenience, for since they see matter in a much more abstract way than we do, they are less unlikely to believe it can think.

If a man who had only been able to see for a day or two were to find himself lost in a land of the blind, he would have to decide between keeping quiet and being taken for a madman. Every day he would proclaim some new mystery, which would only be a mystery to the blind and which the freethinkers would pride themselves on not believing. Could the defenders of religion not make good use of such stubborn and, to some extent, such fair and yet such ill-founded unbelief? If you entertain that supposition for a moment, it will bring to mind in another guise the history and persecutions of those who were unlucky enough to discover the truth in the dark ages and unwise enough to reveal it to their blind contemporaries, among whom they had no crueller enemies than those whose order and education ought, it seemed, to have made them hold the least dissimilar views.

So I leave behind the morality and metaphysics of the blind and move on to less important things, though they

are more closely related to the point of all the observations people are constantly making ever since the Prussian arrived. Question one: how does a man-born-blind form ideas of shapes? I think he gains the idea of a line by moving his hands from one place to the next and feeling a body pass continuously through his fingers. If he slides his fingers along a taught thread, he gains the idea of a straight line, and by following the curve of a slack thread, he gains the idea of a curved line. More generally, it is from repeated experiences of touch that he acquires the memory of the sensations he had at different points, and since he is able to combine these sensations or points, he can form shapes. A straight line for a blind man who is not a geometer is nothing other than the memory of a series of sensations of touch arranged in the same way as a taut piece of string, and a curved line the memory of a series of sensations of touch as they relate to the surface of some concave or convex body. With practice, a geometer is able to rectify these lines by working out their properties, but geometer or no, the man-born-blind relates everything to his fingertips. We combine coloured points, whereas he only combines palpable points or, to be more precise, the sensations of touch that he can remember. Nothing happens in his head the way it does in ours because he cannot imagine, since to imagine you must colour in a background and make some points stand out against it by supposing them to be of a different colour. If you make the points the same colour as the background, they immediately merge together and the shape disappears; at least, that's how things happen in my imagination and I presume other people don't imagine any differently. So when I decide to perceive a straight line in my head other than by means of its geometrical properties, I begin by stretching out a white canvas, on which I pick out a series of black points that are all arranged in a line. The stronger the colour of the backdrop and the colour of the points, the more clearly I perceive them, and a shape in a colour that is very similar to that of the background is no less tiring to contemplate in my imagination than outside my head and on a canvas.

So you see, Madame, it would be possible to come up with some simple rules for imagining several objects of several different colours at the same time, but such laws would be of no use whatsoever to a man-born-blind. Since he is unable to imagine colour and, as a result, unable to make shapes in the way we understand, he has no memory

of anything other than the sensations gained through touch, which he relates to different points, places or distances, and out of which he makes shapes. It is so uniformly the case that we do not make shapes in our imagination other than by colouring them, that if we were asked to touch little spheres in the dark, we would immediately suppose them to be black or white or some other colour, and if we did not suppose them to be any colour, we would be like the man-born-blind and have nothing more than the memory of little sensations at our fingertips that would be consistent with those produced by small round bodies. If this memory is very fleeting in us and we barely have any idea how a blind man grasps, remembers and combines the sensations of touch, it is because our eyes have put us in the habit of doing everything with colours in our imaginations. I have myself, however, had the experience of being in the grip of a violent passion and felt my whole hand tremble as the impressions of bodies that I had touched a long time ago were reawakened in me as vividly as if they were still present to my touch, and I could very clearly perceive an exact correlation between the outlines of my sensation and those of these absent bodies. Although sensation is indivisible in itself, it occupies, if I may put it like this, an extended space, which the man-born-blind is able to enlarge or reduce by making the affected area larger or smaller. In so doing, he composes points, surfaces and bodies, and he could even make a body as large as the earth's sphere, were he to suppose his fingertip as large as the sphere and feel its full height, width and depth.

I don't know what could more clearly demonstrate the existence of the inner sense[13] than that faculty, which is weak in us but strong in men-born-blind, and which enables us to feel or recall the sensations of bodies even when they are absent and no longer perceptible. We are unable to make a man-born-blind understand how our imaginations paint absent objects to us as though they were present, but we can very easily recognize in ourselves the faculty that makes us able to feel an absent body at our fingertips, just as a man-born-blind can. To achieve this effect, press your index finger and thumb together and close your eyes; separate your fingers and immediately examine what happens inside you afterwards, and tell me if the sensation does not last for a long while after you have stopped pressing down, and whether while that pressure persists, you feel as

though your soul is more in your head or in your fingertips, and whether the pressure does not give you the feeling of a surface equal to the space occupied by the sensation. It is only on the basis of the strength or weakness of the sensory impression that we can tell the difference between the sensation of beings that are present outside us and their representation in our imaginations. Similarly, the man-born-blind can only tell the difference between the real presence of an object at his fi ngertips and the sensation of it, on the basis of the strength or weakness of that same sensation.

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Notes

1 'They can, but they don't seem to be able to'. The line is adapted from Virgil; see above, pp. 24–6.
2 The real place of publication was Paris.
3 René Antoine Ferchault, Seigneur de Réaumur et de La Bermondière (1683–1757), member of the Académie Royale des Sciences [Royal Academy of the Sciences] since 1708 and elected its Director on eleven occasions. He was most famous for his six-volume study of insects, *Mémoires pour servir à l'histoire des insectes* [Memoirs for Use in the Study of Insects], 6 volumes (Paris: Imprimerie Royale, 1734–42).
4 According to Rousseau's *Confessions*, this remark may have been what triggered Diderot's arrest and imprisonment (Jean-Jacques Rousseau, *Confessions*, Angela Scholar (trans.), Patrick Coleman (ed., intro. and notes) (Oxford: Oxford World's Classics, 2008), p. 338).
5 Joseph Hillmer (born c. 1720), Prussian oculist; see above pp. 127–9.
6 She may be a relation of the Simoneau who was one the engravers of Réaumur's *Mémoires*.
7 The King's Garden [Jardin du Roi], directed by Georges Leclerc, comte de Buffon (1707–1788) since 1739.
8 There is some evidence for his real-life existence, see above pp. 38–41.
9 René Descartes, *Dioptrics* (1637). The figure reproduced in the *Letter* is taken from an eighteenth-century edition and differs in significant ways from the original; see above pp. 60, 72.
10 René Hérault, Seigneur de Fontaine-l'Abbé et de Vaucresson (1691–1740), Lieutenant General of the Paris Police (1725–1739).
11 This is a reversal of Montaigne's description of a good marriage as one between a blind wife and a deaf husband (*Essays*, in *The Complete Works: Essays, Travel Journal, Letters*, Donald M. Frame (trans.), Stuart Hampshire (intro.) (London: Everyman, 2003), p. 804).
12 Diogenes was a Greek Cynical philosopher, known for his lewd and provocative behaviour that challenged social customs.
13 For a history of this term, see Daniel Heller-Roazen, *The Inner Touch* (Cambridge, MA: MIT Press, 2007).
14 Descartes located the soul in the pineal gland, see *The Passions of the Soul* (1649), in *The Philosophical Writings of Descartes*, vol. 1.
15 For a discussion of medical theories of the nerves and brain, see Ann Thomson, *Bodies of Thought: Science, Religion, and the Soul in the Early Enlightenment* (Oxford: Oxford University Press, 2008), pp. 175–215.

16 For a history of this term, see Peter Dear, 'The Meanings of Experience', in *The Cambridge History of Science*, David C. Lindberg and Ronald L. Numbers (eds), 7 volumes (Cambridge: Cambridge University Press, 2003), vol. 3, pp. 106–31, especially the section entitled 'Event Experiments and 'Physico-Mathematics', pp. 124–30.