

Selected Correspondence of Descartes

René Descartes

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[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 has no philosophical interest, or that seems to present more difficulty than it is worth. (Where a letter opens with civilities and/or remarks about the postal system, the omission of this material is not marked by ellipses.) Longer omissions are reported between brackets in normal-sized type. —The letters between Descartes and Princess Elisabeth of Bohemia, omitted here, are presented elsewhere on this website (but see note on page 181).—This version is greatly indebted to CSMK [see Glossary] both for a good English translation to work from and for many explanatory notes, though most come from AT [see Glossary].—Descartes usually refers to others by title ('M.' for 'Monsieur' or 'Abbé' or 'Reverend Father' etc.); the present version omits most of these.—Although the material is selected mainly for its bearing on Descartes as a *philosopher*, glimpses are given of the colour and flavour of other sides of his life.

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Contents

Letters written in 1619–1637	1
to Beeckman, 26.iii.1619	1
to Beeckman on 23.iv.1619	2
to Beeckman, 29.iv.1619	3
to Gibieuf, 18.vii.1629	3
to Mersenne, 8.x.1629	3
to Mersenne, 13.xi.1629	5
to Mersenne, 20.xi.1629	6
to Mersenne, 18.xii.1629	8
to Mersenne, i.1630	11
to Mersenne, 25.ii.1630	12
to Mersenne, 18.iii.1630	13
to Mersenne, 15.iv.1630	14
to Mersenne, 6.v.1630	16
to Mersenne, 27.v.1630	17
to Beeckmann, 17.10.1630	18
to Mersenne, 25.xi.1630	20
to Mersenne, 23.xii.1630	21
to Balzac, 15.iv.1631	21
to Balzac, 5.v.1631	22
to Villebressieu, summer 1631	22
to Mersenne, x or xi 1631	23
to Golius, 2.ii.1632	24
to Mersenne, 5.iv.1632	24
to Mersenne, 10.v.1632	25
to Mersenne, vi.1632	26
to Mersenne, xi or xii 1632	26
to Mersenne, late xi.1633	27
to Mersenne, ii.1634	28
to Mersenne, iv.1634	28
to Mersenne, 14.viii.1634	30
to Beeckman, 22.viii.1634	31

to Morin, ix or x 1634	32
to Golius, 16.iv.1635	32
to Golius, 19.v.1635	33
to Mersenne, vi or vii 1635	33
to Huygens, 1.xi.1635:	34
from Huygens, 3.xii.35	34
to Mersenne, iii.1636	35
from Huygens, 5.i.1637	36
to Mersenne, 27.ii.1637	37
to Huygens, 3.iii.37	38
to Silhon, v.1637	39
Fermat to Mersenne, iv or v 1637:	39
to Huygens, 20.v.1637	40
to Mersenne, late v.1637	41
to ***, late v.1637	42
to Mersenne, 25.v.1637	43
to Noël, 14.vi.1637	44
to Huygens, 12.vi.1637	44
to Plempius, 3.x.1637	45
to Plempius for Fromondus, 3.x.1637	46
to Huygens, 5.x.1637	49
to Mersenne, 5.x.1637:	52
to Noël, x.1637	53
to Huygens, 4.xii.1637	54
to Plempius, 20,xii.1637:	54
to Mersenne, end of xii.1637	55

Letters written in 1638–1640	57
to Mersenne, i.1638	57
from Pollot to Reneri for Descartes, ii.1638	57
to Plempius, 15.ii.1638:	59
from Morin, 22.ii.38	61
to Vatier, 22.ii.1638	62
against Fermat, 1.iii.38	64
to Mersenne, 1.iii.1638	65
to Reneri for Pollot, iv or v 1638	66
to Huygens, 9.iii.1638	70
from Mersenne, 28.iv.1638	72
to Mersenne, 27.v.1638	72
to Morin, 13.vii.1638	74
to Mersenne, 13.vii.1638	78
to Mersenne, 27.vii.1638	81
to Hogelande, viii.1638	83
to Morin, 12.ix.1638	84
to Debeaune, 12.ix.1638	86
to Mersenne, 11.x.1638	86
to Mersenne, 15.xi.1638	88
to Mersenne, xii.1638	90
to Mersenne, 9.i.1639	91
to Mersenne, 9.ii.1639	93
to Mersenne, 20.ii.1639	94
from Regius, 9.iii.39	95
to Debeaune, 30.iv.1639	95
to Desargues, 19.vi.1639	96
to Mersenne, 19.vi.1639	97
to Mersenne, 27.viii.1639	98
to Mersenne, 16.x.1639	99
to Mersenne, 13.xi.1639	100
to Mersenne, 25.xii.1639:	101
to Mersenne, 29.i.1640	102
to Meyssonier, 29.i.1640	103

to Hogelande, 8.ii.1640	104
to Mersenne, 11.iii.1640	105
to Mersenne, 1.iv.1640	105
to Regius, 24.v.1640	106
to Mersenne, 11.vi.1640	107
to Mersenne, 30.vii.1640	108
to Huygens, 31.vi.1640	109
to Mersenne, 6.vi.1640	110
to Mersenne, 30.ix.1640	111
to Mersenne, 28.x.1640	113
to Mersenne, 11.xi.1640	114
to Gibieuf, 11.xi.1640	115
to Mersenne, 11.0xi.1640	115
to Colvius, xi.1640	116
to Mersenne, 3.xii.1640	116
to Mersenne, xii.1640	117
to Mersenne, 24.xii.1640	118
to Charlet, xii.40	119
to Mersenne, 31.xii.1640	119

Letters written in 1641–1644	122
to Pollot, mid-i.1641	122
to Mersenne, 21.i.1641	122
to Mersenne for Hobbes, 21.1.1641	123
to Mersenne, 28.i.1641	124
to Mersenne, 4.iii.1641	126
to Mersenne, 18.iii.1641	127
to Mersenne, 31.iii.1641	128
to Mersenne for Hobbes, 21.iv.1641	128
to Mersenne, 21.iv.1641	129
to Regius, v.1641	131
to Regius, v.1641	131
to Mersenne, 16.vi.1641	133
to Mersenne, 23.vi.1641	133
to Mersenne, vii.1641	134
to Mersenne, 22.vii.1641	136
to DeLaunay, 22.vii.1641	136
to Hyperaspistes, viii.1641	137
to Mersenne, ix.1641	143
to Mersenne, 17.xi.1641	144
to Regius, xii.1641	144
to Regius, xii.1641	144
to Gibieuf, 19.i.1642	145
to Mersenne, 19.i.1642	148
to Regius, i.1642	148
to Huygens, 31.i.1642:	152
to Regius, late ii.1642	152
to Mersenne, iii.1642	153
to Huygens, 26.iv.1642	154
to Regius, vi.1642	154
to Pollot, 6.x.1642	155
to Huygens, 10.x.1642	155
to Picot, 2.iii.1643	157
to Colvius, 23.iv.1643	157

to Mersenne, 26.iv.1643	158
to Huygens, 24.v.1643	159
to Voetius, v.1643	159
to Vorstius, 19.vi.1643	162
to Buitendijk, 1643?	164
to Father ****, 1643	165
to Mesland, 2.v.1644	166
to Grandamy, 2.v.1644	169
to ***, 1644	170
to Charlet, viii.1644	170
to Bourdin, x.1644	171

Letters written in 1645–1650	172
to Charlet, 9.ii.1645	172
to Mesland, 9.ii.1645	172
to Mesland, v.1645	177
to * * * * , vi.1645	177
to Regius, vii.1645	178
to Cavendish, x.1645	179
to Mesland, 1645 or 1646	181
to * * * , iii.1646	182
to Mersenne, 20.iv.1646	182
to Chanut, 15.vi.1646	183
To Clerselier, vi or vii 1646	184
to Mersenne, 5.x.1646	185
to Chanut, 1.xi.1646	186
to Mersenne, 23.xi.1646	188
to Cavendish, 23.xi.1646	189
to Chanut, 1.ii.1647	191
to the Curators of Leiden University, 4.v.1647	197
to Chanut, 6.vi.1647	198
to Queen Christina, 20.xi.1647	202
to Chanut, 20.xi.1647	203
to Mersenne, 13.xii.1647	204
to Cavendish iii or iv 1648:	205
for Arnauld, 4.vi.1648	207
for Arnauld, 29.vii.1648	208
to Pollot, 1648:	211
to More, 5.ii.1649	212
to Chanut, 26.ii.1649	216
to Chanut, 31.iii.1649	218
to More, 15.iv.1649:	219
to Clerselier, 23.iv.1649	222
to Freinhemius, vi.1649	223
to Carcavi, 11.vi.1649	224
to Carcavi, 17.viii.1649	224

to More, viii.1649	225
to Brégy, 15.i.1650	226

Glossary

accident: Often used to mean ‘non-essential property’: your being more than 5’ tall is an accident of you, whereas some philosophers would say that your having the power of thought is not. But quite often ‘accident’ is used just to mean ‘property or quality’, with no special emphasis on non-essentialness.

a priori, a posteriori: In Descartes’s day these phrases were used to mark the difference between •seeing something happen and working out what will follow from it and •seeing something happen and working out what must have caused it, i.e. between •causally arguing forward and •causally arguing backwards; quite unlike Kant’s use of the terms to mean •‘independently of experience’ and •‘on the basis of experience’.

animal spirits: This stuff was supposed to be even more finely divided than air, able to move extremely fast and seep into tiny crevices. Descartes describes their formation on page 163.—Apparently some people thought of spirits as so rarefied as to be almost mind-like(!), and thus suitable to mediate between mind and body; but Descartes is innocent of this absurdity. Its most famous occurrence is in Donne’s superb lines: ‘As our blood labours to beget / Spirits as like souls as it can, / Because such fingers need to knit / The subtle knot that makes us man. . .’.

art: Any human activity that involves techniques or rules of procedure.

AT: This refers either to *Œuvres de Descartes*, edited by Charles Adam and Paul Tannery, or to Adam and Tannery themselves.

beg the question: Until fairly recently, to ‘beg the question’ was to offer a ‘proof’ of P from premises that include P. It now means ‘raise the question’. It seems that complacently illiterate journalists (of whom there are many) encountered the phrase, liked it, guessed at its meaning, and saw no reason to check on the guess.

burning mirror: A concave mirror which can reflect the sun’s ray to a point, creating enough heat there to start a fire.

catoptrics: The part of optics that deals with reflections.

chimera: A chimera can be a fabulous beast or monster, or a thought or idea of image of something fantastic, fabulous, etc. In Descartes’s usage it is always the second meaning that is at work.

circular: Descartes holds that all motion is in a closed loop (despite his always calling it ‘circular’, he has no views about its shape). His reason for the loop thesis is this: Absolutely all space is full of extended substance(s), there are no gaps; and no material substance can shrink, or expand, or spatially overlap another material substance. Therefore, if body b_1 is to move from location L_1 , it must shove aside body b_2 , which must shove aside b_3 . . . and so on; so if an infinite chain of movements is to be avoided, somewhere along the way there must be body b_n which is pushed into location L_1 , thus closing the loop. (It has to be instantaneous: L_1 mustn’t be empty for a split second between the departure of b_1 and the arrival of b_n .)

common notion: In Descartes’s usage, a ‘common notion’ is a really basic elementary logical truth.

common sense: The phrase ‘*the common sense*’ was the name of a supposed faculty or organ or brain-region where inputs from the various senses are processed together and united.

concurrence: God’s concurrence in an event is his going along with it, in some (supposed) sense that is weaker than •his outright causing it but stronger than •his merely not preventing it.

CSMK: This is volume 3 of *The Philosophical Works of Descartes*, translated by John Cottingham, Robert Stoothoff, Dugald Murdoch, and Anthony Kenny.

doctor: Learned man.

efficient cause: This is an Aristotelian technical term. The •formal cause of a coin is its design, the plan according to which it was made; its •material cause is the stuff it is made of; its •final cause is its purpose, namely to be used in commerce; and its •**efficient cause** is the action of the die in stamping the coin out of a metal sheet. So the efficient cause is what you and I would call, simply, ‘the cause’.

eminently, formally: These are scholastic technical terms that Descartes adopts for his own purposes. To say that something has (say) intelligence ‘formally’ is just to say that it is intelligent; to say that it has intelligence ‘eminently’ is to say that it has intelligence in some higher form that doesn’t involve its being straightforwardly intelligent. The distinction comes into play through the doctrine that whatever is present in an effect is also present in its cause. Obviously something can be caused to be rigid by a cause that isn’t itself rigid; and God presumably doesn’t straightforwardly have many of the qualities he causes other things to have—he isn’t square or muddy or (for that matter) given to telling bad jokes. So the doctrine takes the form ‘Whatever is present in an effect is

also present *formally or eminently* in its cause. Descartes’s only explanation of this terminology is to say that ‘x has Fness eminently’ means ‘x has the power to cause things to have Fness’, which you’ll notice turns the doctrine into a triviality.

de volenté: Descartes repeatedly associates rationally loving x with joining oneself *de volenté* with x. This doesn’t mean joining oneself voluntarily, by volition [*volenté*]; it is a technical term, which he explains on page 191 where he equates ‘x joins itself to y *de volenté*’ with ‘x considers itself and y as forming two parts of a single whole’. A bit less abruptly, you join yourself *de volenté* with the person you love if you *will yourself into a state in which you feel as though* you and that person are the two parts of a single whole.

ens per accidens, per se: A pyramid is a collection of stone blocks that constitute an *ens per accidens* = an entity by happenstance. It just happens to be the case that they are inter-related in a way that makes them a pyramid, a thing, an *ens*. They don’t have any features that intrinsically draw them together, somehow making them *belong* together as a single entity; that would be an *ens per se*.

heaven: Sometimes Descartes uses ‘the heavens’, as we still sometimes do, to mean ‘the whole visible universe outside the earth’. But in the *Principles of Philosophy* and some of his letters ‘heaven’ occurs as a technical term referring to any large spherical mass of rotating fluid material with a star or planet at its centre. The earth, he says, ‘is completely immersed in a very fluid heaven’.

indifferent: A situation where your will is ‘indifferent’ with respect to your doing A is a situation where you are under no external pressure to do A and none to refrain from doing A. For finer tuning, see page 175.

ineffable: Too great to be fully described in words. (The antonym ‘effable’ occurs these days only in jokes.)

inform: When Descartes says that your body is ‘informed’ by your soul, he means only that your body *has* that soul, is united with it in the standard body-soul manner. It’s odd that he uses this verb in this way: it echoes the Aristotelian doctrine that your soul is *the form of your body*; and that doctrine, whatever it means, is denied by Descartes’s thesis that your body is one substance and your soul is another.

interpenetration of dimensions: Descartes holds that it impossible for two distinct •portions of matter to overlap spatially: for any two such items, the volume of them both is the sum of the volumes of each separately. For him this is equivalent to saying that two distinct •regions of space can’t overlap; and he expresses by saying that he rejects the ‘interpenetration of dimensions’.

metempsychosis: The movement of a soul from one body to another.

mœurs: A person’s *mœurs* includes his morality, his basic habits, his attitudes and expectations about how people will behave, his ideas about what is decent. . . and so on. This word—rhyming approximately with ‘worse’—is left untranslated because there’s no good English equivalent to it.

moral certainty: A degree of certainty that is high enough for practical purposes, high enough to make practical doubt unreasonable; similarly with **morally impossible**. (In this phrase ‘moral’ is used in its old sense of ‘having to do with human behaviour’.)

natural light: If you know something to be true just by thinking hard about it in the right way, Descartes will say that you know it ‘by the natural light’.

numerical identity: To say that *x* is numerically identical with *y* means simply that *x* is *y*, which is equivalent to saying that *x* and *y* are *one*—that’s how ‘numerical(ly)’ comes into it. Why have any adjective or adverb in these contexts? Because the writer thinks that the reader might take the unvarnished ‘identity’ to refer to some kind of mere similarity.

objective: When Descartes speaks of the ‘objective being’ of an idea he is referring to its representative content, the being that is its object, the item that it is about.

parhelia: Two bright patches flanking the sun, sometimes called ‘false suns’.

passion: When Descartes speaks of ‘passions’ that people and other animals have, he using the word in about the same sense as we do. Outside the animal context the word is the antonym of ‘action’: action/passion = doing/undergoing.

Pelagian: Follower of Pelagius, a 4th-century theologian whose stress on the role of human effort as a means to salvation was thought by many to push divine grace out of the picture.

pineal gland: This is the current name for the gland that Descartes always refers to as ‘the gland called “the conarium”’.

prejudice: This translates the French *préjugé* and the Latin *præjudicium*. These basically mean ‘something judged or believed in advance’ (of the present investigation, of the evidence, or of etc.). These days ‘prejudice’ usually has the narrower meaning of ‘something pre-judged concerning race, sex, etc.’. To avoid that taint, CSMK uses ‘preconceived opinion’ (7 syllables); the present text will use ‘prejudice’ (3 syllables) accompanied by this warning.

princess: When Descartes speaks of *Queen* Christina as a princess he is following a usage that used to be fairly common for 'prince' (and its cognates in French and Latin), namely as standing for any ruler of a state, whether a king or queen or duke or count etc.

principle: In Descartes's writings a *principe* (French) or *principium* (Latin) is often a certain kind of universal proposition—e.g. in the title standardly translated as *Principles of Philosophy*. But he sometimes uses one of these words in a sense, once common but now obsolete, in which it means 'source', 'cause', 'driver', 'energiser', or the like (see pages 23 and 215). The English 'principle' also had that sense; Hume's *Enquiry Concerning the Principles of Morals* is, he tells us, an enquiry into the *sources in human nature* of our moral thinking and feeling.

privation: A privation in x is x's not having something that it ought to have. If a person can't speak, that is a privation in him; a rock's lack of the ability to speak is not a privation in it but a mere **negation**.

rarefied: In early modern times, 'rare' and the French *rare* meant the opposite of 'dense', and was usually understood to mean 'very finely divided'.

real quality, real accident: These phrases use 'real' in its old sense of 'thing-like' (from Latin *res* = 'thing'). The core thought is this: if heat, for example, is a 'real quality' or 'real accident', then any instance of heat can be thought of independently of anything's *having* it. When a thing x comes to be hot, what happens is that it comes to *have* a real quality, a particular instance of heat. Descartes rejects this, and holds that predicative propositions should be thought of as having the form 'x is-hot' rather than 'x relates-by-possession-to hotness'. When on page 158

Descartes says that he doesn't credit *motion* with any more reality than is generally attributed to *shape*, he means that philosophers generally wouldn't speak of a ball's being round as a result of a thing-like instance of roundness that the ball possesses; and he says that the same goes for the ball's being in motion.

reflection, refraction: How light bounces off a mirror, how light *tilts* as it enters a translucent medium. The problem with refraction was to get a sound general account of how the angle at which the light meets the surface of the translucent body [incidence] relates to the angle at which it carries on from there [refraction]. This could involve light going from air into glass or from glass into air; this problem was central to the making of optical lenses,

reminiscence: Plato's doctrine that things you know without having learned them from experience or from other people are things you *remember* from a previous life when the soul you now have was joined to a different body.

School: The 'Schools' were philosophy departments that were almost entirely under Aristotle's influence, as mediated by Roman Catholic philosophers and theologians.

science: In early modern times the English word 'science', the French *science* and the Latin *scientia* applied to any body of knowledge or theory that is (perhaps) axiomatised and (certainly) well founded and conceptually highly organised.

sensible: Translating French *sensible* and Latin *sensibilis*, this usually means 'capable of being sensed', i.e. '... of being perceived through the senses'. But on page 217 and perhaps elsewhere, Descartes uses 'sensible quality' to refer to what are commonly called the 'secondary qualities' such as colour, smell, sound, etc. and *not* including shape and size, though these are perceptible by the senses.

soul: This translates *âme*. It doesn't obviously mean anything different from *esprit* = 'mind', and has no theological implications.

species: When on page 103 Descartes speaks of 'the species that enter the eyes' etc. he is using the language of a theory of Aristotle's that he doesn't actually believe. According to this theory, when you see a kitten a tiny *representation of a kitten* enters your eyes, and this **representative something-or-other** is called a 'sensible species'. All Descartes needs from this on page 103—and presumably all he intends—is to speak of eyesight as involving a **something-or-other** entering your eyes.

speculative: This means 'having to do with non-moral propositions'. Ethics is a 'practical' discipline, chemistry is a 'speculative' one.

substantial form: When Descartes first **uses** this term here, on page 25, it is not clear what he means by it. In many other places—e.g. on pages 75 and 136—he merely **mentions** it as an item in false Aristotelian metaphysics. In his letter to Regius on January 1642—starting on page 148—he says that he isn't denying that there are substantial forms but merely saying that he can do (meta)physics without them.

subtle: When Descartes speaks of some matter as 'subtle', he means that it is *extremely* finely divided, more fluid than water; and he usually thinks of the ultra-tiny particles composing it as moving very fast.

transubstantiation: The doctrine that in the Eucharist the bread comes to be part of the *substance* of Christ's body although it still has the *qualities* of mere bread.

violent: Aristotle divided motions into 'natural' and 'violent': the movement to the ground of a dropped pebble is natural, its upward movement when you throw it up is 'violent'.

Thus when on page 57 Descartes rejects the natural/violent distinction, he is rejecting Mersenne's apparent assumption that some states of water are natural and others are not (though he would hardly say that the others are 'violent').

vidid: This belongs to the pair
'vivid' and 'clear',

which translates the Latin
clarus and *distinctus*
and the French
clair and *distinct*.

Every other English translator has put
'clear' and 'distinct'

but this is certainly wrong. The crucial point concerns *clarus* (and the French *clair*). The word can mean 'clear' in our sense, and when Descartes uses it **outside** the *clarus et distinctus* phrase, it seems usually to be in that sense. But **in** that phrase he uses *clarus* in its other meaning—its more common meaning in Latin—of 'bright' or 'vivid', as in *clara lux* = 'broad daylight'. If in the phrase *clarus et distinctus* Descartes meant *clarus* in its meaning of 'clear', then what's left for 'distinctus' to mean? Descartes's only explanation of these terms is in *Principles of Philosophy* 1:45–6, a passage that completely condemns the usual translation. He writes: 'I call a perception *claram* when it is present and accessible to the attentive mind—just as we say that we see something *clare* when it is present to the eye's gaze and stimulates it with enough strength and accessibility. I call a perception *distinctam* if, as well as being *clara*, it is so sharply separated from all other perceptions that every part of it is *clarum*. . . . A perception can be *clara* without being *distincta* but not vice versa. When someone feels an intense pain, his perception of it is *clarissima*, but it isn't always *distincta* because people often get this perception muddled with an obscure judgment

they make about something they think exists in the painful spot. . . .’ and so on. He can’t be saying anything as stupid as that intense pain is always *extremely clear*! His point is that pain is vivid, up-front, not shady or obscure. And for an idea to be *distincta* is for every nook and cranny of it to be vivid, i.e. for it as a whole to be in our sense ‘clear’.—Sometimes when *clair* and *distinct* occur together, the traditional translation is forced on us because *distinct* is used as a relational term rather than a one-place predicate;

there’s an example of this on page 137, where notions are spoken of as *claires* and *distinctes les unes des autres*—clear and distinct *from one another*.

we: Sometimes when this version has Descartes speaking of what ‘we’ may do, he has written of what ‘one’ may do. It is normal idiomatic French to use *on* = ‘one’ much oftener than we can use ‘one’ in English without sounding stilted. He often slides from *on* to *nous*, clearly not intending any distinction; for example, paragraph (i) on page 66.

Letters written in 1645–1650

to Charlet, 9.ii.1645:

I'm greatly obliged to Father Bourdin for enabling me to have the good fortune to receive your letters. I'm overjoyed to learn from them that you share my interests and don't find my endeavours displeasing. I was also delighted to see that Bourdin was disposed to view me with favour, which I'll try to deserve in all sorts of ways. Being deeply obliged to the members of your Society—and especially to you for having acted like a father to me throughout my youth—I would be extremely sorry to be on bad terms with any members of the Society that you are the head of in France. I am intensely anxious to have their friendship, from my own inclination and also from my regard for my duty. And there's another reason. In publishing a new philosophy I have followed a path that makes it possible for me to derive so much benefit from their goodwill and so much disadvantage from their lack of interest that anyone who knows that I'm not out of my mind will be sure that I'll do all I can to make myself worthy of their favour. This philosophy is so firmly based on demonstrations that I'm sure •the time will come when it is generally accepted and approved; but since your Jesuit colleagues constitute the largest part of those who are competent to judge it, if *they* weren't interested enough to read it I couldn't expect to live long enough to see •the time of its success. If on the other hand their goodwill leads them to examine it, I venture to predict that they'll find so many things in it that they will think true—things that can explain the truths of the Faith better than the usual accounts do, doing this without contradicting anything that Aristotle wrote—that in a few years this philosophy will gain

as much credence as it otherwise would in a century. I care about this, I admit. I am a man like any other, and not one of those self-possessed people who don't allow themselves to be affected by success. So this also a matter in which you can do me a great favour; but I venture to think the public has an interest in it as does, especially, •your Society, which shouldn't tolerate a situation where important truths get a better reception from others than from •it. Please excuse the freedom with which I express my feelings. I'm aware of the respect that I owe you, but I also regard you as if you were my father, and I don't think you'll be offended by my discussing things with you in the way I would with him if he were still alive.

⊕ [9.ii.45: Descartes writes to Dinet, fervently thanking him for the role he thinks Dinet had in getting the Jesuits to take a favourable view of Descartes's work.]

⊕ [9.ii.45: Descartes writes to Bourdin, thanking him for passing on letters from Charlet ('He was Rector of the College of la Flèche when I was a student there'), and expressing pleasure at the thought of the ongoing friendship between himself and Bourdin.]

to Mesland, 9.ii.1645:

Having finally received your letter of 22.x.44 I write to tell you how grateful I am to you

•not for taking the trouble to read and examine my *Meditations*,

because since we had never met I would like to think that it was the content that attracted you; and

•not because you have made such a good abstract of it,

because I'm not so vain as to think that you did that for my sake, and I think well enough of my arguments to believe that you thought it worthwhile to make them intelligible to many (the new form you have given them will help greatly with that); but

- because in explaining the *Meditations* you have been careful to make them appear in their full strength, and to interpret to my advantage many things that others might have distorted or concealed.

This is what mainly makes me recognise your candour and your desire to do me honour. In the manuscript that you were good enough to send me I haven't found *anything* that I don't entirely agree with; and although it contains many thoughts that are not in my *Meditations*—or at least aren't proved there in the same way—there's not one that I wouldn't be willing to accept as my own. When I said in the *Discourse on the Method* that I didn't recognise the thoughts that people were attributing to me, I wasn't thinking of people who have examined my writings as carefully as you have, but only of those who had tried to gather my opinions from what I said in informal conversation.

In discussing the Blessed Sacrament I speak of the surface that is intermediate between two bodies, i.e. between the bread (or the body of Jesus Christ after the consecration) and the air surrounding it. By 'surface' I don't mean any substance or real nature that could be destroyed by God's omnipotence, but only a mode or way of being that can't be changed without a change in the thing in which (or through which) it exists; just as it involves a contradiction for the square shape of a piece of wax to be taken away from it without any of the parts of the wax changing their place. Now, this **surface between the air and the bread** doesn't differ in reality from the **surface of the bread**, or from the **surface of the air surrounding the bread**; what we have here

are three ways of thinking about a single thing. When we call it **(i)** 'the surface of the bread' we mean that even if the air surrounding the bread is changed, the surface remains always numerically [see Glossary] the same (provided the bread doesn't change; if it does, the surface changes with it). And when we call it **(ii)** 'the surface of the air surrounding the bread' we mean that it changes with the air and not with the bread. And finally, when we call it **(iii)** 'the surface between the air and the bread' we mean that it doesn't change with either, but only with the shape of the dimensions that separate one from the other. . . . If the body of Jesus Christ is put in the place of the bread, and other air comes in place of that which surrounded the bread, **(iii)** the surface between that air and the body of Jesus Christ is still numerically the same as the surface that was previously between the other air and the bread, because its numerical identity does not depend on the identity of the bodies between which it exists, but only on the identity or similarity of the dimensions. Similarly, we can say that the Loire is the same river as it was ten years ago, although it is no longer the same water, and although

the rest of the sentence: *peut être aussi il n'y ait plus aucune partie de la même terre qui environnait cette eau.*

literally meaning: there may no longer be any part of the same earth that surrounded that water.

perhaps Descartes's point is: since that earlier time there may have been a complete turn-over in the material composing the banks of that river.

As for the question '*How* can the body of Jesus Christ be in the Blessed Sacrament?'—it's not for me to answer this because Council of Trent teaches that he is there 'with a form of existence that we can scarcely express in words'. I quoted these words on purpose at the end of my reply to

the Fourth Objections, so as to be excused from saying any more about this topic, and ·I wanted this excuse· because I'd have been afraid that anything I could write about the Blessed Sacrament would get a less warm welcome than things written by professional theologians. Still, since the Council doesn't say 'that we cannot express in words' but only 'that we can scarcely express in words', I'll take a risk: I'll give you here *in confidence* an account of the Sacrament that seems to me quite elegant and very useful for avoiding the slander of heretics who object that our belief on this topic is entirely incomprehensible and self-contradictory. I do so on condition that •you don't communicate it to anyone unless you judge it to be altogether in accord with what the Church has laid down, and that •if you do communicate it to anyone you won't say that I am its author. ·Here it is·.

What exactly *is* the body of a man? When we try to answer this, the word 'body' turns out to be very ambiguous. When we speak of **a body in general**, we mean a determinate portion of the matter the universe is composed of. In this sense, if the smallest amount of that portion were removed, we would automatically judge that the body had been lessened and was no longer complete; and if there were a turnover of material in the body—with one particle of it being replaced by another from outside the body—we would at once think that what was left was not numerically the same body that we started with. But when we speak of **the body of a man**, we don't mean a determinate portion of matter, or one that has a determinate size; we mean simply the whole of the matter that is united with the soul of that man. So even when that matter changes—more matter joins it from outside, or some of its matter is lost—we still believe that it is numerically the same body so long as it remains joined to and substantially •united with the same soul; and we think that this body is whole and entire so long as it has in itself all the dispositions

needed to preserve that •union. No-one denies that we have the same bodies that we had in our infancy, although

•they have become much bigger

and although—according to the common opinion of physicians, who are surely right about this—

•one's adult body doesn't contain *any* of the matter that belonged to it at birth,

and even though

•one's body has changed shape since birth,

it is numerically the same body only because it is informed [see Glossary] by the same soul. Personally, I go further. I have examined the circulation of the blood, and I believe that nutrition takes place by a continual expulsion of parts of our body that are driven from their place by the arrival of others. Consequently I don't think that any particle of our bodies remains numerically the same for a single moment, although our body remains always numerically the same human body so long as it is united with the same soul. [The first half of that sentence doesn't follow from what went before; this striking non-sequitur is in the original, and not an artifact of this version.] In that sense it can even be called indivisible; because if an arm or a leg of a man is amputated, we think that it is only in the first sense of 'body' that his body is divided—we don't think that a man comes to be less a man by losing an arm or a leg. . . .

Moreover, I hold that when we eat bread and drink wine, the tiny particles of bread and wine dissolve in our stomach, and pass at once into our veins; so that they *naturally* 'transubstantiate' themselves and become parts of our bodies simply by mixing with the blood. But if we were sharp-sighted enough to distinguish them from the other particles of the blood, we would see that they are still numerically the same particles that previously made up the bread and the wine; so that setting aside their union with the soul we could still call them bread and wine as before.

This transubstantiation takes place without any miracle, but it can help us to think about what is miraculous in the transubstantiation that occurs in the Blessed Sacrament. I can't see any problem in the following view:

If the particles of bread and wine had been informed *naturally* by the soul of Jesus Christ, they would have had to mingle with his blood and dispose themselves in certain specific ways; but what actually happens is that they are *miraculously* informed by his soul simply by the power of the words of consecration.

... In this way it is easy to understand how the body of Jesus Christ is present only once in the whole portion of bread when it is undivided, and yet is whole and entire in each of its parts, when it is divided; because all the matter, however large or small, which as a whole is informed by the same human soul, is taken for a whole and entire human body.

No doubt this explanation will shock those who have always thought that the body of Jesus Christ can't be in the Eucharist unless all its parts are there with their same quantity and shape, and with numerically the same matter as they were composed of when he ascended into heaven. But they will easily free themselves from these difficulties if they bear in mind •that none of that has been decided by the Church, and •that the integrity of a human body doesn't require it to possess all its external parts with their quantity and matter. *That* kind of 'sameness' isn't useful or appropriate in this Sacrament, in which the soul of Jesus Christ informs the matter of the bread in order to be received by men and to be united more closely with them. This doesn't detract in the least from the veneration due to the Sacrament. Moreover, it should be noted that it is impossible—seems plainly to involve a contradiction—that these bodily parts should be present in the Sacrament. Why? Because what we

call a man's 'arm' or 'hand' is what has the external shape, size and use of one; so that whatever one might imagine in the bread as the hand or the arm of Jesus Christ, it flouts all the dictionaries and entirely changes the use of the words to call it an 'arm' or a 'hand', since it has neither extension, nor external shape, nor use.

I would be most grateful to hear your opinion of this explanation, and I would be glad also to know what Father Vatier thinks of it, but I don't have time to write to him.

[The rest of this letter exists in the archives as a second letter, in Latin, on the same date. Here it is:]

On free will, I entirely agree with what Gibieuf wrote about this. Here's an even more compact statement of my view about it. It seems to me that the word 'indifference' [see Glossary], when used properly, stands for **(i)** the state the will is in when it isn't carried in any one direction by the person's knowledge of what is true or what is good; and I was using it in that sense when I wrote that the lowest degree of liberty—the poorest kind of freedom—consists in the power to steer ourselves towards upshots between which we are entirely indifferent. But there may be people who understand 'indifferent' in another sense, namely as **(ii)** a positive faculty ·or ability· to choose to do x or not to do x, to affirm P or deny it. I haven't denied that the will has this faculty. Indeed I'm so far from denying it that I reckon that it is present not only whenever

it picks on an action in the absence of any *reason* to choose one action rather than another,

but even when

it is so greatly mixed in with all the other actions that it can't be put to use in any way.

When a strong evident reason carries us towards something, so that *morally speaking* it's hard for us to turn away from it, speaking *absolutely* we can do this. We are always free to

prevent ourselves from pursuing something that we clearly know to be good, or to refuse to accept an evident truth—just as long as we think that it's a good thing to show in this way the freedom of our will.

And another thing: bear in mind that freedom can be thought of as coming into play **(a)** before the relevant act of the will or **(b)** at the very moment when that act is performed.

Now, it's certain that freedom considered as **(a)** preceding the action brings with it *indifference* only in **(ii)** the second of the senses that I have distinguished, but not in **(i)** the first. In **opposing our own judgment to the commandments of others**, we usually say that we're more free to

do things that aren't commanded or forbidden, i.e. ones where we are allowed to follow our own judgment

than we are to

do things that we are forbidden to do.

But now **opposing some to others among our own judgments**, it is *not* all right for us to say that we're more free to

do things that don't seem to us to be good or bad, or in which we see as much bad as good

than we are to

do things that we can see contain much more good than bad.

For you to be *more free* than I am is either (α) your •being able more easily to determine yourself [= make up your mind] than I am to determine myself, or (β) your •having a greater use of the positive power we both have to following the worse while seeing the better. If we follow the course that appears to have the most reasons in its favour, we (α) determine ourselves more easily; but if we follow the opposite, we (β) make more use of that positive power; and thus we can always act more freely in cases where we see more good than evil than in cases that are called *adiaphora* [Greek] or 'indifferent'. In this sense too when others command us

to do x which we wouldn't otherwise have done, we do x less freely than we do y which no-one has ordered us to do; because the judgement that x is difficult to do is opposed to the judgement that it is good to do (y) what is commanded; and the more equally these two judgements move us the more sense-**(i)** indifference they confer on us.

But freedom considered in the acts of the will at the moment when they occur doesn't entail any indifference in either of the two senses; for what is done cannot remain undone as long as it is being done. Freedom consists simply in ease of operation; and at that point freedom, spontaneity and voluntariness are the same thing. That was the sense I had in mind when I wrote that I moved towards something all the more freely when there were more reasons driving me towards it; for it is certain that in that case my will moves itself more easily and with greater force.

⊕ [9.ii and 17.ii.45: Descartes writes to Picot, expressing pleasure in the quality of the French translation of the *Principles of Philosophy*, reporting on the good reception the work has been getting, and explaining a few details in it.]

⊕ [17.ii.45: Descartes writes to the Rector of the University of Groningen, mainly expressing indignation over having been called an atheist by some of his opponents.]

⊕ [17.ii.45: Descartes writes to Clerselier explaining the rules that constitute his physics of collisions in *Principles of Philosophy* II.49. These explanations are defeatingly hard to understand, and Descartes admits that the rules are not trouble-free. (They were considerably improved in the French version of the work that appeared a couple of years later.)]

⊕ [iv.45: Descartes writes to Cavendish, responding to four biological questions that he is flattered to have received from this nobleman: •the cause of sleep, •the cause of heat in animal bodies, •two questions about the role of animal spirits.]

⊕ [18.v.45: Descartes writes to Pollot, who has written saying that Princess Elisabeth is ill. Descartes won't visit to her: Pollot says she is recovering, and also the trip would be a serious burden ('since my visit to France I have become 20 years older'). And a couple of other topics.]

to Mesland, v.1645:

I am obliged that you have favoured me with your opinion of my *Principles*; but I wish you had been more specific about your difficulties. I can't think of any problem regarding rarefaction. Nothing is easier to conceive, I think, than the way a sponge swells up in water and shrinks as it dries out.

As for the question of *how* Jesus Christ exists in the Holy Sacrament: accepting the explanation I sent you isn't a price that has to be paid for this doctrine to agree with my principles. I put it forward not •for that purpose but •as a useful way dodging the objections of the heretics who say that the Church's articles of faith contain impossibilities and contradictions. Do what you please with my letter; it's not worth keeping, so please simply destroy it rather than returning it to me.

I wish you had time to examine my *Principles* in more detail. I venture to think you would find that it hangs together, logically speaking, so that one must either reject the whole content of Parts 3 and 4—taking it as a mere hypothesis or even as a fable—or else accept the whole of it. And even taking it as merely a hypothesis, which is how I presented it, it still shouldn't be rejected until one has found some other, better explanation of all the phenomena of nature.

So far, however, I have no reason to complain about my readers. Since this last treatise was published I haven't heard of anyone trying to find fault with it, and it seems that I have at least succeeded in making many people suspect

that what I wrote might after all be true. But I don't know what is said behind my back; and I'm living in a corner of the world where I would live peacefully and happily even if the verdict of the entire learned world were against me. I have no feelings about those who hate me, only for those who wish me well, whom I want to serve whenever I can.

to * * * , vi.1645:

It is a mark of your friendship, for which I am greatly obliged, that you have taken the trouble to inquire into what people in your circle think about my writings. Authors of books are always glad to know what readers say about them, this is not something I care about much. Indeed, I am so familiar with the intellectual scope of most of those who pass for learned that I would think badly of my thoughts if I saw them being approved by such men.

I'm not saying that the person whose opinion you send me is one of those; but I don't think he has read much of my work—witness his saying that my account of rainbows is common, and that my principles of physics are drawn from Democritus. His objections against my views on rarefaction confirm this view; if he had attended to what I have written about the rarefaction that occurs in the hollow balls called aeolipyles, or in machines where the air is forcibly compressed, or in gun powder, he wouldn't tell me about the rarefaction that occurs in his artificial fountain! And if he had taken in how I explained our idea of body in general (i.e. of matter) as being the same as our idea of space, he wouldn't have tried to make us conceive the interpenetration [see Glossary] of dimensions through the example of motion. For we have a very clear idea of the various speeds of motion; but it is self-contradictory and inconceivable that two spaces should interpenetrate one another.

I'm not replying to the critic who says that demonstrations are missing in my *Geometry*. I have indeed omitted many; but you know them all, and you also know that those who hold this against me because they can't produce the demonstrations for themselves are showing by this that they are not very talented geometers.

What I find most strange is this person's conclusion that what will prevent my principles from being accepted in the Schools is that •they aren't sufficiently confirmed by experience, and that •I haven't refuted the arguments of others. I have reported in detail almost as many observations as there are lines in my writings, and after giving general explanations in my *Principles* of all the phenomena of nature I explained in the same manner all the observations that can be made regarding inanimate bodies; whereas the principles of the ordinary ·scholastic· philosophy have never provided any good explanations of any of this. So I am amazed that the followers of that philosophy still complain about a lack of observational evidence in *my* work!

I find it very strange too that they want me to confront the arguments of the scholastics; if I did that, I would be doing them a bad turn! A long time ago the malicious actions of some of them gave me cause to do this, and perhaps they'll force me to do it again. But those who have most at stake here are the Jesuit fathers; and because of my respect for Father Charlet (who is a [very distant] relative of mine, and now leader of the Jesuits), Father Dinet, and several other senior members of that Society whom I believe to be genuinely my friends, I have till now held back. That's why I composed my *Principles* in such a way that it can be said to be not at all in conflict with the ordinary philosophy, but actually to have enriched it with many things that were missing from it. Since these philosophers accept countless other opinions that are contrary to one another, why couldn't they also accept mine?

Still, I'm not willing to *ask* for their acceptance: if my views are false I'll be sorry to have led these folk astray; and if they are true then they can gain more from examining them than I can from recommending them.

⊕ [7.vii.45: Huygens writes to Descartes in a tone of rapturous admiration, expressing pleasure at the news that the authorities in Groningen University have come down on Descartes's side in the dispute with Voetius and the University of Utrecht; and asking Descartes to send him a short clear account of the fundamentals of chemistry, comparable with the account of mechanics that he sent on 5.x.1637 (see page 50).]

to Regius, vii.1645:

When I sent you my last letter, I had read only a few pages of your book. They led me to think that your style of writing is appropriate only for presenting theses, where it is customary to present one's opinions in the most paradoxical fashion, so as to get more people to join in the battle. As for myself, I work very hard to make my opinions *not* seem paradoxical, and I would never want them to be the subject of intellectual battles; I regard them as so certain and evident that they won't be opposed by anyone who rightly understands them. I accept that they can be correctly presented through definitions and divisions, proceeding from the general to the particular, but I don't agree that in that case proofs ought to be omitted. I know of course that people (like you) who are more mature and well versed in my doctrines don't need such proofs; but please consider how few of you there are! Of the many thousands who practise philosophy it's hard to find *one* who understands my doctrines. Those who understand the premises will know what follows from them, so they don't need ·written proofs and thus· don't need your book. [That translation assumes that *probationes* = 'proofs' was a slip for something meaning 'premises'.]

But when •others read the conclusions without the proofs, along with wholly paradoxical definitions that talk about ‘ethereal globules’ and other such things without explaining them anywhere, •they will make fun of them and hold them in contempt. Thus what you have written will very often be harmful, and never beneficial.

That is the judgement I formed when I read the first pages of your book. But when I came to the chapter on Man, and saw there your views about the human mind and God, not only did I find my first judgement confirmed, but I was completely astounded and saddened •because you seem to believe such things and •because you can’t refrain from writing and teaching them even though they expose you to danger and censure without bringing you any praise. Please forgive me if I open my heart to you as freely as if you were my brother. If these writings fall into the hands of malicious people (as they easily may, via some of your pupils), they’ll use them to argue—convincingly, in my opinion—that you hold views similar to those of Voetius, etc. To stop all this from flooding over into my territory I’m going to have to keep telling people that in metaphysics there’s as much difference between you and me as there could possibly be; and I’ll even put this declaration into print if your book gets published. Thank you for showing me the work before going public with it; but I don’t thank you for teaching its contents privately behind my back. I wholly agree, now, with those who would like you to confine yourself to medicine. Why must you mix metaphysical and theological matters into your writings, given that you can’t touch on them without heading off into error in one direction or another? At first, in considering the mind as a distinct substance from the body, you write that a man is an *ens per accidens* [see Glossary]; but then, when you observe that the mind and the body are closely united in the same man, you take the mind to be only a mode of

the body—a much worse error. Again, please excuse me: I assure you that I wouldn’t have written to you so freely if I weren’t genuinely fond of you.

I would have returned your book with this letter, but I was afraid that if it should fall into hostile hands, the severity of my censure might harm you. So I’ll keep it until I learn that you have received this letter.

⊕ [23.vii.45: Regius writes to Descartes, saying that Descartes has misunderstood what he wrote about the human mind and body, and that Descartes’s proposed announcement about the metaphysical gap between them will harm himself rather than Regius, because Descartes gets advantage from having a highly respected academic on his side. He reports that many honest and able people are puzzled about what Descartes is up to in the *Principles of Philosophy*—‘you promised nothing but clarity and certainty...but what you offer there is obscure and uncertain’. He thanks Descartes for writing so frankly, and for taking the trouble ‘to read my book—or, more accurately speaking, your book’.]

⊕ [30.vii.45: Descartes writes to Regius, continuing his warnings and advice about publishing his book, and declaring himself insulted by the idea that he is ‘up to’ something.]

⊕ [4.viii.45: Descartes writes to Huygens, saying that he can’t produce anything new in compliance with Huygens’s request (7.vii.45, page 178) for a crash-course in chemistry, because the little chemistry that he knows is in *Principles* 4. To know more he would have to perform experiments for which he lacks the materials or equipment. He has sworn off all enquiries in which he would need the help of others; he has enough go-it-alone projects to keep him busy for the rest of his life.]

to Cavendish, x.1645:

The treatise on animals that I began work on more than fifteen years ago can’t be finished until I have conducted many experiments that are needed for its completion. I haven’t

yet had the opportunity to do these and I don't know when I shall. So I don't expect to publish it for a long time yet. Nevertheless, I will obey you in everything you command me; I am flattered by your wish to know my opinions on several philosophical problems.

I'm convinced that hunger and thirst are felt in the same way as colours, sounds, smells, and in general all the objects of the external senses, i.e. by way of nerves stretched like fine threads from the brain to all the other parts of the body. Whenever one of these parts is moved, the place in the brain where the nerves originate moves also, and its movement arouses in the soul the sensation that is attributed to that part. I have tried to explain this at length in my *Optics*. I said there that the various movements of the optic nerve make the soul aware of all the varieties of colours and light; and similarly I believe that the sensation of hunger is caused by a movement of the nerves that go to the base of the stomach and that the sensation of thirst is caused by a different movement of those same nerves and of the nerves that go to the throat. What makes these nerves move in this way? My answer is this: Just as one's mouth waters when one has a good appetite and sees food on the table, so normally a large quantity of water-like liquid comes into the stomach in the same circumstances. It is carried there by the arteries whose ends have narrow openings that are shaped so as to allow this watery liquid to pass into the stomach while keeping out the other parts of the blood. It's like a kind of acid that mingles with the small particles of the food one has eaten, dissolves them into chyle, and then returns with them through the veins into the blood. But if this liquid on entering the stomach finds no food to dissolve, it exerts its force on the wall of the stomach, stimulating the nerves there in such a way as to make the soul have the sensation of hunger. [Then some remarks about special cases—hunger

accompanied by illness, the eventual lack of hunger-pangs in people starving to death, etc.]

Here is how I think thirst is caused. The watery part of the blood that usually goes through the arteries to the stomach and the throat in liquid form and thus moistens them sometimes travels there in the form of vapour that dries them up and thus agitates their nerves in the manner needed to arouse in the soul the desire to drink. So there's no more difference between this vapour that gives rise to thirst and the liquid that causes hunger than there is between sweat and what is exhaled from the whole body without our noticing it.

The only general cause of all the movements in the world, I think, is God. At the first instant of his creation of matter, he made all its parts start to move in different ways; and now, by the same action by which he keeps matter in existence, he also preserves as much movement as he put into it back then. As for the matter the sun is composed of and the nature of fire: I have given my views about these (in *Principles* 2:54 and 4:80 respectively) in such detail that anything I could add now would be harder to understand than what I wrote then. And I said explicitly in 2:18 that I think the existence of a vacuum involves a contradiction, because we have the same idea of matter as we have of space. If we said that space is empty, i.e. that something we conceive as a real thing is not real, we would be contradicting ourselves, asserting the contrary of what we think.

The preservation of health has always been the main goal of my studies, and I'm sure there are ways of getting much new knowledge about medicine. But the treatise on animals that I am planning but haven't yet been able to complete is only an introduction to the acquisition of this knowledge, so I'm careful not to boast that I already have it. All I can say at present is that I agree with the Emperor Tiberius, who

held that everyone over 30 had enough experience of what was harmful or beneficial to be his own physician. Indeed it seems to me that anyone who has any intelligence and is willing to pay a little attention to his health can better observe what is good for it than the most learned doctors.

⊕ [The correspondence between Descartes and Princess Elisabeth is not included here (see introductory paragraph at the head of this text), but it gets this mention: between 22.vii.45 and 27.xii.45 he wrote at least seven good-sized letters to her and she wrote at least eight to him.]

to Mesland, 1645 or 1646:

I have read with much emotion the last farewell that I found in the letter that you took the trouble to write me. [A note (by Clerselier?) in the margin of a manuscript copy of this letter says: ‘This Father was banished to Canada because of his close relations with Descartes, and he died there. He had made some learned remarks and commentaries on Descartes’s *Meditations*.’] It would have affected me even more if I weren’t living in a country where every day I meet people who have returned from the Antipodes. These commonplace occurrences prevent me from losing all hope that I shall see you back in Europe some day. Your aim of converting the savages is very noble and saintly; but I imagine that this requires only zeal and patience, and not much intelligence and knowledge, so that it seems to me that your God-given talents could be applied more usefully in converting our own *European* atheists, who pride themselves on their intellect and won’t surrender to anything but the evidence of reason. . . . [Mesland never returned to Europe, and died in Canada in 1672. (CSMK note)]

You will find enclosed some brief replies to the objections that you so kindly sent me regarding my *Principles*. I would have made them longer except that I’m sure that most of the difficulties you first encountered when you began

reading the book will vanish of their own accord when you have finished it. [We have a text which seems to be a part of the ‘brief replies’ that Descartes has just mentioned. That material is not included here, because the preparer of this version agrees with the editor Ferdinand Alquié that ‘it is confused, seems to have been hastily written, and obscures rather than clarifying *Principles* 1:60–65. Perhaps what we have isn’t exactly what Descartes wrote.’]

The difficulty you find in my explanation of the Blessed Sacrament is easy to resolve, I think. It’s quite true that I have the same body now as I had ten years ago, although the matter it is composed of has changed, because the identity through time of a human body depends not on its matter but on its form, which is the soul. So our Lord’s words are still quite true: ‘This is my body, which is given for you.’ I don’t what else he could have said to signify transubstantiation in the sense in which I have explained it.

Next: *How* was the body of Jesus Christ in bread that was consecrated during the time when he was dead? I don’t know whether the Church has settled anything about this. It seems to me that we should be careful to distinguish •the views determined by the Church from •the views commonly accepted by the learned, which are based on a shaky physics. Anyway, even if the Church had determined that the soul of Jesus Christ was *not* united to his body in bread that was consecrated while he was dead, we can still say that •the matter of this bread would be as strongly *disposed* to be united to the soul of Jesus Christ as was •the matter of his body lying in the sepulchre; and that implies that this •bread-matter was truly his body, because the only reason for calling the matter in the sepulchre ‘the body of Jesus Christ’ is its strong disposition to receive his soul. And if

the matter of the bread had the dispositions of the body without the blood, and the matter of the wine had the dispositions of the blood without the flesh,

then it follows that

the body alone, without the blood, was in the bread,
and the blood alone was in the chalice.

...I don't see any shadow of a difficulty in all this. But like you I willingly accept the words of the Council of Trent that 'He is there with a form of existence that we can scarcely express in words'.

⊕ [2.iii.46: Descartes writes to Mersenne a two-part letter mainly about physics.]

⊕ [12.i.46: Descartes writes to Clerselier, who had asked for replies to objections by Gassendi that Descartes had neglected; this letter has Descartes complying with that request. Parts of it are included in the final section of the Fifth Objections and Replies as given in the website from which the present text comes.]

⊕ [2.iii.16: Descartes writes to Clerselier, about Clerselier's acting as a mail-drop for Descartes's sister Anne to get letters to him, and about what is going on in the Eucharist.]

⊕ [6.iii.46: Descartes writes to Chanut about the weather (the worst winter in the Netherlands since 1606) and the difficulty of performing enough experiments to get good scientific results. And another complaint: The world is much bigger than is needed for it to house all the honest people that there are; if they were all herded into one town, Descartes might go and live there instead of pursuing solitude as he does.]

⊕ [30.iii.46: Descartes writes to Cavendish about the physics of pendulums. Cavendish has done experiments which don't square with Descartes's published physics, and Descartes acknowledges and discusses them, saying 'I can't yet see anything wrong with them'. He submits his present thoughts on the topic to Cavendish and humbly asks for his judgment on them.]

to * * * , iii.1646:

[This is an excerpt—all we have—of a letter to an unknown correspondent.]

As for the difficulty you speak of, I don't see that it is more of a difficulty for my philosophy than for the philosophy of the Schools [see Glossary]. There are two principal questions about this mystery. **(1)** How it can come about that all the accidents of the bread remain in a place where the bread is no longer present, having been replaced by another body? **(2)** How can the body of Jesus Christ have the same size and shape as a piece of bread?

My reply to **(1)** had to differ from that given by the scholastic philosophers because I don't accept their view about the nature of accidents. As for **(2)**, I don't need to look for any new explanation; and even if I could find one I wouldn't want to divulge it, because in these matters the most common opinions are the best. Thus one may ask all theologians as well as myself: 'When one corporeal substance is changed into another and all the accidents of the former remain, what is it that has changed?' And they must reply, as I do, that there is no change that the senses could detect, and hence no change in any basis for giving different names to these substances. Why not? Because the only reason we can have for giving different names to two substances is that our senses have detected different qualities in them.

to Mersenne, 20.iv.1646:

[He opens with remarks about the physics of musical triangles, then moves on to a number of mainly personal matters. The criticisms by Roberval aren't good enough to require any revisions in Descartes's work; he has made some revisions, but those were in the interests of his readers, not of the likes

of Roberval. The rest of the letter is in Latin.]

[About four pages of physics, and then:] Finally, it is a most absurd suggestion that **(i)** all the particles of the matter of the universe have a property in virtue of which they attract one another, and that **(ii)** each particle of terrestrial matter has a similar property in respect of other terrestrial particles, with no interference between **(i)** and **(ii)**. [He is thinking of **(i)** as a force that pulls (for example) the earth and the moon towards one another, and of **(ii)** as a force that pulls the parts of the earth together so that it is a single cohering lump.] To make sense of this, one has to suppose not only that •each particle of matter has a soul, and indeed several different souls that don't get in one another's way, but also that •these souls are capable of thought—and indeed that they are *divine*, because each of them *x* is supposed to exercise its powers in distant places, which requires it to know what is going on there, and to know this without any intermediary, ·i.e. without any signal being carried across from the distant place to *x*.

[Then three more pages, with details about how the supposed two powers would threaten to interfere with one another.]

⊕ [15.v.46: Descartes writes to Cavendish about triangles again (see letter of 30.iii.46), this time less patiently.]

⊕ [v.46: Roberval writes to Cavendish for Descartes, seven pages of highly technical objections to what Descartes has written to Cavendish.]

⊕ [15.6.46: Descartes writes to Cavendish for Roberval, saying that Roberval's latest was much longer than it needed to be, and didn't merit much in the way of a reply.]

⊕ [15.vi.46: Descartes writes to Wilhelm, thanking him for taking the trouble to update him about the doings of various people. He implies that there was no need to do this, and in particular 'As for Voetius, I no longer give any thought to him'—followed by a page about him.]

to Chanut, 15.vi.1646:

I was glad to learn from your letter that Sweden is near enough for news to take only a few weeks to get here. So I'll sometimes have the happiness of conversing with you on paper, and sharing in the results of the studies that I see you are planning to make. Since you are good enough to examine my *Principles*, I'm sure you'll notice many obscurities and faults that I'll need to know about, and I know no-one who can inform me of them better than you. I'm only afraid that you'll soon grow tired of reading the book, because it is only distantly connected with moral philosophy, which you have chosen as your principal study.

I entirely agree with you that the best way to find out how we should live is to discover first what we are, what kind of world we live in. and who is the creator of this world—the master of the house we live in. I don't claim that all I have written is true, and anyway ·I haven't written about this·. I have tried to convey in my *Principles* •the general notion of heaven and earth; but that is a long way from •detailed knowledge of the nature of man, about which I haven't yet said anything. However, so as not to seem to be trying to divert you from your plan I shall tell you (this is in confidence) •that the notion of physics that I have tried to acquire has—without any special preparation—greatly helped me to establish sure foundations in moral philosophy; and •that I have found it easier to reach satisfactory conclusions on this topic than on many topics in medicine that I have spent much more time on. So instead of finding ways to preserve life, I have found another much easier and surer way to deal with death, which is *not to fear it*. But this doesn't depress me, as it commonly depresses people whose wisdom is drawn entirely from the teaching of others, and rests on foundations that depend only on human prudence and authority.

I'll also tell you that while I'm waiting for the plants in my garden to grow—plants that I need for some experiments to push my physics forward—I spend some time thinking about particular problems of morality. This past winter I sketched a little treatise on the nature of the *Passions of the Soul*, without any idea of publication; and I would now be in a mood to write more about this, if I weren't made slack by seeing how depressingly few people condescend to read what I write.

To Clerselier, vi or vii 1646:

My hope of soon being in Paris makes me careless about writing to those whom I hope to see there. So it is already some time since I received the letter you were kind enough to write; but I thought that you couldn't care much about my answer to your question 'What should be taken as the first principle?', because in that same letter you answered it better than I could.

I will only add that the word 'principle' can be taken in several senses. It is one thing to look for

- (1) a common notion [see Glossary] so clear and so general that it can serve as a principle for proving the existence of all the beings—entities—to be discovered later;

and another thing to look for

- (2) a *being* whose existence will be known to us better than that of any other, so that it can serve as a principle for discovering the others.

[A 'principle' in either of these senses is a proposition; so both senses belong on one side of the line that is drawn in the Glossary entry on **principle**.]

The proposition that *It is impossible for the same thing both to exist and not exist at the same time* can be called a

'principle' in sense (1), not as making known the existence of anything but simply, when something is known to exist, to *confirm* that it does. How? By the following reasoning:

- It is impossible that something that exists doesn't exist;
- I know that item x exists; so
- I know that it is impossible that x doesn't exist.

This is of very little importance, and makes us no better informed.

The proposition that *our soul exists* is the first principle in sense (2), because there is nothing whose existence is better known to us.

For something to count as the first principle all that is needed is that •it can be useful for the discovery of many other propositions, that •it doesn't depend on any other proposition, and that •there is no other proposition that is easier to discover than it is. It doesn't have to be a proposition that all other propositions can be reduced to proved by. It may be that there isn't any principle to which everything can be reduced. When other propositions are reduced to the principle *It is impossible for the same thing both to exist and not exist at the same time*, this ·sense-(1)· procedure is superfluous and useless. Whereas the ·sense-(2)· procedure in which the consideration of your own existence convinces you first of the existence of God and then of the existence of all creatures is very useful indeed. . . .

Zeno's Achilles paradox is not hard to solve if you bear the following in mind. If you start with a quantity Q and then create the series

$$\begin{aligned} Q_1, \text{ which is } \frac{Q}{10}, \\ Q_2, \text{ which is } \frac{Q_1}{10}, \\ Q_3, \text{ which is } \frac{Q_2}{10}, \\ Q_4, \text{ which is } \frac{Q_3}{10} \dots \end{aligned}$$

and so on ad infinitum, all these tenths add up only to a finite quantity, namely $\frac{Q}{9}$. [Suppose that Q is the length of a finite line, and that •from one end of the line we mark off a series of segments

$Q_1,$
 $Q_2,$
 $Q_3,$
 Q_4, \dots

and so on, while •from the other end we mark off a series of segments

$8 \times Q_1,$
 $8 \times Q_2,$
 $8 \times Q_3,$
 $8 \times Q_4, \dots$

and so on. If each of these operations is performed infinitely many times, Descartes says, they will meet at a point that is one ninth of the way along from one end of the line and eight ninths of the way from the other end. But after any finite number of operations from each end there will always be a distance between their end-points. He continues:]

This provides an answer to anyone who says that a tortoise that has ten leagues' start can never be overtaken by a horse that goes ten times as fast as it does, because while the horse travels these ten leagues the tortoise travels one more, and while the horse travels that league the tortoise goes ahead another tenth of a league, and so on for ever [this being a version of Zeno's 'Achilles paradox']. The answer is that it is true that the horse won't overtake the tortoise while traveling 10 leagues plus 1 league plus $\frac{1}{10}$ of a league plus $\frac{1}{100}$ of a league, and so on; but it doesn't follow that it will never overtake the tortoise, because that entire infinite series of distances adds up to $11\frac{9}{10}$ leagues, at the end of which the horse will start to be in the lead. People are puzzled by this because they think of this $11\frac{9}{10}$ league as an infinite quantity

because they divide it in their imaginations into infinitely many parts.

⊕ [vii.46: Clerselier writes to Descartes, sending something Descartes had asked for, namely Le Conte's objections to the *Principles of Philosophy*. They occupy 17 pages of small print Latin which AT describes as 'a long controversy among Le Conte, Picot and Clerselier, and not really addressed to Descartes'. But see next item.]

⊕ [29.viii.46: Descartes writes to Clerselier with a 'brief' (eight pages) reply to the Le Conte objections.]

⊕ [7.ix.46: Descartes writes to Mersenne: •pleasure at Mersenne's safe return from travels; •Regius's book is said to be near to publication, despite Descartes's urging him not to release it until Descartes has checked it out (see letter of vii.1645, page 178), 'for his sake, not mine'; •acknowledges that a new book by Fabri opposes Descartes's work and is generally preferred to the latter, and will comment on it when he has read it; •a request not to send anything more by Roberval, because that would only waste Descartes's time; •a brief version of his treatment of Zeno's paradox; •physics of sounding triangles.]

⊕ [ix.46: Roberval writes to Cavendish against Descartes, but it was Mersenne who passed it on to Descartes—see his reply on page 188. The letter is about physics; Roberval accuses Descartes of contradicting himself and misrepresenting his own views.]

to Mersenne, 5.x.1646:

A few days ago I saw a book that will make me from now on much less free in communicating my thoughts than I have been until now; it's a book by a professor at Utrecht, Regius, entitled *Foundations of Physics*. In it he repeats most of the things I put in my *Principles of Philosophy*, my *Optics*, and my *Meteorology*, and dumps in everything he has been able to get from me •directly• in private, and even things that must have come to him by indirect routes—things that I

didn't want him to be told. And he spells all this out in such a confused way, and provides so few arguments, that his book can only make these opinions look ridiculous, and expose me to two lines of attack. •Those who know that he has paraded his friendship with me and blindly followed all my opinions will think that all his faults are mine. •And if I ever decide to publish the views that I haven't yet published, it will be said that I have borrowed them from him, because they will have some resemblance to what he has written. But the worst is that while in matters of •physics he has tried (not always successfully) to follow my views, in matters of •metaphysics he has done the exact opposite—there are four or five examples of this when he is talking about my *Meditations*. I warn you of this so that if the book falls into your hands you'll know my opinion of it, and know that it was published against my wishes and without my knowledge, and that I don't regard its compiler as my friend. If you don't yet have it, save your money.

[There are three more pages, •on reports of a new kind of reading-glasses by an artisan named Bourgeois, •on the physics of sounding triangles, •on Descartes's willingness to enter into correspondence with Torricelli, and his reluctant consent to be sent some things about geometry by Carcavi though he hasn't thought about mathematics for a long time—'and I wish Roberval could convince everyone that I have forgotten mathematics entirely'.

⊕ [5.x.46: Descartes writes to Huygens, •thanking him for sending Wendenin's new book on 'red rain' and suggesting some new experiments the author might conduct to strengthen his conclusions, •deploring Regius, and commenting on a publication by Bourgeois (see preceding letter). After discussing how this relates to things in his *Optics*, Descartes says that this is the work of a charlatan: if Bourgeois had really had the success he claims, he would be *selling* the reading-glasses says he has made, not merely *praising* them.]

⊕ [12.x.46: Descartes writes to Mersenne, a letter summed up in the declaration that he no longer wants to read anything except by friends giving their news—friends whom Descartes may be able to help. He especially doesn't want anything more by Roberval.]

to Chanut, 1.xi.1646:

If I didn't place a singularly high value on your knowledge, and didn't have a great desire to increase mine, I wouldn't have taken the liberty of urging you to look at my writings. I'm not in the habit of begging people to do this, and indeed I have published things before they were ready and before they had any of the decorations that might attract the gaze of the public. For I wanted my writings to be seen not •by those who attend only to external things but •only by certain people with good intelligences—people who would take the trouble to examine them with care, so that I could learn something from them. Although you haven't yet done me this favour, you have obliged me greatly in other ways. In particular, I learn from reliable witnesses that you have spoken favourably about me to many people; and Clerselier has written that you are expecting to receive from him the French version of my *Meditations* so as to present it to Queen Christina of Sweden, where you are living. I have never been so much a climber as to want my name to be known by persons of that rank. Indeed if only I had been as wise as the savages are said to believe monkeys are, no-one would have known of me as a writer of books; they are said to believe that monkeys could speak if they wanted to, but abstain from speaking in order to avoid being forced to work. Because I haven't taken the same care to abstain from writing, I don't have as much free time or peace as I would if I'd had the wit to keep quiet. But since the error has already been committed and I am known by countless Schoolmen who

look askance at my writings and try from every angle to find in them the means of harming me, I have good reason to want to be known also by persons of greater distinction whose power and virtue might protect me.

Moreover, I have heard that this Queen is held in such high esteem that—although I have often complained about people wanting to introduce me to some grand person—I can't forbear to thank you for having spoken so kindly to her about me. I have seen de la Thuillierie since his return from Sweden, and he has given such a glowing description of her qualities as to make *being a Queen* seem to be one of the least of them! I wouldn't have believed half of what he said if I hadn't seen in the Princess ·Elisabeth of Bohemia·, to whom I dedicated my *Principles of Philosophy*, that men and women of high birth don't need to be very old to be able to go far beyond other people in learning and virtue. But I'm afraid that my published writings are not worthy of being read by the Queen and that accordingly she won't be grateful to you for having recommended them to her.

If I had dealt with moral philosophy I might have had reason to hope she would find my writings more agreeable; but that's a subject that I must not get involved in. The Regents ·of the University of Utrecht· are so worked up against me because of the harmless principles of physics they have seen, and they are so angry at finding in them no pretext for slandering me, that if I had dealt with morality after all that they would never have given me any peace. A certain Father Bourdin thought he had good reason to accuse me of being a sceptic, because I refuted the sceptics; and a certain minister maintained that I was an atheist, his only reason being the fact that I tried to prove the existence of God! So what *wouldn't* they say if I undertook to answer these:

- What is the true value of all the things that can be desired or feared?
- What is the state of the soul after death?
- How far ought we to love life?
- What ought we to *be* if we are to have no reason to fear losing our life?

It would be pointless for me to have only those opinions that •agree as closely as possible with religion and •are as beneficial as possible for the state: for my critics would still try to convince people that I had opinions opposed to both. So the best thing I can do henceforth is •to abstain from writing books, and •to pursue my studies only for my own instruction and communicate my thoughts only to folk I can converse with privately. [Descartes associates the second of these with his having adopted as his motto some lines by Seneca: *Illi mors gravis incubat / Qui, notus nimis omnibus, / Ignotus moritur sibi*, meaning: 'Someone who is known to everyone else but gets through life without knowing himself has a hard, painful death.'] I would count myself extremely fortunate, I assure you, if I could do this with you; but I don't think I'll ever go to the places where you are, or that you'll retire to this place. All I can hope for is that after some years you may do me the favour of stopping at my hide-away en route back to France, and that I shall then have the opportunity to talk with you with an open heart. A lot can be said in a short time, and I find that long associations aren't needed for establishing close friendships, when these are based upon virtue. From the moment I had the honour of meeting you, I felt entirely at one with you.

A final point: you seem to conclude from the fact that I have studied the passions that I must no longer have any. On the contrary, in examining the passions I have found almost all of them to be good, and to be so useful in this life that our soul would have no reason to wish to remain joined to its body for even one minute if it couldn't feel them. I do

hold that we should guard against feeling anger at insults we receive; to do this we must try to elevate our mind so high that the insults of others don't get through to us. In place of anger, though, I believe it is right to feel indignation, and I confess to having often felt indignant at the ignorance of those who want to be taken as learned, when I see this ignorance joined with malice.

⊕ [2.xi.46: Descartes writes to Mersenne against Roberval: nine indignant pages, not retreating an inch.]

⊕ [2.xi.46: Descartes writes to Mersenne, commenting on his reply to Roberval (see preceding item), praising a geometrical result by Torricelli that was messed up by Roberval, and pleading again not to be sent anything by Roberval. Mersenne has been told that Fabri has written a book covering the same ground as Descartes's, but better and in better order. Descartes thinks Fabri is fronting for the Jesuits, and says that he had better see the book, but there's no hurry. Then remarks about some recent empirical results in physics.]

⊕ [2.xi.46: Descartes writes to Cavendish, with a complicated account of how Cavendish innocently got into the Roberval exchange, and introducing a four-page account of everything he (Descartes) has said on the topic that he and Roberval are disagreeing about. He is doing this 'so that you won't think that a desire to contradict a man whom I have never admired as some do, and whom I have known for years not to be devoted to my welfare, has led me to write anything that I don't believe.']

to Mersenne, 23.xi.1646:

The news you sent me of our friends' illnesses upset me, but I'm grateful to you for telling me. I'm quite unable to bring them any remedy, but I think that one of the duties of friendship is to share in the ills of those we are fond of. Picot had already told me of the trouble with his eyes, but since he didn't make a big fuss about it I would have expected it

to have improved by now. Clerselier's illness gave me more of a shock; but it's a common enough malady, and going by your description of it I judge that it isn't life-threatening or incurable. My only fear is that the ignorance of the physicians may lead to treatments that harm him further. They were right to prescribe bleeding to begin with, and I am sure that this will have lessened the severity and frequency of the fits; but they are great ones for bleeding in Paris, and I'm afraid that when they see the benefits of one blood-letting they will keep on with the treatment, weakening the brain without improving his bodily health. You tell me that his illness began with a kind of gout in a toe. If he isn't yet cured and continues to have epileptic fits, I think it would be good to make an incision right to the bone in the toe where the trouble began, especially if he is known to have been injured in that area; there may still be some infection there that is the cause of this illness and needs to be cleared out before he can recover properly. But I would be most embarrassed if it were known that I am giving medical consultations, especially on an illness that I don't know much about. So if you think it right to pass on my suggestion to one of his physicians, please make sure that he doesn't *in any way* learn that it comes from me.

You are right in thinking that I don't share Regius's opinion that 'the mind is a corporeal principle' or his view that 'we know nothing except by appearance'; for in my writings I have said exactly the opposite. As for his way of explaining the movement of the muscles: this comes from me, and has pleased him so much that he repeats it twice, word for word; but it is entirely worthless because, not having understood what I wrote, he has forgotten its main point; and not having seen my diagram, he has drawn his own very badly, in such a way as to contradict the rules of mechanics. About a dozen years ago I described all the functions of the

human or animal body; but the manuscript is in such a mess that even I would find it hard to read. Nevertheless, four or five years ago I couldn't stop myself from lending it to a close friend, who made a copy that was then recopied by two more people, with my permission but without my rereading or correcting the transcripts. I asked them not to show it to anyone, and I have never wanted Regius to see it because I knew his character, and thinking that I might publish my views I didn't want anyone else detracting from their novelty. But behind my back he got hold of a copy—I can't think how—and extracted from it his *lovely* account of the movement of the muscles. He could have lifted much else besides so as to fill out his book, but I'm told that he didn't get hold of my manuscript until the printing of his own work was almost completed.

[Then three short paragraphs on semi-personal matters.]

to Cavendish, 23.xi.1646:

I agree entirely with your Excellency's judgement about the chemists. I think they use words that aren't in common use only so as to seem to know more than they do. I think also that what they say about reviving flowers with their 'salts' is only a baseless fancy, and that the powers of their 'extracts' are quite different from those of the plants they come from. This is clear empirically because wine, vinegar and brandy, three extracts made from the same grapes, have quite different tastes and powers. In my view, the chemists' salt, sulphur and mercury are no more different from each other than the four elements of the ·Aristotelian· philosophers, and not much more different from one another than water is from ice, foam and snow. I base all this on my view that all these bodies are made of the same matter and that any differences amongst them come from differences

in the shapes or arrangements of their tiny parts. I hope you will soon be able to see this explained at some length in my *Principles of Philosophy*, which is about to be printed in French.

[A long paragraph about the differences amongst stones, pieces of metal, bones, etc. Then one about the properties of liquid mercury. To understand these properly, Descartes says, he would have to do some experiments, but even without those he is pretty sure of this much:] What makes this mercury so fluid is that its small parts are

- so unified and slippery that they can't catch onto one another, and
 - so big (bigger than the small parts of water) that they hardly make room for
 - the subtle matter that I call 'matter of the second element'
- to get in among them, but only
- the *very*-subtle matter that I call 'matter of the first element'.

It seems to me that all the properties of liquid mercury that I know of can be explained by those same facts about its small parts. [He gives the explanations: the stuff is opaque and cold because it contains so little matter of the second element; it settles into round drops when you put some on a table-top because its small parts are so much bigger than those of air or other bodies; and that same fact explains why it doesn't cling to our hands as water does. . . .

[A short paragraph about a book by Kenelm Digby. Not knowing English, Descartes hasn't read it. but he has a few bits translated, and is optimistic about the chances of his being in complete agreement with Digby. Then:]

I can't agree with Montaigne and others who attribute understanding or thought to lower animals. I'm not relying here on the common belief that human beings have absolute

dominion over all the other animals; that is too blunt an instrument, for I acknowledge that some of the lower animals are stronger than us, and I believe that some of them may have a natural cunning that can deceive the shrewdest human beings. But I hold that they imitate or surpass us only in actions of ours that aren't guided by our thought. We often walk or eat without giving the least thought to what we are doing; and we often—without using our reason—reject things that are harmful for us and fend off the blows aimed at us. Indeed, even if we expressly resolved not to put our hands in front of our head, when we fall we can't help doing just that. If we had no thought then we would walk, as the lower animals do, without having learned to; and it is said that sleep-walkers sometimes swim across rivers in full flood that would drown them if they were awake. As for the movements of our passions: in us they are accompanied by thought because we have the faculty of thinking, but it's very clear that they don't depend on thought, because they often occur against our will. So they might also occur in lower animals, even more violently than in human beings, without licensing the inference that those animals have thoughts.

In fact, the only external actions of ours that could show someone who examines them that our body is not just a self-moving machine but contains a soul with thoughts are

(i) spoken words or other signs, **(ii)** made with reference to states of affairs that come up, **(iii)** without expressing any passion.

I say **(i)** 'spoken words or other signs' because deaf-mutes use signs as we use speech; **(ii)** I speak of these words or signs as having reference to something, so as to exclude the 'speech' of parrots (without excluding the speech of madmen, which has reference to particular topics, though it doesn't follow reason); and **(iii)** I add that these words or signs mustn't express any passion, so as to exclude not only cries

of joy or sadness and the like, but also things that animals can be trained to do. If you teach a magpie to say 'hullo' to its mistress when it sees her approach, this can only be by making the uttering of this word the expression of one of its passions—e.g. it will express its wish to eat if it has always been given a titbit when it says 'hullo'. Similarly, all the things that dogs, horses and monkeys are taught to do are only expressions of their fear, their hope or their joy; which is why they can be performed without any thought. I am struck by the fact (as it seems to be) that the use of words, so defined, is something that only human beings have. It's all very well for Montaigne and Charron to say that some human beings differ from others more than a human being differs from a lower animal; but there has never been known an animal so perfect as to use a sign to make other animals understand something that doesn't relate to its passions; and there's no human being so imperfect as *not* to do so, because even deaf-mutes invent special signs to express their thoughts. I regard this as very strong evidence that the reason why animals don't speak as we do is not that they lack the organs but that they have no thoughts. It can't be said that they speak to each other but we don't understand them; dogs and some other animals express their passions to us, and they would express their thoughts also if they had any.

I know that lower animals do many things better than we do, but this doesn't surprise me. It is evidence that they act naturally and mechanically, like a clock that tells the time better than our judgement does. When the swallows come in spring, surely they are operating like clocks. The actions of honeybees are all like that, as is the orderly pattern of cranes in flight. . . . The instinct of some animals to bury their dead is no stranger than that of dogs and cats that scratch the earth to bury their excrement; they hardly ever

actually bury it, which shows that they act only by instinct and without thinking. The most one can say is this:

Although the lower animals don't perform any action that shows us that they think, still, since the organs of their bodies are not very different from ours it may be conjectured that attached to these organs there's some thought such as we experience in ourselves, but of a very much less complete kind.

All I can say to this is that if they thought as we do, they would have an immortal soul as we do. This is unlikely, because there's no reason to believe it of some animals without believing it of all, and many of them—e.g. oysters, sponges—are too imperfect for this to be credible.

⊕ [1.xii.46: Chanut writes to Descartes, assuring him that the good things he has heard about Queen Christina of Sweden are all true, praising her competent involvement in political affairs and her devotion to high culture. [She was 20 years old at this time.] He reports that she asked him for his opinion on a certain matter, and he is passing the question on to Descartes. It is **(3)** of the trio in Chanut's letter on 1.ii.47. Questions **(1)** and **(2)** don't appear in the copy we have of the present letter, which is presumably incomplete.]

⊕ [14.xii.46: Descartes writes to Noël, a miscellany of remarks about his (Descartes's) intellectual friends and enemies.]

⊕ [14.xii.46: Descartes writes to Charlet, responding gratefully to advice Charlet has given regarding the conduct of public disagreements on intellectual matters. Descartes comments on the difficulty of getting one's allies to toe this line—he clearly has Regius in mind.]

to Chanut, 1.ii.1647:

I can't rest until I have replied to your most welcome letter that has just reached me. The problems you set would be difficult for wiser men than me to discuss in a short time, and

I know that however long I spent I could not solve them fully. Consequently, I prefer to write at once what my enthusiasm dictates rather than to think things through more slowly and after all write nothing any better.

You ask on Queen Christina's behalf for my opinion about three things.

(1) What is love?

(2) Does the natural light by itself teach us to love God?

(3) Which is worse if immoderate and misused, love or hatred?

(1) [This will run until page 193.] I distinguish **(a)** the love that is purely intellectual or rational from **(b)** the love that is a passion. The first seems to be what we have when our soul perceives some present or absent good that it judges to be appropriate for itself, and joins itself to it *de volonté* [see Glossary], i.e. considers itself and the good in question as forming two parts of a single whole. Then **(i)** if the good is present—i.e. if the soul possesses it, or is possessed by it, or is joined to it not only by its will [*volonté*] but also in fact and reality in the appropriate manner—in that case, the movement of the will that accompanies the knowledge that this is good for it is **joy**; and **(ii)** if the good is absent, then the movement of the will that accompanies the knowledge of its lack is **sadness** and the movement that accompanies the knowledge that it would be a good thing to acquire it is **desire**. All these movements of the will that constitute love, joy, sadness and desire, in so far as they are rational thoughts and not passions, could occur in our soul even if it had no body. For instance, if a soul perceived that there are many fine things to be known about Nature, its will would be unstoppably led to •love the knowledge of those things, i.e. to consider that knowledge as belonging to itself. And if in addition it was aware of having that knowledge, it would have •joy; if it realised that it didn't have the knowledge, it

would have •sadness; and if it thought it would be a good thing to acquire it, it would have •desire. Nothing in all these movements of its will would be obscure to the soul—it would be perfectly aware of it all—provided it reflected on its own thoughts.

But while our soul is joined to the body, this rational love is commonly accompanied by **(b)** the other kind of love, •the passion• that can be called sensual or sensuous. This (as I said briefly of all passions, appetites and sensations in my *Principles*) is nothing but a confused thought, aroused in the soul by some motion of the nerves, which disposes it to have the other thought—the clearer one—that constitutes rational love. In love a strange kind of heat is felt around the heart, and a great abundance of blood in the lungs, which makes us open our arms as if to embrace something, and this inclines the soul to join itself *de volonté* to the object presented to it. But the thought by which the soul feels the heat is different from the thought which joins it to the object. (It's like what happens in thirst: the sensation of the dryness of the throat is a confused thought that disposes the soul to desire to drink, but it isn't identical with that desire.) It sometimes happens, indeed, that the feeling of love occurs in us without our will [*volonté*] being led to love anything, because we don't encounter any object we think worthy of love. It can also happen, on the other hand, that we are aware of a most worthwhile good, and join ourselves to it *de volonté*, without having any corresponding passion, because the body is not appropriately disposed.

Commonly, however, these two loves occur together; for they are so linked that when **(a)** the soul judges an object to be worthy of it, this immediately disposes the heart to make **(b)** the motions that arouse the passion of love; and when **(b)** the heart is disposed in that way by other causes, that makes the soul **(a)** imagine lovable qualities in objects

in which at other times it would see nothing but faults. It's not surprising that certain motions of the heart should be naturally connected in this way with certain thoughts that they in no way resemble. Because the soul is naturally fitted to be united with a body, it also has this property:

Each of its thoughts can be associated with certain motions or conditions of this body in such a way that
 •when the same conditions recur in the body, they induce the same thought in the soul, and conversely
 •when the same thought recurs, it disposes the body to return to the same condition.

In the same way when we learn a language, we connect the sight or sound of certain words, which are material things, with their meanings, which are thoughts, so that when we later hear the same words we conceive the same things, and when we conceive the same things we remember the same words.

But the bodily conditions that first accompanied our thoughts when we came into the world must have become more closely connected with them than any •bodily conditions• that accompany them later. This helps to explain the origin of the heat felt around the heart and of the other bodily conditions that also accompany love. It is probable, I think, •that at the first moment of the soul's union with the body it felt joy, and immediately after that felt love, then perhaps also hatred, and sadness; and •that the bodily conditions that caused those passions back then have ever since naturally accompanied the corresponding thoughts. I think that the soul's first passion was joy because it isn't credible that the soul was put into the body at a time when the body was not in a good condition; and a good condition of the body naturally gives us joy. I say that love followed because the matter of our body perpetually flows out of it—flows like the water in a stream—and there's always need

for new matter to take its place; so that it's hardly likely that the body would be in a good condition if there weren't within reach some matter suitable for food. The soul, uniting itself *de volont * [see Glossary] to that new matter, felt love for it; and later, if the food happened to be lacking, it felt sadness. And if its place was taken by some other matter unsuitable as food for the body, it felt hatred.

Those are the four passions that we had first (I think), and they're the only ones we had before our birth. Back then they were (I also think) only sensations, or very confused thoughts, because the soul was so attached to matter that its only way of attending to anything else was by receiving various impressions from it. Some years later the soul began to have other joys and other loves—ones that don't depend only on the body's being in a good condition and suitably nourished—but **(a)** the intellectual element in its joys or loves has always been accompanied by **(b)** the first sensations that it had of them and even by the motions or natural functions that occurred in the body on those early occasions.

Before birth, love was caused only by suitable nourishment which, entering in abundance into the liver, heart and lungs, produced an increase of heat; that's why a similar heat still always accompanies love, although it comes from very different causes. If I weren't afraid of being long-winded I could show you—item by item—how all the other bodily conditions that occurred along with these four passions at the beginning of our life *still* accompany them. I'll merely say that it's because of these

(b) confused sensations of our childhood that remain joined with **(a)** the rational thoughts by which we love what we judge worthy of love

that it is hard for us to know what the nature of love is. And it is also made hard for us by the fact that many other passions—e.g. joy, sadness, desire, fear, hope, etc.—mingle

in various ways with love. This is especially noticeable in the case of *desire*, which is so commonly mistaken for *love* that people have distinguished two sorts of love: one called 'benevolent love', in which desire is less apparent, and the other called 'concupiscent love', which is simply a very strong desire based on a love that is often weak.

A full account of love would take a big book; and though its nature is to make one very apt to communicate •as much as one can, so that it incites me to try to tell you •more than I know, I restrain myself for fear that this letter may become tediously long.

(2) So I pass to your second question [the first began on page 191; this will run to page 195]:

Does the natural light by itself teach us to love God?

And can one love him by the power of that light alone?

I see two strong reasons for doubting that one can. The first is that the attributes most commonly attributed to God are so high above us that we don't see they can possibly be fitting for us; so we don't join ourselves to them *de volont *. The second is that nothing about God can be visualised by the imagination, which makes it seem that although one might have **(a)** an intellectual love for him one could not have **(b)** any sensuous love, because it would have to pass through the imagination if it were to reach the senses by way of the intellect. So I'm not surprised that some philosophers are convinced that •the only thing that enables us to love God is the Christian religion, which teaches the mystery of the Incarnation in which God came down to our level and made himself like us; and that •those who appear to have had a passion for some divinity without knowing about the mystery of the Incarnation haven't loved the true God but only some idols to which they gave his name. . . . Despite all this, I have no doubt that we can truly love God solely by the power of our nature. I don't assert that there's any *merit* in this love

when it occurs without grace—let the theologians sort that out—but I make bold to say that with regard to the present life it is the most delightful and useful passion possible; and it can even be the strongest, though only if we meditate very attentively, because we're continually distracted by the presence of other objects.

In my view, the way to reach the love of God is to consider that he is a mind, or a thing that thinks; and that •our soul's nature is sufficiently like his for us to come to believe that •it is an emanation of his supreme intelligence, a 'breath of divine spirit'. Our knowledge seems to be able to grow by degrees to infinity, and since God's knowledge is infinite it is at the point that our knowledge is aiming at; and if we focussed on this to the exclusion of everything else we might arrive at the absurdity of wishing to be gods, thus making the disastrous mistake of •loving divinity instead of •loving God. But **the infinity of God's knowledge** isn't the whole story. We should also take account of

- the infinity of his power**, by which he has created so many things that of which we are only a tiny part; of
- the extent of his providence**, which makes him see with a single thought all that has been, all that is, all that will be and all that could be; of
- the infallibility of his decrees**, which are altogether immutable even though they respect our free will; and (finally) of
- the greatness of the created universe** balanced against our smallness, observing how all created things depend on God, and regarding them in a manner proper to his omnipotence instead of enclosing them in a ball as do the people who insist that the world is finite.

Someone who meditates on these things and understands them properly will be filled with extreme joy. Far from being

so insulting and ungrateful to God as to want to take his place, he will think that the knowledge that God has favoured him with is already enough to make his life worthwhile. Joining himself *de volenté* entirely to God, he loves him so perfectly that he desires nothing at all except that God's will should be done. And from now on, knowing that nothing can happen to him that God hasn't decreed, he will no longer fear death, pain or disgrace. He so loves this divine decree, regards it as so just and so necessary, and knows that he must be so completely subject to it, that even when he expects it to bring death or some other evil he won't will to change it even if *per impossibile* he could do so. He doesn't shun evils and afflictions because they come to him from divine providence; still less does he shun the permissible goods or pleasures he may enjoy in this life, since they too come from God's decree. He accepts them with joy, without any fear of evils, and his love makes him perfectly happy.

It's true that the soul must be very detached from the traffic of the senses if it is to represent to itself the truths that arouse such a love. That's why it appears that it can't pass this love on to the imaginative faculty so as to make it a passion. But I don't doubt that it does do this. For although we can't imagine anything in God, who is the object of our love, we *can* imagine our love itself, which consists in our wanting to unite ourselves to some object and, when God is the object, that amounts to wanting to consider ourselves as a minute part of all the immensity of the created universe. Objects vary, so there are various ways of uniting oneself to them or joining them to oneself; and the mere idea of such a union produces heat around the heart and causes a violent passion.

Ordinary usage and the courtesy of good manners forbid us to tell those whose condition is far above ours that we 'love' them; we may say only that we respect, honour, esteem

them, and that we have zeal and devotion for their service. I think this is because reciprocal love between two human beings makes them in some way equals, so that if while trying to make myself loved by some great person I said that I ‘loved’ him, he might think I was doing him wrong by treating him as an equal. But philosophers usually don’t give different names to things that share the same definition, and the only definition of *love* that I know is that it is

a passion that makes us join ourselves *de volonté* to some object,

no matter whether the object is equal to or greater or less than us. So it seems to me that if I am to speak philosophically I must say that it is possible to love God.

[Descartes adds that he is sure Chanut loves Queen Christina, though he wouldn’t say so to her openly.]

[The symbol * , below, marks the place where Descartes moves from *nous* to *on*—i.e. from ‘we’ to ‘one’—and then the place where he moves back again. Repeated uses of ‘one’ are now burdensome to Anglophone ears, so the present version ignores the switch to *on*.]

The love we have for objects above us isn’t *less* than the love we have for other objects; indeed, such love has a nature that makes it *more* perfect, and makes * us embrace with greater ardour the interests of that which we love. It is the nature of love to make us consider ourselves and the object we love as a single whole of which we are only a part, and to transfer the care we previously took of ourselves to the preservation of this whole. We keep for ourselves only a part of our care, a part that is large or small in proportion to whether we think we are a large or a small part of the whole to which we have given our affection. So if we are joined *de volonté* to an object that we regard as less than ourselves—for instance, if * we love a flower, a bird, a building or some such thing—the highest perfection that this love can *properly* reach can’t make us risk our lives for the preservation of

such things. That is because, considered as parts of the whole that we and they constitute, they’re no nobler than are our nails and our hair considered as parts of our body; and it would be preposterous to risk the whole body for the preservation of our hair. But when two human beings love one another, charity leads each of them to value his friend above himself; so their friendship is not complete unless each is ready to say in favour of the other: ‘It is I who did the deed, I am here, turn your swords against me’ [Descartes quotes this in Latin; it is from an episode in Virgil’s *Aeneid* where one hero tries to protect his friend from the enemy]. Similarly, when an individual is joined *de volonté* to his ruler or his country, if his love is complete he’s bound to •regard himself as only a very small part of the whole that he and they constitute, and •be no more afraid to go to certain death in the interests of that whole than he would be afraid to draw a little blood from his arm to improve the health of the rest of his body. Every day we see examples of this love, even in persons of low condition who give their lives cheerfully for the good of their country or for the defence of some great person whom they love. From all this it is obvious that our love for God should be, beyond comparison, the greatest and most perfect of all our loves. [This started on page 193; the next ends on page 197.]

(3) I pass to your third question: ‘As between immoderate love and immoderate hatred, which is worse?’ I find this harder to answer this question than the other two because it is ambiguous. One passion might be called ‘worse’ than another because

- (i)** it makes us less virtuous, or
- (ii)** it is more of an obstacle to our happiness, or
- (iii)** it carries us to greater excesses and disposes us to do more harm to other people.

These three versions of the question should, I think, be examined separately.

(i) I have no straightforward answer to the first version of the question. •If I attend to the definitions of the two passions, I consider that love for an undeserving object can make us worse than can hatred for an object we should love, because there's more danger in being joined to a bad thing and being as it were transformed into it than there is in not being joined *de volonté* to a good thing. [What Descartes wrote means 'than in being separated *de volonté* from a good thing', but he hasn't provided a meaning for that phrase.] •On the other hand, if I take into account the inclinations or habits arising from these passions, I change my mind. Love, however immoderate, always has the good for its object, so it seems to me that it can't corrupt our morals as much as hatred, whose only object is evil. We see by experience that ·even· the best people gradually become malicious if they can't help hating someone; for even if their hatred is just, they so often call to mind the evils they receive from their enemy, and the evils they wish him, that they gradually become accustomed to malice. By contrast, those who give themselves over to love, even if their love is immoderate and frivolous, often become more decent and virtuous than ·they would be· if they turned their mind to other thoughts.

(ii) I have no trouble with the second version of the question. Hatred is always accompanied by sadness and grief; and if some people take pleasure in doing harm to others, I think their delight is like that of the demons who (according to our religion) continually imagine themselves to be getting revenge on God by tormenting men in hell but are nevertheless damned. Love, on the other hand, however immoderate it may be, gives pleasure; and though the poets often complain of it in their verses, I think men would naturally give up loving if they didn't find it more sweet than bitter. All the afflictions that are blamed on love come solely from the other passions—rash desires and ill-founded

hopes—that accompany it.

(iii) But if the question concerns which of the two passions carries us to greater excesses and makes us capable of doing more harm to others, I think I must say that it is *love*. It has by nature much more power and strength than hatred; and affection for a trivial object often causes incomparably more evils than the hatred of a more valuable object could do. To see that hatred has less vigour than love, consider the origin of each. As I said earlier, our first feelings of love arose because our heart was receiving suitable nourishment in abundance, whereas our first feelings of hatred were caused by harmful food reaching the heart; and the same bodily events still accompany the same passions. If I was right about that, it's evident that when we love,

all the purest blood in our veins floods towards the heart, sending a great quantity of animal spirits to the brain and thus giving us more power, vigour and courage;

whereas when we hate,

the bitterness of gall and the sourness of the spleen mixes with our blood and diminishes and weakens the spirits going to the brain, and so we become feebler, colder and more timid.

Experience confirms what I say, for heroes like Hercules and Roland love more ardently than other men, whereas weak and cowardly people are more inclined to hatred. Anger can indeed make people bold, but it borrows its strength from the *self-love* that is always its foundation, and not from the hatred that is merely an accompaniment. Despair also calls forth great efforts of courage, and fear can lead to great cruelties; but these passions are not the same as hatred.

I still have to show that immoderate love for an unimportant object—being ungoverned—can cause more evil than can hatred for something more valuable. My argument for

this is that •the evil arising from hatred extends only to the hated object, whereas •immoderate love spares nothing but its object, which is usually very slight in comparison with all the other things that it is ready to abandon and destroy to serve as seasoning for its immoderate passion. You might say:

Hatred is the immediate cause of the evils attributed to love, because if we love something we thereby hate whatever is contrary to it.

But even so, love is more to blame than hatred for the evils that come about in this way, •because it is the *first* cause and •because love for *one* object can give rise in this way to hatred for *many*. Moreover, love's greatest evils don't have hatred as their immediate sources; the chief and most dangerous are the evils that are done or permitted for the sole pleasure of the loved object or for oneself. As a poet said, 'Noble Paris put all Troy to fire / To quench his own heart's flame.' This shows that even the greatest and most tragic disasters can be, as I have said, seasoning for an immoderate love, and make it more delicious the more they raise its price.

⊕ [15.iii.47: Descartes writes to Mersenne, sorting out a misunderstanding over what Descartes had said about the sounds of suspended (musical) triangles.]

⊕ [26.iv.47: Descartes writes to Mersenne, replying sharply to his request for an opinion about a recent book by Fabri, and brushing off a request for explanations of certain supposed empirical facts.]

to the Curators of Leiden University, 4.v.1647:

[This 10-page Latin letter is a protest at the libels that have been directed at Descartes in a formal public debate about his work at Leiden University. The first four pages recapitulate the history of this conflict, and highlight the charge that Descartes is guilty of 'a horrible and impious

blasphemy' because, allegedly, he says that God is a deceiver. Then he gets down to some details:]

I have been told that at the ·formal· disputation, when my defender asked the attacker and the chairman what passage in my writings showed that I hold God to be a deceiver, the first passage they cited (and they kept bringing it up) was this from the first Meditation:

'So I shall suppose that some malicious, cunning demon with the highest power has done all he can to deceive me—rather than this being done by God, who is supremely good and the source of truth.'

My defender pointed out that in that passage I expressly distinguished •the supremely good God, the source of truth from •the malicious demon. He denied that I meant to hold. . . .or even to suppose the supremely good God to be a deceiver, and said that I had supposed this instead about the evil demon. I had to go about it this way, he said, because I had added that God is 'the source of truth', displaying an attribute of his that is incompatible with deception. They replied that I had called the deceiver 'supremely powerful', and that the only supremely powerful being is the true God. I could exclaim that following that line of argument they must hold all the demons, idols, and gods of the heathen are the true God or gods, because the description of any one of them will contain some attribute that in reality belongs only to God. And I could turn their own words against them by saying that their treatment of me *is* 'a horrible and impious blasphemy', especially given that it isn't a mere supposition but is an assertion scandalously taught in a public lecture-hall in support of a libel. [Descartes was a little carried away there. He can't have soberly thought that the mistreatment of him was impious and blasphemous.] But I will merely say that since the context demanded the supposition of an extremely powerful deceiver, I distinguished the good God from the

evil demon, and taught that if *per impossibile* there were such an extremely powerful deceiver, it would not be the good God. . . .and could only be regarded as some malicious demon. My use of this supposition can't be criticised on the grounds that 'evils are not to be done so that good may come'; my supposition has no moral evil in it, and no goodness either through the purpose it serves, because it is an act of the intellect and not of the will, which reinforces the claim that I don't believe the supposition to be true and don't want anyone else to believe it either. My purpose was excellent, because I was using the supposition only •to make a better job of overthrowing scepticism and atheism, •to prove that God is no deceiver, and •to establish this as the foundation of all human certitude. Indeed I dare to boast that no-one can less justly and less plausibly be accused of holding God as a deceiver than I myself; because nobody before me whose writings have survived has so expressly, earnestly and carefully demonstrated that the true God is no deceiver. [The protest continues for nearly three more pages.]

⊕ [11.v.47: Chanut writes to Descartes about his long letter to Queen Christina. He read it to her, and was amazed at the speed of her uptake. He passes on (at her request) the admiring terms in which she has spoken of Descartes. She asks for re-assurance that Descartes's notion of the world as infinite doesn't clash with Christianity, and Chanut throws in a question of his own, about friendship.]

⊕ [v.47: Descartes writes to the Curators of the University of Leiden, continuing in the same vein as his letter of 4.v.47.]

⊕ [12.v.47: Descartes writes to Servien, a representative of the French king in the Netherlands, describing his trouble with the University of Leiden, alleging (with convincing detail) that the University's conduct in all this has been extremely unfair to him, and protesting that what they really want is to deliver him into the hands of the Spanish Inquisition, though he is a Frenchman who has carried arms in the fight to chase

the Inquisition out of France. He asks to intercede on his behalf with the Prince of Orange.]

⊕ [v.47: the Curators of the University of Leiden write to Descartes, acknowledging his letter of 4.v.47 and saying that the professors who had attacked Descartes in their lectures had been ordered to confine themselves to teaching what they believed to be true and not to discuss Descartes 'for or against'.]

⊕ [27.v.47: Descartes writes to the Curators of the University of Leiden, a letter in which 'he replied testily that the issue was not about what should or should not be discussed but about the fact that he needed an apology and retraction' (Richard Watson, *Cogito Ergo Sum*, page 234.)

⊕ [27.v.47: Descartes writes to Wilhelm, asking for his help in the Leiden matter. Some of the colleagues of Descartes's attackers are friends of Wilhelm's, and have seemed to Descartes to be reasonable and decent, and he asks Wilhelm to speak to them on Descartes's behalf.]

to Chanut, 6.vi.1647:

I avidly read your latest letters, finding in them great proofs of your friendship and your tact. I was alarmed when I read in the first pages that du Rier [physician to the Queen] had spoken to the Queen about one of my letters and that she had asked to see it. Later, when I reached the place where you say that she heard it with some satisfaction, I was greatly relieved. I don't know whether I was more overcome with •admiration at her so easily understanding what the most learned men find obscure, or with •joy that she didn't find it displeasing. But my admiration doubled when I saw the force and weight of the objections that Her Majesty made regarding the size I attributed to the universe [see Chanut's letter of 11.v.47]. I wish that your letter had found me in my normal abode. The problem is difficult and judiciously posed, and if I had been in a place where I could collect my thoughts

I might have unravelled it better than I can in a hotel room. Still, I don't want to use this as an excuse; I'll try to write all I can say on this topic, provided I'm allowed to think that I am writing to you alone, so that my imagination won't be too confused by veneration and respect.

In the first place, I recollect that the Cardinal of Cusa and other theologians have supposed the world to be infinite without ever being censured for this by the Church; on the contrary, representing God's works as very great is thought to be a way of doing him honour. And my opinion is easier to accept than theirs, because I say not that the world is infinite but only that it is *indefinite*. There's a quite notable difference between the two: because if we say that something is infinite we should have a reason that tells us that it is so; and we can't have such a reason except in the case of God; but to say that a thing is indefinite, all we need is *not* to have a reason showing that it has bounds. That there are bounds to the matter of which the world is composed seems to me impossible to conceive, let alone to prove. The nature of this matter, when I examine it, turns out consist merely in its being extended in length, breadth and depth, so that whatever has these three dimensions is a part of this matter; and there can't be any completely empty space—i.e. space containing no matter—because we can't conceive such a space without conceiving it as having these three dimensions and consequently as being matter.

Now, in supposing the world to be finite we are imagining that beyond its bounds there are some spaces that are three-dimensional and therefore not purely 'imaginary', as the philosophers' jargon has it. These spaces contain matter; and there's nowhere for this matter to be but in the world; so the world extends beyond the bounds we had tried to assign to it.

Thus, having then no reasons that show the world to have

bounds—and not even being able to conceive its having them—I call it *indefinite*. But I can't deny that there may still *be* some reasons that are known to God though incomprehensible to me, which is why I don't say outright that it is *infinite*.

When I think about the world's duration and compare it with the world's extension (considered in this way), the only thought I come up with is the following. [What follows *looks* clear but is extraordinarily hard to follow. It has three main claims. **(a)** Descartes's argument for the impossibility of a spatial bound to the world (indented in the preceding paragraph) is not matched by a valid argument for the impossibility of a beginning bound to the time the world has existed. When we think of the world as coming into existence at time T, we aren't compelled to imagine something about pre-T time that implies that the world existed back then. (The difference comes from this: a supposed spatial boundary of the world involves the thought of *space* beyond it, and (according to Descartes) that is the thought of *matter* beyond it, i.e. some part of the *world* beyond it; but even if the thought of a supposed backwards temporal boundary of the world involves the thought of *time* before that, Descartes has no reason to say that this involves the thought of any *world* back then.) **(b)** However, although metaphysics gives us no reason to **deny** that the world began only a finite length of time ago, it gives us no reason, either, to *affirm* that the world began only a finite length of time ago. For any time T before the actual time at which the world was created, God *could* have created the world at T if he had wanted to. Descartes then turns to the future:] Faith teaches us that although •heaven and earth will pass away (i.e. will change their appearance) •the world (i.e. the *matter* of which the earth and the heavens are composed) will never pass away. This is clear from the promise of eternal life for our bodies

after the Resurrection, and consequently for the world in which they will exist. . . .

The special advantages that religion attributes to human beings need some explanation, because they seem difficult to believe in if the spatial extent of the universe is taken to be indefinite. We may say that •all created things are made for us, in the sense that we can make use of them; I don't know that we're obliged to believe that man is what the creation is *for*. On the contrary, it is said that 'all things are made for God's sake', and that God alone is the final as well as the efficient cause of the universe. 'The 'made for us' talk doesn't mean anything so grand'. Created beings can be of service to each other; and when x finds that y and z are useful to it, it may ascribe to itself a privileged position and consider that y and z are 'made for me'.

It's true that the Genesis account of the six days of the creation make it look as though man is what the creation is principally *for*. But it can be said that the Genesis account was written for man, and that the Holy Spirit •focussed the narration of things that concern mankind and indeed •didn't speak of anything except in its relationship to man. Preachers, whose role is to spur us on to the love of God, commonly present us with the various benefits we derive from other creatures and say that God made them for us; they don't bring to our attention the other ends for which God might be said to have made those other creatures, because this would be irrelevant to the preachers' purpose; and the upshot of this is that we're inclined to believe that God made all these other things for us alone. But preachers go even further: they say that each person in particular owes gratitude to Jesus Christ for *all* the blood that he shed on the cross, as if he had died merely for a single person. What they say is indeed true; but it doesn't rule out his having redeemed many other **people** by that same blood. In the

same way I don't see that the mystery of the Incarnation, and all the other favours God has done to man, rule out his having done countless other great favours to countless other **creatures**.

I don't infer from this that there are intelligent creatures in the stars or elsewhere, but I don't see any argument to show that there aren't. I always leave questions of this kind undecided, rather than denying or asserting anything about them. The only remaining difficulty, I think, is that we have long believed that man has great advantages over other creatures, and it looks as if we lose them all when we change our opinion about what thinking beings there are in the universe, the fear being that if there are countless many of them on other planets we may lose all our privileges because we're outranked by them. I now allay that fear. [The addition of the last four lines is required if we're to make sense of this paragraph in relation to what follows.]

Our goods, benefits, advantages can be sorted into two groups: **(a)** those that can be lessened through others' having goods like them, and **(b)** those that cannot.

(a) A man who has only a thousand pistoles would be rich if no-one else in the world had as much; and he would be poor if everyone else had much more. Similarly, all praiseworthy qualities bring more glory to those who have them, the fewer the people who share them.

Those examples explain why we commonly envy the riches and glory of others.

(b) Virtue, knowledge, health, and in general all other goods considered in themselves without regard to glory, are not lessened in us through being found in many others.

That is why we have no grounds for being distressed because others have them too.

Now the goods that could belong to all the intelligent creatures in an indefinitely large world belong to class **(b)**; they don't diminish *our* goods. On the contrary, when we love God and through him unite ourselves *de volenté* to all the things he has created, then the greater, nobler and more perfect we reckon them, the more highly we esteem ourselves as being parts of a more perfect whole, and the stronger our grounds for praising God on account of the immensity of his works. Holy Scripture entirely confirms this view in the many places where it speaks of the innumerable multitude of angels, for we think that the least of the angels is incomparably more perfect than human beings. It is also confirmed by the astronomers when they measure the size of the stars and find them to be very much bigger than the earth. For if the indefinite extent of the universe gives ground for inferring that places other than the earth are inhabited, so does the extent that all the astronomers attribute to it; for every one of them judges that the earth is smaller in comparison with the entire heavens than a grain of sand in comparison with a mountain.

·So much for Her Majesty's question·. I now pass to *your* question about the causes that often impel us to love one person rather than another before we know the worth of either. I can discover two, one belonging to the mind and one to the body. The one in the mind presupposes so many things concerning the nature of our souls that I'm not up to explaining it in a letter; so I will speak only of the one in the body. It consists in the arrangement of the parts of our brain that is produced by objects of the senses or by some other cause. The objects that strike our senses act, via the nerves, to create as it were *folds* in our brain. Such a fold flattens out when the object stops acting on the senses, but the place where it was made has a tendency to be folded again in the same way by another object resembling the original object

even if not completely. Here's an example: When I was a child I loved a little girl of my own age who had a slight squint. The •impression made by sight in my brain when I looked at her not-quite-focussed eyes became so closely connected to the simultaneous •impression that aroused in me the passion of love that for a long time afterwards when I saw persons with a squint I felt a special inclination to love them simply because they had that defect; and I didn't know that that was why. But as soon as I reflected on it and saw that it was a defect, I was no longer affected by it. So, when we're led to love someone without knowing why, we may conjecture that it's because he has some similarity to someone we loved earlier, even if we can't say what the similarity is. What attracts our love in this way is more often a perfection than a defect, but it *can* be a defect—as in the case of my youthful self—so a wise man won't altogether yield to such a passion without first considering the worth of the person to whom he feels drawn. But because we can't *love* equally all those whom we observe to be equally worthy, I think that our only obligation is to *esteem* them equally; and since the chief good of life is friendship, we have reason to prefer those to whom we are joined by our secret inclinations, provided we also see worth in them. And when these secret inclinations are aroused by something in the mind, not in the body, I think they should always be followed. How are we to know which is which? Mainly by this: the inclinations that come from the mind are reciprocated, whereas the others usually aren't. . . .

⊕ [ix.47: Descartes writes to Mersenne about something in Galileo's physics which Descartes says is, when properly understood, clearly false.]

to Queen Christina, 20.xi.1647:

I learn from M. Chanut that you wish me to have the honour of expounding to you my view of *the supreme good* understood in the sense of the ancient philosophers. This command is such a great favour that my desire to obey it turns away all other thoughts; so without making excuses for my inadequacy I will put in a few words all that I have come to know on this topic.

The goodness of each thing can be considered in itself without reference to anything else, and in this sense it's evident that God is the supreme good, since he is incomparably more perfect than any created thing. But goodness can also be considered in relation to ourselves, and in this sense I don't see anything we can regard as good unless •it somehow belongs to us and •our having it is a perfection. Thus the ancient philosophers, whose minds were not bathed in the light of faith and who knew nothing about supernatural blessedness, considered only the goods we can have in this life; and they were trying to discover which of *these* is the supreme good.

We should not consider anything as good in relation to ourselves unless we possess it or have the power to acquire it. Given this, it seems to me that the supreme good of *all men together* is a total or aggregate of all the goods—those of the soul as well as those of the body and of fortune—that can be shared by two or more people; whereas the supreme good of *each individual* is quite different from that, and consists only in a firm will to do good and in the contentment that this produces. My reason for saying this is that I don't see any other good that seems so great or so entirely within each man's power. For the goods of the body and of fortune aren't entirely within our power, because they don't depend absolutely upon us; and the goods of the soul. . . well, let's

look at them. They all come down to one of two things: **(i)** knowing what is good, and **(ii)** willing what is good. But knowledge is often beyond our powers; so there remains only our will, the use of which is absolutely up to us. And I don't see that it can be better used than by a firm and constant resolution

- to carry out exactly all the things that one judges to be best, and
- to employ all the powers of one's mind in finding out what these are.

All the virtues come down to this pair; this alone really deserves praise and glory; and this alone produces the greatest and most solid contentment in life. So I conclude that it's this that constitutes the supreme good.

In this way I think I can reconcile the two most opposed and most famous opinions of the ancient philosophers—that of Zeno, who thought *virtue or honour* to be the supreme good, and that of Epicurus, who thought the supreme good was *contentment*, which he called 'pleasure'. Just as all vices arise simply from the uncertainty and weakness that go with ignorance and lead to regret, so virtue consists only in the resolution and vigour that we put into doing the things we think to be good—provided that this vigour stems not from stubbornness, but from our knowing that we have examined the matter as well as we're morally able to do. What we do after this examination may turn out badly, but still we can be sure of having done our duty; whereas if we perform a virtuous action thinking we're doing wrong or not caring whether we are doing right or wrong, we are not acting like a virtuous person. Honour and praise are often awarded to the other goods, the goods of fortune; but I'm sure that you, Your Majesty, care more about virtue than about your crown, I don't hesitate to express my opinion that nothing but virtue really deserves praise. All other goods deserve only

to be esteemed, not to be honoured or praised, unless they are thought to have been bestowed by God as a reward for the good use of free will. For honour and praise is a kind of reward, and only what depends on the will provides grounds for reward or punishment.

I still have to prove that the greatest and most solid contentment in life comes from the good use of free will. This doesn't strike me as hard to do, and here is why. When I consider carefully what constitutes pleasure, or delight, and in general all the sorts of contentment we can have, I observe three things. **(1)** All of these states are entirely within the soul, though many of them depend on the body (just as the soul sees by means of the eyes). **(2)** Nothing can bring contentment to the soul except its belief that it possesses some good, and this belief is often only a very confused representation. The soul's union with the body commonly causes it to represent certain goods as being incomparably greater than they are; whereas if it had clear knowledge of their true value •its contentment would always be in proportion to the greatness of the good from which •it proceeded. **(3)** How good something is *for us* should be measured not only by its intrinsic value but also—and principally—by how it is related to us. Now free will is intrinsically the noblest thing we can have, because it puts us (in a way) on a par with God and seems to exempt us from being subjected to him; so its correct use is the greatest of all our goods, and the one that is most utterly *ours* and that matters to us most. From all this it follows that nothing but free will can produce our greatest happiness. Moreover, the peace of mind and inner satisfaction felt by those who know they always do their best to discover what is good and to acquire it is a pleasure incomparably sweeter, more lasting and more solid than all those that come from elsewhere. . . .

to Chanut, 20.xi.1647:

It is true that usually I refuse to write down my thoughts about morality, for two reasons. **(a)** There's is no subject in which malicious people can more easily find pretexts for vilifying me; and **(b)** I believe only that sovereigns and people authorised by them have the right to get involved in regulating the *mœurs* [see Glossary] of other people. But in the present situation—where you have honoured me by writing, on behalf of the incomparable Queen whose court you are attending, that she would like me to write down for her my views on the supreme good—neither of those reasons applies, because **(b)** her wish does authorise me, and **(a)** I hope that what I write will be seen only by Her Majesty and by you. I so ardently desire to obey her that, far from holding back, I would like to be able to cram into one letter everything I have ever thought on this topic. In fact, in the letter I ventured to write her I to put in so much that I'm afraid I haven't explained anything well enough. To make up for this fault, however, I'm sending you a collection of other letters in which I have explained these matters at greater length. I have also included. . . a little treatise on the passions, because they are what we must primarily try to be acquainted with if we are to attain the supreme good as I have described it. If I had gone so far as to include the replies I had the honour of receiving from the Princess [Elisabeth of Bohemia] to whom those letters were written I could have sent you a more complete collection—and I could have added another two or three of my letters, ones that aren't intelligible without hers. But for that I'd have needed to get her permission, and she is now quite far from here.

By sending letters that I have written to a third person instead of writing to Her Majesty what I judge she will find agreeable, perhaps I'm not showing the respect and

eneration that I owe to her. Because I fear that that may be so, I ask you not to present this collection to the Queen straight away. But if you think it proper to speak to her about them, saying that I sent them to you, and if she then wants to see them, my worries about this will be removed. I think she may find it more agreeable to see what I have written for someone else than to see something addressed to her; for she may then be sure that I haven't changed or concealed anything for her sake. But I beg you, if possible, to see that these writings don't fall into other hands.

⊕ [4.xii.47: Brasset writes to Descartes, giving a kind of running commentary on various events, mostly illnesses but also one miracle.]

to Mersenne, 13.xii.1647:

It is already some time since Huygens sent me the publication by Pascal—for which I must thank the author, since it was sent to me at his request. In it he seems to want to attack my subtle matter, and I wish him well in this, but beg him •not to forget to advance all his best arguments on this subject, and •not to be upset if in due course I defend myself by expounding all the points that I believe to be relevant.

You ask me to write something on the experiments with mercury, but you don't tell me what they are, leaving me to guess! But I mustn't take the risk of guessing: if I get it right, people might think that I had done the experiment here; and if I guessed wrongly, they would have a poorer opinion of me. But I'll be grateful if you would give me a plain account of everything you have observed, and if eventually I use these observations, I shan't forget to say whom I got them from

I had advised Pascal to do an experiment to see whether the mercury rises as high at the top of a mountain as at its foot, and I don't know whether he has done it. But to enable you and me to know whether a change in the weather or

place has any effect on the result [i.e. on how high the mercury rises], I'm sending you a long piece of ruled paper marked up as a scale, and am keeping an exactly similar piece here, so that we can record our observations and see whether they agree. Please try to observe the point on this scale that the mercury rises to when the weather is cold and when it is hot, when the wind blows from the north and when from the south. To enable you to know if there is any difference, and to encourage you to tell me plainly what you observe, I shall tell you that last Monday the height of the mercury was exactly 2' 3" on this scale, and yesterday (Thursday) it was a bit above 2' 4"; but today it came down quite a lot. To make these observations I keep a tube fastened in the same place day and night. I can't see any reason for us to rush into publishing our findings; it would be better to wait till Pascal's book is published.

I would also like you to try to light a fire in your 'vacuum', and observe whether the smoke goes up or down and what shape the flame is. You can perform this experiment by suspending a bit of sulphur or camphor at the end of a thread in the vacuum, and lighting it through the glass with a burning mirror or a burning glass. I can't do it here because the sun isn't hot enough. . . .

I'm surprised that you (like Pascal) have kept quiet about this experiment for four years, without ever reporting anything about it to me or telling me that you had begun it before this summer. For as soon as you told me about it, I reckoned that it was important, and that it could strongly confirm what I have written on physics.

⊕ [xii.47: Descartes writes to Hogelande, sending his just-completed 'Notes Against a Certain Broadsheet' and asking for Hogelande's judgment on them. The broadsheet had appeared anonymously, but Descartes knew that its author was Regius.]

⊕ [31.i and 7.ii.48: Descartes writes to Mersenne about various aspects of the experiments (with a tube containing mercury) conducted by the ‘protectors of the vacuum’.]

⊕ [7.ii.48: Descartes writes to Pollot: sorry to have missed connecting with him in The Hague and looking forward to their meeting in Paris; also, remarks about the Utrecht University affair.]

⊕ [21.ii.48: Descartes writes to the Curators of the University of Leiden defending one of their teachers who has been badly treated by the University because of his support for Descartes’s works.]

⊕ [21.ii.48: Descartes writes to Chanut, ecstatic at the thought of Queen Christina’s interest, anxious to know her opinion of the things of Descartes’s that she reads, and enjoying the thought that by helping her develop her mind Descartes may be helping the world, in which she is ‘one of the most important people’. Also some complaints and regrets.]

to Cavendish iii or iv 1648:

[This letter opens with thanks to Cavendish for his part in bringing it about that Descartes had been promised a pension by the French government. Then lavish declarations of friendship etc., after which Descartes answers two questions that Cavendish had put to him:]

(1) I hold that there’s a certain quantity of motion in the created material world as a whole, a quantity that doesn’t grow or shrink; so that when body *x* makes body *y* move, *x* loses as much motion as it gives to *y*. If a rock falls to the earth and doesn’t bounce, I take this to come from the rock’s passing all its motion on to the earth when it disturbs it. But if the earth that *x* moves contains a thousand times more matter than *x* does, *x* transfers to it only a thousandth of its speed. So if two unequal bodies each receive the same amount of motion, this quantity of motion gives less speed to the larger than it does to the smaller; so it can be said in

this sense that the more matter a body contains, the more natural inertia it has. Also: A large body can transfer its motion more easily to other bodies than a small one can, and can less easily be moved by them. So there’s one sort of inertia that depends on the quantity of the matter and another that depends on the area of the surfaces. [•This relies on tying *size* to *area of surfaces*. •Descartes doesn’t explain is how bodies of the same size can contain different quantities of matter.]

(2) Your other question, about the nature of our knowledge of God in the beatific vision, is a topic far away from any of my usual areas of study. Anyway, it seems to me that you have given a good answer to it yourself. You say that this knowledge is intuitive, ‘though you don’t use that word’, and that that’s what marks it off from our present knowledge of God. Perhaps your position is this:

The term ‘intuitive’ doesn’t capture what’s special in the beatific knowledge of God. If we come to have intuitive knowledge of God, it will be on a par with our actual knowledge of him, differing only in *how much* is known and not in the ‘basic’ *kind* of knowledge.

If that is your view, then in my opinion that’s where you go wrong. Intuitive knowledge is an illumination of the mind, by which it sees in the light of God whatever it pleases him to show it by a direct shining of the divine brilliance on our understanding, which in this is not considered as actively *doing* anything but simply as ‘passively’ receiving the rays of divinity. Whatever we can know of God in this life, short of a miracle, is the result of reasoning and discursive inquiry. It has only two sources: •the principles of ‘our’ faith, which is obscure; and •the ideas and notions we naturally have, which even at their clearest are only gross and confused ways of thinking about God. Consequently, whatever knowledge we have or acquire by way of reason is •as dark as the principles from which it is derived and •infected with the uncertainty

we find in all our reasonings.

Now compare these two kinds of knowledge to see if there is any similarity between •such a troubled and doubtful perception that costs us much labour and is enjoyed only momentarily once acquired and •a pure, constant, bright, certain, effortless and ever-present light.

Can you doubt that our mind, when it is detached from the body, or has a glorified body that will no longer hinder it, can receive such direct illumination and knowledge? Even in our present body the senses give it such knowledge of corporeal and sensible things, and our mind already has some direct knowledge of the beneficence of its creator without which it wouldn't be capable of reasoning. I agree that the latter knowledge is somewhat obscured by the mind's mingling with the body; but still it gives us a primary, unearned and certain awareness that we touch with our mind with more confidence than we give to the testimony of our eyes. You will surely admit that you're less certain of the presence of the objects you see than of the truth of the proposition 'I am thinking, therefore I exist'. Now this knowledge isn't the work of your reasoning or information passed on to you by teachers; it is something that your mind sees, feels and handles; and although your imagination pushes into your thoughts and lessens the vividness of this knowledge by trying to clothe it with shapes, it is nevertheless a proof of our soul's capacity for receiving intuitive knowledge from God.

Your doubt seems to come from your view that an intuitive knowledge of God is one in which we know God by himself. On this foundation you have built the following argument:

•I know that God is unique, because I know that he is a necessary being;

and

•this form of knowledge uses nothing but God himself;

therefore

•I know by God himself that God is unique;
and consequently

•I know intuitively that God is unique.

It doesn't take much work to dismantle this line of thought. **(i)** Knowing God by himself, i.e. by his directly flooding our mind with light (which is what 'intuitive knowledge' ordinarily means), is quite different from. . . **(ii)** using your natural knowledge of one of God's attributes to construct an argument leading to another. (Remember that the knowledge of kind **(ii)**, just by being natural, is a rather dark affair, at least in comparison with knowledge of kind **(i)**.) So you must admit that in this life your belief that God is unique is not •something you see, *in God and by his light*, but •something based on a proposition you have made about him, inferred from it by the power of argument, which is a machine that often breaks down.

⊕ [4.iv.48: Descartes writes to Mersenne: the reported results of Mersenne's experiments with mercury/vacuum' etc. don't surprise Descartes, who thinks they can all be explained on his principles; he is angry at Mersenne's asking him to comment on the latest attack on his geometry, an attack by Schooten with Roberval in the background. Descartes declines to read Schooten and repair his errors 'because if I started correcting his work I couldn't help making it clearer than it is, and I don't want to do that.']

[Descartes's Conversation with Burman is included by AT and CSMK at this point, because it occurred on 30.iv.1648. It can be found as a separate item on the website from which the present text came.]

⊕ [v.48: Descartes writes to Chanut from Paris, expressing anxiety about Queen Christina's having read something by Descartes and not yet expressed any opinion of it to Chanut. He is encouraged by the news that she plans to re-read it. If Chanut thinks he is unduly concerned about this, Descartes says, 'blame it on the Paris air', which must be bad

for people's intellects because people there are awash in error. 'I can't wait to get out of this place and back to my rural solitude.']

⊕ [3.vi.48: Arnauld writes to Descartes, six pages of Latin, following up on some of his published Objections to the *Meditations*. Things he says that Descartes replies in the next letter, are as follows. (This material is partly gathered from CSMK and Alquié's edition of Descartes's works, vol. 3, footnotes on page 855.) **(1)** Because an infant has no pre-judgments = prejudices, it can have ideas that are vivid and clear. It's surprising that it doesn't as an adult recall these by an act of intellectual memory. **(2)** It isn't necessary that the soul always thinks. All that is necessary is that it always has the ability to think, just as a body always has the ability to be divided but isn't always divided. **(3)** Descartes's treatment of the duration of the soul is wrong; the duration of a spiritual being is not successive. **(4)** A challenge to Descartes's use of the thesis that a thing that is capable of doing *x* is capable of doing things that are less than *x*. **(5)** A question about *where* the body of Christ is in the Eucharist. **(6)** Challenging Descartes's denial of the possibility of empty space: given a barrel full of wine, God could annihilate the wine while not allowing any other changes, and in that case the barrel would have a concavity, a vacuum.]

for Arnauld, 4.vi.1648:

The author of the objections that reached me yesterday has chosen to conceal his person and his name: but the better part of him, his mind, cannot remain unknown. This I find to be acute and learned, so that I shall not be ashamed to be worsted in argument or to learn from him. But because he says that he is moved by desire to discover the truth, and not by zeal for disputation, I shall reply to him here only briefly, and save some things for discussion face to face. In my experience it's safer to deal with argumentative people by letter, but pleasanter to deal with seekers of truth by word of mouth.

(1) I agree that there are two sorts of memory; but I'm convinced that infants have never had any pure conceptions but only confused sensations. These leave in the brain traces that remain there for life; but those don't suffice to enable us to observe that the sensations that come to us as adults are like the ones we had in our mother's womb, because that would involve *remembering* the ones we had in the womb, and that in turn would require a certain reflective act of the intellect—a certain intellectual memory—which wasn't in use in the womb.

(2) It seems necessary that the mind should always be actually engaged in thinking; because thought constitutes its essence, just as extension constitutes the essence of a body. Thought isn't conceived as an attribute that can be present in or absent from the mind, in the way that division of parts and motion can be present in or absent from a body.

(3) What is said here about duration and time rests on a scholastic opinion that I strongly disagree with, namely that the duration of motion is of a different kind from that of motionless things. I have explained this in *Principles* 1:47. Even if no bodies existed, it still couldn't be said that the duration of the human mind is entirely simultaneous, like the duration of God; because our thoughts display a successiveness that can't be found in the divine thoughts. We clearly understand that it is possible for me to exist at this moment, while I am thinking of one thing, and yet not to exist at the very next moment, when, if I do exist, I may think of something quite different.

[That last sentence is puzzling at first, but can be understood. Descartes is stressing the *successive* nature of minds, as follows. My mind thinks of mountains at t_1 and of rivers at t_2 , and the status of these times as different periods in the history of mind is reinforced by the obvious fact that my mind could exist at t_1 and not exist at t_2 .]

(4) The axiom ‘Anything that can do the greater can do the lesser’ seems to be self-evident in the case of first causes that are not otherwise limited; but in the case of a cause determined to a particular effect we commonly say that it is a greater thing for it to produce some effect other than that to which it is determined and adapted. In that sense it is a greater thing for a man to •move the earth than to •perform an act of understanding. It is also a greater thing for a man to keep himself in existence than to give himself some of the perfections he perceives that he lacks; and this is enough to validate the argument, although it may well be less than to give oneself omnipotence and the other divine perfections.

(5) Since the Council of Trent itself was unwilling to explain how the body of Christ is in the Eucharist, and wrote that it was there ‘in a manner of existing that we can scarcely express in words’, I shan’t risk reaching any •conclusion about this for fear of being accused of rashness; and such •conjectures as I make I would prefer to communicate by word of mouth rather than in writing.

(6) I have hardly anything to say about vacuum that isn’t already to be found in my *Principles of Philosophy*. What you call the ‘concavity’ in the barrel, and explain in terms of the sides of the barrel as though it weren’t anything different from them, seems to me to be a body with three dimensions •within the barrel.

But all these things can be more easily discussed at a meeting, which I would gladly arrange, being the most respectful servant of all men who love honesty and truth.

⊕ [vi or vii.48: Descartes writes to Mersenne, reluctantly commenting, at Mersenne’s request, on a recent publication by Roberval. He says that the part he was urged to read is partly absurd and for the rest stolen from Descartes.]

⊕ [vii.48: Arnauld writes to Descartes, explaining that he isn’t in Paris (where Descartes currently is, so that the hoped-for conversation can’t take place (see Descartes’s letter of 4.vi.48). He devotes three pages of Latin replying to some of Descartes’s points.]

for Arnauld, 29.vii.1648:

Recently I was given some objections that appeared to come from an inhabitant of this city [Paris]. I answered them briefly, thinking that any omission could easily be remedied in conversation. But now that I realise the writer lives elsewhere, I hasten to reply to his second most courteous letter. . . .

(1) It seems to me very true that the mind, as long as it is united to the body, can’t withdraw itself from the senses when it is stimulated with great force by external or internal objects. I add that it can’t withdraw itself •from the senses •whenever it •is attached to a brain that is too soft or damp, as in children, or •is otherwise in poor condition, as in those who are lethargic, apoplectic or frenetic, or as in all of us when we are deeply asleep. . . .

(2) [In the course of this next paragraph and the one following it, Descartes silently moves from A to B to C:

A: ‘M recognises that x has occurred to it earlier’

B: ‘M recognises that x has earlier occurred to it for the first time’,

C: ‘At some earlier time M recognised that x was occurring to it for the first time’.

Read carefully and you’ll see it happening.] If we are to remember something, what is needed is not only •for the thing to have been before our mind previously and to have left some traces in the brain that prompt it to occur in our thought again, but also •for us to [A] recognise, when it occurs the second time, that this is happening because it has already been perceived by us earlier. Thus poets often think of verses that •they don’t remember having read in other authors but that

•wouldn't have occurred to them unless they had read them elsewhere.

For memory to occur, therefore, there must be in the brain traces of preceding thoughts, traces that the mind [B] recognises as not having always been present to it but as having earlier been impressed on the mind for the first time. Now for •the mind to recognise this, I think that when these traces were first made •it must have used pure intellect—i.e. thinking that owed nothing to the mind's attachment to a body—to [C] be aware that the thing then being presented to it was new and hadn't been presented before; for there can't be any corporeal trace of this novelty. Consequently, if I wrote somewhere that children's thoughts of leave no *traces* in their brain, I meant *traces sufficient for memory*, i.e. *traces that were, at the time they first occurred, observed by pure intellect to be new*. Compare that with this: We could say 'There are no human tracks on this beach' on the grounds that the sand shows no unevennesses made by human feet; but what we would ordinarily mean is that this sand shows no impressions shaped like a human foot. Finally, just as we distinguish •direct vision (depending on the first impact of the sun's rays) from •reflective vision (depending on the second impact), I also distinguish •direct thoughts from •reflective thoughts. The first, simple thoughts of infants are *direct* in my sense—I mean such mental events as the pain they feel from wind in their intestines, or the pleasure they feel when nourished agreeably. But when an adult feels something and simultaneously perceives that he hasn't felt it before, I call this second perception *reflection*, and attribute it to the intellect alone, in spite of its being so linked to sensation that the two occur together and appear to be indistinguishable from each other.

(3) I tried to remove the ambiguity of the word 'thought' in *Principles* 1:63–64. Just as extension, which constitutes

the nature of body, differs greatly from the various shapes or modes of extension that it assumes, so thought—i.e. the thinking nature—which I hold constitutes the essence of the human mind, is very different from any particular act of thinking. It's up to the mind to decide whether to produce this or that particular act of thinking, but it doesn't decide whether to be a thinking thing; just as what goes on in a flame determines its shape and size etc. but doesn't determine whether it is an extended thing. So by 'thought' I don't mean some universal that includes all modes of thinking, but a particular nature that takes on those modes, just as extension is a nature that takes on all shapes.

(4) Being conscious of our thoughts •when we are thinking is not the same as remembering them •later. Thus, we don't have any thoughts in sleep without being conscious of them when they occur, though we usually forget them immediately. We aren't conscious of *how* our mind sends the animal spirits into particular nerves, because that depends not on the mind alone but on its union with the body. We are conscious, though, of every action by which the mind moves the nerves, in so far as such action is in the mind, where it is simply the inclination of the will towards a particular •bodily• movement. This inclination of the will is followed by everything needed for the flow of the spirits into the nerves, and then by the flow itself. This happens because of **(a)** the appropriate way the body is constructed and **(b)** the union of the mind with the body. The mind may not be aware of **(a)**, but it is certainly conscious of **(b)**—if it weren't, it wouldn't incline its will to move the limbs.

That the incorporeal mind can set the body in motion is shown to us not by any reasoning or comparison with other matters, but by the surest and plainest everyday experience. It's one of those self-evident things that we only make obscure when we try to explain them in terms

of other things. Still, here is a comparison. ·It doesn't aim to show how our minds moves our bodies, but merely to show that plenty of other philosophers are not in a position to mock or criticise us for not being able to say how this is done.· Most of the philosophers who think that a stone's heaviness is a real quality [see Glossary] distinct from the stone also think they understand well enough how this quality can impel the stone towards the centre of the earth, because they think they have a manifest experience of such an occurrence. I, however, am convinced that there is no such quality in nature, and that consequently there is no real idea of it in the human intellect; and I think that in order to represent this heaviness to themselves they are using the idea they have within them of an **incorporeal substance**. So it's no harder for us to understand how the mind moves the body than it is for them to understand how such heaviness moves a stone downwards. Of course they deny that heaviness is a **substance**, but in fact they conceive it as a substance because they think that it is real [= thing-like] and that God could make a stone's heaviness exist without the stone. And they would deny that heaviness is **incorporeal**, regarding it as corporeal because it relates to a body although it isn't of the same nature as body; but by that standard the mind can be called 'corporeal' on the strength of its union with the body! In fact we don't count anything as corporeal unless it has the nature of body, and by that standard this heaviness is no more corporeal than the human mind is.

(5) I understand the successive duration of things in motion, and of the motion itself, in the same way that I understand the duration of things that are not in motion. What I know of earlier and later in *any* duration comes from the earlier and later of the successive duration that I detect in my own thought, with which the other things co-exist.

(6) The difficulty in recognising the impossibility of a vacuum seems to arise primarily from our not sufficiently considering that *nothing can have no properties*. If we bore that in mind then, seeing that there is true extension—and thus all the properties necessary for the nature of body—in the space we call 'empty', we wouldn't say that it is wholly empty, i.e. is a mere nothing. Another source of the difficulty is our way of appealing to divine power: knowing this power to be infinite, we attribute an effect to it without noticing that it involves a contradictory conception, i.e. is inconceivable by us. But ·I am not saying that because something is impossible, God couldn't make it happen·. I don't think that we should ever say of anything that it can't be brought about by God. For since every basis of truth and goodness depends on his omnipotence, I wouldn't risk saying that God can't make an uphill without a downhill, or bring it about that $1 + 2 \neq 3$. I merely say that he has given me a mind such that I can't conceive an uphill without a downhill, or a sum of 1 and 2 that is not 3; such things involve a contradiction in my conception. I think the same should be said of a wholly empty space, i.e. an extended nothing; and of a ·spatially· limited universe, because no limit to the world can be imagined without its being understood that there's extension beyond it; just as no barrel can be conceived to be so empty that it has inside it no extension and therefore no body, for wherever extension is, there must body be also.

⊕ [6.ix.48: Descartes writes to Picot. We don't have this letter, but are told a little about its contents. Mersenne had died on 1.ix.48, but news of that couldn't have reached Amsterdam (where Descartes is at the time of this letter) in a mere five days.]

to Pollot, 1648:

[Both AT and CSMK offer the *guess* that this letter is written to Pollot. The addressee is a military man who has wondered whether his poor health should lead him to retire early from the military, and asked for Descartes's advice. The advice was 'Don't do it', though said less plainly than that; Pollot (if that's who it was) replied, and Descartes is now acknowledging that.]

I am glad you weren't displeased that I took the liberty of giving you my opinion; and I'm obliged to you for indicating that you mean to follow it, even though you have reasons for not doing so—reasons that I admit are very strong. For I don't doubt that your mind could provide you with better things to occupy you than the world's conflicts. Custom and example have given the profession of arms the reputation of being the noblest of all; but for myself, considering the matter as a philosopher, I accord it only the value it deserves, and indeed find it difficult to count it as one of the honourable professions, seeing that the main motives that lead most men to take it up are idleness and debauchery. So I would be exceedingly sorry if things turned out badly for you. In any case, I acknowledge that a man with an illness ought to regard himself as older than other men, and it's better to retire when one is winning than when one is losing. But in the 'game' we are talking about I don't think there is any risk of *losing*, but only of *not winning*; and it seems to me that one needn't retire from it until one is no longer winning. I have met plenty of old men who have told me that in their youth they were less healthy than other men who had died before them; so it seems to me that whatever weakness or ill-health we may suffer, we ought to live our lives and perform our tasks in the way we would if we were certain to reach a ripe old age. But on the other hand, however energetic or healthy we may be, we ought also to be prepared

to meet death without regret when it comes, because it may come at any time, and *anything* we do may cause it—we eat a piece of bread that may be poisoned, we walk down the street and may be flattened by a falling roof-tile, and so on. Accordingly, since we are surrounded by so many unavoidable hazards, it seems to me that wisdom doesn't forbid us to expose ourselves to the hazards of war when obliged by a fine and just cause—provided that it doesn't involve downright rashness, and provided that

the next clause: *nous ne refusons de porter des armes à l'épreuve, autant qu'il se peut.*

which means: we do not refuse to put our arms to the test so far as we can.

what Descartes is getting at: ??

In fact, I believe •that the occupations we are obliged to undertake by some duty don't make us think about difficulties and risks any more than do the pastimes we choose for ourselves, however agreeable they may be; and •that our body becomes so used to the style of life we lead that when we change this style our health usually worsens rather than improves, especially when the change is too sudden. That is why I think it best to pass from one extreme to another only gradually. In my case, before coming to this country in search of solitude I spent a winter in France, in the district where I had received my early education. And if I were leading a style of life that my indisposition didn't allow me to continue for a long time, I wouldn't try to hide this indisposition; instead I would try to make it seem greater than it was, thus enabling me to avoid, openly, any activity that might make it worse. And so, by increasing my leisure-time little by little, I would gradually achieve complete freedom.

⊕ [11.xii.48: More writes to Descartes, on topics that can be gathered from Descartes's reply of 5.ii.49.]

⊕ [12.xii.48: Queen Christina writes to Descartes, thanking him for his letter of 20.xi.47 and for *Passions of the Soul*, which have confirmed the good things Chanut has said to her about Descartes.]

⊕ [12.xii.48: Chanut writes to Descartes, reporting that Queen Christina has engaged the services of a 'learned and honest' member of her court to study Descartes's philosophy and then help her in her reading of it. He suspects that she may have thoughts of inviting Descartes to Sweden.]

⊕ [1648 or 1649: Descartes writes to * * *, a correspondent who has asked about the movements of the planets and the moon, and about Descartes's work in animal anatomy. Descartes gives two pages to the first topic, and says that he is starting afresh on the second. After a period of pessimism about it, he says, 'I am now almost certain that I can complete my entire physical science provided I get the free time and the means needed to perform certain experiments.']

⊕ [1648: Descartes writes to Huygens, asking him to intervene with the Prince of Orange on behalf of 'a poor peasant in my neighbourhood who has had the misfortune to kill someone', specifically his step-father who was a wife-beater. Rigorous punishment of crimes is a good thing, Descartes says, but 'our passions aren't always in our power and may drive a good man to do something very bad'; and in those cases mercy should trump the law.]

to More, 5.ii.1649:

The praises you heap on me are proof of your kindness rather than of my merit, which could never equal them. But such generosity, based on the mere reading of my writings, shows so clearly the candour and nobility of your mind that although we have never met I am entirely *yours*. So I'll willingly respond to your comments.

(1) Why did I define *body* as 'extended substance' rather than 'perceptible, tangible or impenetrable substance'? Because putting 'perceptible' into the definition would be defining *body* by its relation to our senses—i.e. in terms of •one of its properties rather than •its whole nature. This nature doesn't depend on our senses, because there could be bodies even if there were no men. I don't see why you say that all matter must be perceptible by the senses. On the contrary: any portion of matter can be made completely imperceptible by being divided into fast-moving parts that are much smaller than the particles of our nerves.

You describe as 'cunning and almost sophisticated' my argument showing that extension is the *whole* essence of matter. I used that argument only to refute the opinion of those who hold, as you do, that every body is perceptible by the senses; and I think it does clearly and conclusively refute that view. For a body can retain its whole bodily nature without being soft or hard or cold or hot to the senses—indeed without having any perceptible quality.

[Descartes continues on this topic for a further (extremely obscure) paragraph. Then:]

Let us see next whether body is more appropriately called 'impenetrable or tangible substance', in the sense you explained.

Now tangibility or impenetrability in body is like the ability to laugh in man. . . .—not a true and essential property such as I claim extension to be. Consequently, just as •*man* is defined not as 'an animal capable of laughter' but as 'a rational animal', so •*body* should be defined not by impenetrability but by extension. This is confirmed by the fact that tangibility and impenetrability involve a reference to parts and presuppose the concept of division or limitation; whereas we can conceive a body that is

•continuous, and thus has no parts, and

•indefinitely large, and thus has no limits;
and this would be a body in which there's nothing to consider
but extension.

'But', you say, 'God, or an angel, or any other self-
subsistent thing is extended; so your definition is too broad.'
I don't usually argue about words; so if someone wants to say
that God is in a sense 'extended' because he is everywhere, I
won't object. But I deny that

God or
angels or
our mind or
any substance that isn't a body

is 'extended' in the ordinary meaning of that word, because
when people talk of an extended being they mean something
imaginable. In this being—never mind whether it's a real
being or a conceptual fiction—they can distinguish by the
imagination various distinct parts with definite sizes and
shapes. Some of these parts can be imagined as moved
into the location of others, but no two can be imagined as
simultaneously in a single place. None of this can be said
about God or about our mind; they can't be grasped by
the imagination, but only by the intellect; and they can't
be distinguished into parts, let alone parts with definite
sizes and shapes. Again, we easily understand that the
human mind and God and several angels can all be at
the same time in one and the same place. So we clearly
conclude that no incorporeal substances are in the strict
sense 'extended'. I conceive them as sorts of powers or
forces that can act on extended things but aren't themselves
extended—just as fire is in red-hot iron without itself being
iron. Why do some people confuse the notion of *substance*
with that of *extended thing*? Because of their false prejudice
that nothing can exist or be intelligible without being also
imaginable, and because it is indeed true that nothing falls

within reach of the imagination without being in some way
extended. Now just as we can say that health belongs only to
human beings, though by analogy medicine and a temperate
climate and many other things also are called 'healthy', so
too I call 'extended' only what is imaginable as having parts
lying outside one another, each with a definite size and
shape—though other things are also called 'extended' by
analogy.

(2) About this extended being that I described: if we
examine what it *is* we'll find that it is space—the space
that is popularly regarded as full in some places and empty
in others, as real in some places and imaginary in others.
[That's because some philosophers held that if the world is spatially
finite then the space outside it is 'imaginary'.] For in a space—even
an imaginary and empty space—everyone easily imagines
various parts with definite sizes and shapes; and some of
the parts can be transferred in imagination to the location of
others, but no two of them can be conceived as penetrating
each other at the same time in the very same location, since it
is contradictory for this to happen without some part of space
being removed. Now, because I considered that such real
properties could exist only in a real body, I boldly asserted
that there can be no completely empty space, and that every
extended being is a genuine body. I wasn't deterred by the
fact that this view put me at odds with great men such
as Epicurus, Democritus and Lucretius, because I saw that
what guided them was not any solid reason but rather a false
preconception that we were all taught in our earliest years.
Our senses don't always show us external bodies exactly as
they are, but only in so far as they are related to us and can
benefit or harm us (I warned of this in *Principles* 2:3). Despite
this, we as children all decided that there's nothing in the
world except what the senses show us, so there are no bodies
that aren't perceivable by the senses, and if we don't perceive

anything in a certain location, that's because it is empty. Since Epicurus, Democritus and Lucretius never overcame this ·childish· prejudice [see Glossary], I'm not obliged to follow their authority.

I'm surprised that a man as sharp as you are, having seen that he can't deny that there is some •substance in every space because all the •properties of extension are truly found in it, avoids concluding that there can't be space without body by saying that there is space in which there are no bodies and that they are filled with the divine extension. For as I said earlier, the alleged extension of God can't have the genuine properties that we perceive very distinctly in all space: God can't be imagined or distinguished into parts that are measurable and have shape.

But you're quite ready to admit that vacuum never occurs *naturally*; you are concerned about God's power, which you think can annihilate the contents of a container while preventing its sides from meeting. Well, I know that my finite intellect can't set limits to God's infinite power; so the only question I can consider here is 'Can I conceive this?', and I'm careful to ensure that my judgements square with my conception. So I assert outright that God can do anything that I conceive to be possible, but I'm not so rash as to assert the converse, namely that he cannot do what conflicts with my conception of things—I merely say that it involves a contradiction. Now, seeing that it conflicts with my way of conceiving things for all body to be taken out of a container and for there to remain an extension which I conceive exactly as I previously conceived the body contained in it, I say that it involves a contradiction that such an extension should remain there after the body has been taken away, from which I infer that the sides of the container must come together. . . .

(3) In the same way I say that it involves a contradiction that there should be any atoms that are conceived as both

extended and indivisible. God might make them such that no created thing could divide them, but we can't make sense of the suggestion that he might deprive himself of the power to divide them! Your comparison with things that have been done and can't be undone is not to the point. For we don't take it as a mark of impotence when someone can't do something that we don't understand to be possible, but only when he can't do something that we distinctly conceive to be possible. Now we certainly conceive it to be possible for an atom to be divided, since we suppose it to be extended; so if we judge that it can't be divided by God we'll be judging that God can't do one of the things that we conceive to be possible. But we don't in that way conceive it to be possible for what is done to be undone—on the contrary, we conceive it to be altogether impossible, so that it's no defect of power in God not to do it. It's different with the divisibility of matter: though I can't count all the parts into which a portion of matter is divisible (which is why I say they are indefinitely numerous), I can't assert that their division by God could never be completed, because I know that God can do more things than I can get my thought around. Indeed I agreed in *Principles* 2:34 that such indefinite division of certain parts of matter sometimes actually takes place.

(4) When I say that some things are indefinite rather than infinite, this isn't a display of modesty [as More suggested] but an upshot of necessary caution. The only thing I positively understand to be infinite is God. As for other things like these:

- the world's extent,
- the number of parts a lump of matter can be divided into,

I admit that I don't know whether they are outright infinite; I merely know that I know no end to them, and on that basis I call them 'indefinite'.

Our mind is not the measure of reality or of truth, but it should be the measure of what we assert or deny. What is more absurd or thoughtless than to make judgements about matters that we admit our mind can't conceive? I'm surprised to see you doing this when you •say 'If extension is infinite only in relation to us then it will in fact be finite' and •imagine some divine extent that stretches wider than the extent of the material world. That •fantasy about God's *size* involves you in supposing God has parts lying outside one another, and is divisible, and indeed in attributing to him all the essence of a corporeal thing.

To remove any worries that you may still have about this, let me explain that in calling the extent of the material world 'indefinite' I'm trying to block the fiction that there's a place outside the material world into which bits of material things might escape; that's a fiction, I maintain, because wherever such a place is conceived, there is some matter. When I say that the material world is 'indefinitely extended', I'm saying that it extends further than anything a human being can conceive.

Nevertheless, I think that the vastness of •this bodily extent is very different from the vastness of •the divine substance or essence; so I call the latter simply 'infinite', and the former 'indefinite'. (Note that I don't speak of the vastness of the divine *extent*, because God isn't extended.)

It's kind of you to concede that the rest of my opinions could stand even if what I have written about the extent of the material world were refuted; but I don't agree, because my view about the extent of the material world is one of the most important—and, I believe, one of the most certain—foundations of my physics; and I confess that no reasons satisfy me even in physics unless •they can be known by experience alone (e.g. that there is only one sun, and only one moon around the earth) or •they involve the kind of

necessity that you call 'logical', i.e. the kind where Q follows necessarily from P because *P and not-Q* is not just false but self-contradictory. Since you are well disposed to my other views, I hope that you'll come to agree with these too, if you reflect that it's a mere prejudice that makes many people think that •an extended being in which there's nothing to affect the senses is not a true corporeal substance but merely an empty space, and that •all bodies are perceivable by the senses, and that •every substance falls within the reach of the imagination and is consequently extended.

(5) But there's no prejudice that we are all more accustomed to from our earliest years than the belief that dumb animals think.

Why do we think this? It's because we see that many of the animals' organs are quite like ours in shape and movements. Since we believe that there's a single principle within us that causes these movements—namely the soul, which both moves the body and thinks—we confidently assume that animals also have some such soul. I came to realise, however, that two different principles are causing our movements: (i) a purely mechanical and corporeal principle that depends solely on the force of the spirits and the structure of our organs, and can be called 'the corporeal soul'; (ii) an incorporeal principle, the mind or soul that I have defined as a thinking substance. So I investigated carefully whether the movements of animals originated from both these principles or from one only. I soon saw clearly that they could all originate from (i) the corporeal and mechanical principle, and I regarded it as certain and demonstrated that we can't prove the presence of (ii) a thinking soul in animals. I'm not shaken by the cunning of dogs and foxes, or by all the things animals do when they are drawn by food or sex or driven by fear. I can easily explain them all as originating from the structure of the animals' bodily parts.

But though I regard it as established that we can't prove there is any thought in animals, I don't think we can prove that there isn't, since the human mind doesn't reach into their hearts. But when I investigate what is most probable in this matter, the only argument I can find for animals having thoughts is this one: since they have eyes, ears, tongues and other sense-organs like ours, it seems likely that they have sensation like us; and since our kind of sensation includes thought, it seems that similar thought is attributable to the animals. This very obvious argument has taken possession of the minds of all men from their earliest age. But there are other arguments, stronger and more numerous though not so obvious to everyone, which strongly urge the opposite. One is that it is more probable that worms, flies, caterpillars and other animals move like machines than that they all have immortal souls.

It is certain that in the bodies of animals, as in ours, there are bones, nerves, muscles, animal spirits and other body-parts so arranged that they can by themselves, without any thought, give rise to all the movements we observe in animals. This is very clear in convulsions, when the mechanism of the body moves despite the mind, and often moves more vigorously and in a more varied manner than usually happens when it is moved by the will.

Second, since art copies nature, and people can make various automata that move without thought, it seems reasonable that nature should produce its own automata, much more splendid than artificial ones—namely the animals. This is especially likely since we know no reason why thought should always accompany the sort of bodily structure that we find in animals. That no animal contains a mind isn't as astonishing as the fact that every human body contains one.

But of all the reasons for holding that animals lack thought the main one, in my opinion, is the following. Within

a single species, including our own, some individuals are more perfect than others; you can see this in horses and dogs, some of which learn what they are taught much better than others; and all animals easily communicate to us their natural impulses of anger, fear, hunger, etc., doing this by sounds and movements. Yet it has never been observed that any brute animal has attained the perfection of using real speech, i.e. of indicating by sound or gesture something relating solely to •thought and not to •natural impulse. Speech is the only certain sign of thought hidden in a body. All human beings use it, however stupid or insensate they may be, even if they have no tongue or vocal organs; but no animals do. So this can be taken as a real specific difference between humans and animals.

For brevity's sake I omit the other reasons for denying thought to animals. Please note that I'm speaking of thought, and not of life or sensation. I don't deny life to animals, since I regard life as consisting simply in the heat of the heart; and I don't deny sensation, in so far as that depends on a part of the body. Thus my opinion is not as hard on animals as it is kind to human beings—at least to those who aren't given to the superstitions of Pythagoras—because it clears them from even a suspicion of crime when they eat or kill animals. . . .

to Chanut, 26.ii.1649:

[The opening paragraph is a flowery encomium for Queen Christina of Sweden. Then:] Although the letter which that matchless Princess [see Glossary] condescended to write to me came as an altogether undeserved favour, and although I'm surprised that she should take the trouble to write it, I am not so surprised that she took the trouble to read my *Principles*, because I'm convinced that it contains many truths that aren't easily found elsewhere. It might be said

that they're only unimportant truths in physics, apparently having nothing in common with the things a queen ought to know. But because there are no limits to the scope of her mind, and because these truths of physics are part of the foundations of the highest and most perfect morality, I allow myself to think she will get satisfaction from learning them. I would be delighted to learn that she had chosen you, in addition to Freinshemius, to help her in this study; and I would be most grateful if you would take the trouble to tell me about the places where I haven't explained myself adequately; I would always make a point of replying to each letter on the day it reaches me. But this would only be helping *me*; it is so far from here to Stockholm, and the letters go through so many hands before arriving there, that you'll have solved each difficulty for yourself before you could have had the solution from here. [AT says that a letter took five weeks to get from Stockholm to Descartes in Egmond.]

In this letter I will merely observe two or three things that experience has taught me about the *Principles*. **(a)** Though Part 1 is only an abridgement of what I wrote in my *Meditations*, a preliminary reading of that work isn't needed for understanding this one. (I mention this because many people find the *Meditations* much more difficult, and I would be afraid that Her Majesty might become bored with them.) **(b)** There's also no need to spend much time examining the rules of motion that start in II.46; they aren't needed for understanding the rest. **(c)** It must be remembered, while reading this book, that although I consider nothing in bodies except the sizes, shapes and motions of their parts, I claim to be explaining the nature of light and heat and all other sensible [see Glossary] qualities; for I take it that these qualities are only in our senses, like pleasure and pain, and not in the objects we perceive by the senses, in which there are only certain shapes and motions that cause the sensations we

call 'light', 'heat', etc. I didn't explain and prove this until the end of Part 4, but the whole book will be better understood by someone who knows it from the start.

⊕ [26.ii.49: Descartes writes to Queen Christina, rapturously exclaiming over the great favour she has done for him in sending him a question, liking the answer, and now writing to him.]

⊕ [27.ii.49: Chanut writes to Descartes, presenting an invitation from Queen Christina to visit her in Stockholm..]

⊕ [2.iii.49: Brasset writes to Descartes about the current antagonism between King and Parliament in France. He wishes that the calm of The Hague would spread to Paris, and congratulates Descartes on his prudence in getting out of Paris at the right time.]

⊕ [5.iii.49: More writes to Descartes, 18 Latin pages responding to Descartes's letter of 5.ii.49 (see page 212); this letter will be replied to—very sketchily—in Descartes's letter of 15.iv.49.]

⊕ [10.iii.49: Schooten writes to Descartes, enclosing two books, discussing the attitude to them of 'the late Father Mersenne', remarking on the difficulty of expressing a certain numerical value, and asking Descartes if he could solve 'two paradoxes' in applied arithmetic.]

⊕ [27.iii.49: Chanut writes to Descartes about Queen Christina's wishes concerning when she might see Descartes in Stockholm; she is flexible about this, and has thoughts about timing Descartes's visit to Stockholm so as to enable him to escape the rigours of the Swedish winter.]

⊕ [31.iii.49: Descartes writes to Chanut, replying to his letter of 27.ii.49, expressing more than mere gratitude for the Queen's invitation to visit Stockholm. He accepts, of course ('Her least wish is my absolute command'), but suggests a later date for the visit to start. It had been proposed that he would go quite soon, and return home at the end of the summer; but he thinks he would need longer than that to 'give much satisfaction to Her Majesty', and suggests that he arrive in mid-summer and stay throughout the winter.]

to Chanut, 31.iii.1649:

I shall give you, if I may, the trouble of reading two of my letters on this occasion. For I assume that you'll want to show the other to Queen Christina, and I have saved for this one something that I thought she needn't see—namely that I'm finding it much harder to decide about this visit than I had imagined I would. I do of course have a great desire to serve this Princess: my confidence in your words, and my admiration and esteem for the *mœurs* [see Glossary] and intellect you ascribe to her, are such that I would be willing to undertake an even longer and more arduous journey—even if she didn't occupy such an exalted place and had only a common birth—in order to have the honour of doing what I could to contribute towards the satisfaction of her wishes, as long as I had some chance of being useful to her. But experience has taught me that very few people, even ones with excellent minds and a great desire for knowledge, can spare the time to enter into my thoughts; so that I have no grounds for expecting this from a Queen who has countless other occupations. Experience has also taught me that although my views are found surprising at first because they're so different from received opinions, once they are understood they appear so simple and commonsensical that they are no longer objects of wonder or regarded as important. It's a fact about human nature: people value only things that they wonder at and don't completely possess. Health is the greatest of all the goods relating to our bodies, but it's the one we reflect on and savour least. The knowledge of truth is like the health of the soul: once a man has it, he thinks no more of it. My greatest desire is to communicate openly and freely to everyone all the little that I think I know, but I hardly ever encounter anyone who condescends to learn it. But I see that those who boast of having secrets—e.g.

in alchemy or astrology—however ignorant and impudent they may be, never fail to find curious people who buy their impostures at a high price.

I have never knowingly *waited for my luck to change*; I have tried to live in a manner that gives Fortune no power over me. This seems to have made her jealous, for she takes every opportunity she has to let me down. That's what I found in each of the three visits I have made to France since retiring to this country, but especially in the last one. The invitation was a virtual royal command. To get me to make the journey, they sent me elegantly sealed letters on parchment, containing a eulogy more extravagant than I deserve and the gift of a decent pension. And those who sent these letters from the King also wrote privately and promised me much more as soon as I arrived there. But once I was there unexpected difficulties cropped up: instead of seeing any sign of what had been promised, I found that a relative of mine had had to pay for the letters to be sent to me, and that I was obliged to pay him back. So it seems that I went to Paris only to buy a parchment—the most expensive and most useless that I have ever held in my hands. I don't mind that very much; I would have seen it simply as one of those unfortunate things that happen in public affairs, and would still have been satisfied, if I had found that my visit achieved something for those who had summoned me. But none of them (this is what most disgusted me) showed the slightest sign of wanting to know anything about me except what I look like. So I have reason to think that they wanted to have me in France like an elephant or a panther—interesting as a rare specimen but not as something that could be useful.

I don't imagine anything like that happening in the place where you are; but the poor outcome of every visit I have made in the last twenty years makes me fear that on this one I'll simply find myself being robbed by highwaymen or

involved in a shipwreck that will cost me my life. But this won't deter me if you believe that this incomparable Queen •does still want to examine my views and •can find the time to do so. If that is so, then I shall rejoice in the happiness of being able to serve her. But if it isn't so, and she merely had a passing curiosity about my views, then I beg and urge you to arrange it so that, without displeasing her, I may be excused from making this voyage.

⊕ [31.iii.49: Descartes writes to Brassset about the Swedish invitation, and about the King/Parliament trouble in France.]

⊕ [9.iv.49: Descartes writes to Schooten, replying to his letter of 10.iii.49. The numerical value Schooten had asked about is not hard to work out, but it's a long calculation (and he jokes about his shortage of pens). The two 'paradoxes' are briskly dealt with.]

to More, 15.iv.1649:

Your welcome letter of 5.iii.49 reaches me at a time when I am distracted by so much other business that I must either write in haste this very minute, or put off replying for many weeks. I have decided on haste: I would rather seem to lack skill than to lack courtesy. [This letter had cross-headings relating to parts of More's letter. Their places are marked by the bold letters **A-E**; the actual headings couldn't tell us anything unless we had More's letter in front of us, and wouldn't tell us much even then; this letter of Descartes's was obviously written in haste.]

A. (1) [More proposed defining *body* in terms of perceptibility rather than extension.] Describing a thing as 'perceptible' or 'sensible' seems to me to be giving a merely extraneous description of it—one that says how it relates to something else. And in any case 'sensible' doesn't accurately cover all and only the things it is meant to cover:

- [not all:] Understood in terms of *our* senses, it doesn't apply to the smallest particles of matter; and
- [Not only:] understood in terms of *any* senses, even ones that we might imagine God to construct, it might well apply also to angels and souls.

For •sensory nerves so fine that they could be moved by the smallest particles of matter are no more intelligible to me than •a faculty enabling our mind to sense or perceive other minds directly. Although in extension we easily understand how the parts relate to each other, it seems to me that I perceive extension perfectly well without thinking of the inter-relations of these parts. You should admit this even more readily than I do, because you conceive extension as something that God has, though you deny that he has parts.

(2) [More wrote that 'It hasn't been shown that tangibility or impenetrability are essential properties of extended substance.'] If you conceive extension in terms of the relation of the parts to each other, it seems that you can't deny that each of its parts touches its immediate neighbours. *This* tangibility is a real property, **intrinsic** to the thing that has it, unlike the tangibility that is named after the sense of touch ·and is purely **relational**·. Moreover, if you try to conceive of one part of an extended thing penetrating another equal part, you'll be forced into the thought of half the total extension being taken away or annihilated; and what is annihilated doesn't penetrate anything else! In my opinion this conclusively proves that impenetrability belongs to the essence of extension and not to that of anything else.

(3) [More wrote: 'You tie extension to tangibility and impenetrability, which leads you to deny extension to God and angels and the human mind. But there is another extension that is equally genuine.'] At last here's something we agree about! That is, we agree about the **fact** that this is 'another extension' ·from the one that

geometry studies, but there is still a **verbal** question: Should this second sort of extension be called ‘equally genuine’? Speaking for myself, the only extension I can conceive of in God and angels and our mind is extension not of •substance but of •power. An angel can exercise power at different times over different amounts of corporeal substance; but I can’t conceive of any space that an angel or God would be co-extensive with if there were no bodies. Crediting a substance with extension when it’s only an extension of power—that’s an effect of the same prejudice that regards every substance, God included, as imaginable.

B. (1) [More wrote about circumstances where ‘some parts of empty space would absorb others.’] I say it again: if they are absorbed, then half the space is destroyed, goes out of existence; but what doesn’t exist doesn’t penetrate anything else; so impenetrability must be admitted in every space.

(2) [More wrote ‘If God annihilated this universe and much later created a new one out of nothing, the interval between worlds would have its own duration.’] I think it involves a contradiction to conceive of any duration intervening between the destruction of an earlier world and the creation of a new one. To ‘explain’ this duration in terms of a succession of divine thoughts or the like would simply be an intellectual error, not a genuine perception of anything. . . .

C. (1) [More equated God’s being ‘positively infinite’ with his ‘existing everywhere.’] I don’t agree with this ‘everywhere’. You seem here to make God’s infinity consist in his existing everywhere, which is an opinion I cannot agree with. I think that God is everywhere in virtue of his power; yet in virtue of his essence he has no relation to place at all. But it’s hard to think this through because in God there is no distinction between essence and power. So I think it is better to argue in such cases about our own mind or about angels, which are more

on the scale of our own perception, rather than to argue about God.

The difficulties that follow all seem to me to arise from the prejudice that makes us too accustomed to •imagine all substances as extended, including the ones that we don’t think are bodies, and to •philosophise extravagantly about beings of reason [*entibus rationis* = conceptual entities], attributing the properties of a *being* or a *thing* to items that aren’t *beings* at all. It is important to remember that non-being can have no true attributes, nor can it be understood in any way in terms of part and whole, subject, attribute, etc. And so you are perfectly right when you conclude that when the mind considers logical fictions it is ‘playing with its own shadows’.

(2) [More wrote: ‘Your physics has no need for an indefinitely large world. A definite and finite number of miles across would suffice.’] It conflicts with my conception to attribute any limit to the world; and I have no measure of what I should affirm or deny except my own perception. I say that the world is indeterminate or indefinite because I can’t discover any limits to it; but I wouldn’t be so rash as to call it infinite, because I perceive that God is greater than the world, not of course in extension but in perfection.

D. (1) [More seemed optimistic about Descartes’s eventually completing his scientific account of the human body.] I am not certain that the continuation of my *Principles of Philosophy* will ever see the light of day, because it depends on many experiments which I may never have the opportunity to do. But I hope to publish this summer a small treatise on the passions, in which it will be seen how all the bodily movements that accompany our passions are caused not by the soul but simply by the machinery of the body. The wagging of a dog’s tail is only a movement accompanying a •passion, so it’s to be sharply distinguished from speech, which is the only

thing that shows the •thought hidden in the body.

(2) [More wrote that Descartes's reasons for denying that non-human animals have thoughts are also applicable to infants.] Infants are in a different case from animals: I wouldn't judge that they were endowed with minds if I didn't see that they have the same nature as •human• adults; whereas animals never develop to a point where any certain sign of thought can be detected in them.

E. (1) [According to you, *could* the world have been finite in size if God had so chosen?] It conflicts with my conception—i.e. it involves a contradiction—to think of the world as finite or bounded; because whatever bounds you assign to the universe I can't help conceiving a space beyond them; and such a space is a genuine body. Some people call it 'imaginary', and thus regard the world as finite; but I'm not shaken by that because I know what prejudices gave rise to this error.

(2) [If someone were at the boundary of the world, could he thrust his sword out beyond the boundary, up to the hilt, so that the blade of his sword was outside the world?] When you imagine a sword going through the limits of the universe, you show that also don't conceive the world as finite; for in reality you conceive every place the sword reaches as a part of the world, though you call it 'vacuum'.

(3) [More challenged the account of motion in *Principles* 2:29, especially Descartes's claim that 'for a body x to be transferred from contact with a body y is for y to be transferred from immediate contact with x; the same force and action is needed on both sides.] The best way I have of explaining this matter is to suppose:

A small boat, nearly afloat, resting on the sand on the bank of a river; and two men, one in the boat and the other on the shore. The one in the boat reaches down and pushes against the sand; the one on the shore leans over and pushes against the boat.

The two men could exert equal forces, so that they contribute equally to the separation of boat from shore. . . .

(4) [Question and answer concerning the movements of the moon]

(5) [More wrote: 'When one of the particles that you call 'striated'—i.e. shot through with little canals—is twisted into a corkscrew shape, how can this happen without the particle crumbling into countless smaller pieces?'] The coherence •or holding-together• of a particle depends on the motion and rest of its parts; and I don't suppose that very tiny particles are less coherent than big visible ones. It's important to understand that these striated particles are made out of supersubtle matter [see note on page 92], so they are divided into countless tiny parts that join together to compose them. I think of each very small particle as having more parts than the man in the street would attribute to a pebble.

(6) [More devoted two pages to a constellation of questions and challenges concerning the relations between the body and the mind.] In my treatise on the passions I have tried to explain most of what you here ask. All I will add here is that I haven't yet met anything in the nature of material things for which I couldn't easily think up a mechanical explanation. It's not disgraceful for a philosopher who doesn't regard God as corporeal to believe nevertheless that God can move a body; so it's no more of a disgrace for him to think that other incorporeal substances can do something like this too. Of course, in these two truths:

- My mind acts on my body,
- God acts on matter,

'acts on' is not being used in exactly the same sense; but I confess that I can't find in my mind any idea that represents how God or an angel can move matter other than the one that shows me how I can move my body through my own thinking, as I am aware of doing.

(7) [More wrote (in effect): ‘If the world had existed from eternity, all the collisions amongst the particles in it would have reduced them to indefinitely small parts, so that the whole universe would have been reduced to a *single immense fire* ages ago.’] Not so. In the infinitely long history of the universe there would be many splittings-apart but also many joinings-together.

(8) [More asked if the particles that constitute water have pores in them. His comments on this shows him thinking of those particles as simple, ultimate, *atoms*.] From my account of the formation of our earth . . . it obviously follows that the particles of water have pores and so do all the other terrestrial particles. The matter out of which all this is composed is indefinitely divided, so there can’t be any lower limit on the size of particle that can have pores in it.

(9) [More’s ninth inquiry elicited from Descartes •a repetition of his one-boat-two-men example from (3) and •a complaint that he doesn’t understand one of More’s sentences.]

⊕ [23.iv.49: Descartes writes to Brasset, •congratulating him good-humouredly on his coming move from a lovely climate to a harsh one, Sweden, with the latter compensated for by the presence of Queen Christina, ‘who has more knowledge, intelligence and reason than all the learned churchmen and academics I have encountered’; and •rejoicing in the news of peace’s being restored in France.]

⊕ [23.iv.49: Descartes writes to Chanut about delays in the mail, delays in his visit to Stockholm, and the connections between these two.]

to Clerselier, 23.iv.1649:

I shan’t spend long in thanking you for all the care and precautions you have taken to ensure that the letters. . . from that northern country should reach me; for I’m already so obliged to you, and have so many other proofs of your friendship, that this is nothing new to me. I will only say

that none have gone astray, and that I’m resolved to make the journey to which the latest letters invite me, though I was at first more reluctant than perhaps you can imagine. My journey to Paris last summer discouraged me; and I can assure you that my enormous esteem for Chanut, and my confidence in his friendship, are among my principal reasons for deciding to go.

I don’t expect the treatise on the passions to be printed before I arrive in Sweden, because I have been slack about revising it and adding the things you thought should be added—which will increase its length by a third. [He then describes its three-part structure.] I shall now address the eight difficulties that you put to me concerning things in the third Meditation.

(1) My purpose was to base a proof of the existence of God on the idea or thought that we have of him, and so I thought that I was obliged first of all to classify all our thoughts so as to observe which kinds of thoughts can deceive. By showing that not even chimeras [see Glossary] contain falsehood in themselves, I hoped to get in ahead of the opinion of those who might reject my reasoning on the grounds that our idea of God is a chimera. I also had to distinguish the ideas that are born with us from the ideas that come from outside us or are made by us, in order to get in ahead of those who might say that the idea of God is made by us or acquired by hearing others speak of him. Why did I insist on the shakiness of the beliefs we derive from all the ideas that we think come from outside us? To show that no single idea from outside us gives us knowledge as certain as what we get from our idea of God. . . .

(2) It seems to me that I see clearly that there can’t be an infinite regress in the ideas I possess, because I feel myself to be finite, and in the place where I say this I’m not crediting myself with anything that I don’t *know* I have. Later, when I

say that I daren't exclude an infinite regress, I'm referring to the works of God, whom I know to be infinite, so that it's not for me to set any limits to his works.

(3) To the words 'substance', 'duration', 'number' etc. I could have added 'truth', 'perfection', 'order' and many others—it's not easy to mark them off precisely. With each of those others it's up for discussion whether it is really distinct from one or other of the first three, because there's no distinction between truth and the thing or substance that is true, or between perfection and the thing that is perfect, and so on. That's why I merely said '. . . and anything else of this kind'.

(4) By 'infinite substance' I mean a substance that has actually infinite and immense, true and real perfections. This is not a contingent property that the substance merely happens to have; it is the very essence of the substance, taken absolutely and not limited by any defects. In any substance, defects are contingent properties, but infinitude is not. It should be noted that I never use the word 'infinite' to signify a mere lack of limits (that's something negative, for which I have used the term 'indefinite') but always to signify something real that is incomparably greater than anything that is in any way limited.

(5) Why do I say that the notion I have of *the infinite* is in me before that of *the finite*? It's because, by the mere fact that I think of *being*—i.e. of that which *is*—without thinking whether it is finite or infinite, what I am thinking of is *infinite* being. To think of a finite being I have to work through this general notion of being, by taking something away from it; and I can't do that unless the general notion, i.e. the thought of infinite being, is there to be worked through.

(6) I say 'This idea is true in the highest degree' etc., because truth consists in *being*, and falsehood only in *non-being*, so that the idea of the infinite, which includes all

being, includes all that there is of truth in things and can't contain anything false—even if it's being supposed that it's not true that the infinite being exists.

(7) 'It is enough that I understand the infinite.' I mean that to understand God, in very truth and as he is, all I need is to understand that God is not *grasped* by me, provided that I also judge that he has all the perfections that I clearly understand and also many more that I cannot grasp.

(8) 'As regards my parents, even if it's all true etc.'—that is, even if everything we ordinarily believe about them is true—namely that they engendered our *bodies*—I still can't imagine that they made *me*, considered only as a thing that thinks, because I can't see how the physical act by which I'm accustomed to believe they engendered me has anything to do with the production of a substance that thinks.

(9) That every deception depends on some defect is obvious to me by the natural light; for a being that has no imperfection can't tend towards non-being, i.e. can't have non-being as its end or purpose (or non-good, or non-true; these three are the same). It's obvious that in every deception there is falsehood, and that falsehood is something nontrue. . . .

to Freinhemius, vi.1649:

[With Chanut absent from Stockholm, Descartes turns to Freinhemius for help. His journey to Stockholm has been delayed; he hasn't been able to keep it secret; and he is afraid that his enemies—'of whom I have many, not because of myself personally but because of my new philosophy'—may write to people in Stockholm decrying the intended visit, stirring people up so as to make difficulties for Queen Christina. 'I would rather die on the voyage than have that happen.' He asks Freinhemius to form an opinion on whether anything

like that is going on, and to report back to Descartes. Then:]

I have one more favour to ask of you. I have been urged by a friend to give him the little treatise on the passions that I had the honour of offering to Her Majesty some time ago. I know that he plans to have it published with a preface of his own, but I haven't yet risked sending it to him because I don't know whether Her Majesty will approve of something that was presented to her in private being published without a dedication to her. But because this treatise is too small to deserve to bear the name of so great a Princess, to whom I will some day be able to offer a more important work if that sort of homage isn't displeasing her, I thought that perhaps she won't object to my granting this friend's request. That is what I humbly ask you to tell me. . . .

to Carcavi, 11.vi.1649:

I am greatly obliged to you for your offer to enter into correspondence with me on scholarly matters: I accept this offer as a favour that I'll try to deserve by serving you in every way that I can. During the life of the good Father Mersenne I had the advantage of always being informed in great detail about everything that was happening in the learned world, although I never made any inquiries about such matters. So that if he sometimes asked me questions, he richly repaid me for my answers by advising me about all the observations that he and others had made, all the curious devices that people had discovered or were seeking, all the new books that enjoyed any favour, and all the controversies that the learned were engaged upon.

I fear I would be tiresome if I asked you for all this. But I'm sure you won't mind my asking you to tell me the outcome of an experiment that Pascal is said to have done—or to have had done—in the mountains of Auvergne, order to discover

whether and by how much higher mercury rises in a tube at the base of a mountain than it does further up. I ought to have heard about this from him rather than from you, since it was I who advised him to do this experiment two years ago, and who assured him that I had no doubt about the outcome although I hadn't done it myself. [He goes on to speculate that Pascal's behaviour comes from his being a friend of Roberval, 'who declares himself to be no friend of mine'; and accuses Roberval of sharp practice in the matter of a mathematical discovery.]

⊕ [9.vii.49: Carcavi writes to Descartes, reporting on the outcome of Pascal's experiment, giving various bits of other news, and trying to calm the relations between Descartes and Roberval.]

⊕ [23.vii.49: More writes to Descartes, six Latin pages raising five distinct issues. Descartes's reply in viii.49 will get to only one of them.]

to Carcavi, 17.viii.1649:

I am greatly obliged to you for the trouble you have taken to tell me about the outcome of Pascal's experiment with mercury, showing that it rises less in a tube up on a mountain than in one lower down. I had some interest in learning this because it was I who had asked him to try the experiment two years ago, and I had assured him of what its outcome would be, because it agrees completely with my principles; without these principles he wouldn't even have thought of it, since he was of the opposite opinion. Previously he sent me a pamphlet in which he described his first experiments on vacuum, and undertook to refute my thesis that there is subtle matter; and if you see him I would like him to know that I am still waiting for this refutation, and that I'll receive it in good part, as I have always received objections made against me that are not accompanied by libels.

[Then a couple of pages of comments, mostly mathematical, on other items in Carcavi's 9.vii letter. After which Descartes rather frostily thanks Carcavi for his good-hearted wish to make peace, but says that he has some evidence that Roberval hates him and none that he doesn't. There follow six more pages against Roberval, five of them geometrical.]

to More, viii.1649:

When I received your letter of 23.vii I was just on the point of sailing to Sweden.

'Do angels have sensations in the strict sense, and are they corporeal or not?'

I reply that the human mind separated from the body does not have sensations, strictly so called; but unaided natural reason doesn't tell us whether angels are created like •minds distinct from bodies or •minds united to bodies. I don't go in for *conjectures* or for deciding about questions on which I have no certain reasons. I agree with you that we should not think of God except as being *what all good people would wish there to be if he didn't exist*.

Your argument using the acceleration of motion to prove that the same substance can take up different amounts of space at different times is ingenious; but it falls far short of the mark, because motion is not a substance but a mode, and a mode of such a kind that we can *deeply* conceive how it can be lessened or increased in the same place. In forming opinions about any being we should use the notions that are appropriate to it, and not go by comparisons between it and other beings. Thus what is appropriate to •shape isn't appropriate to •motion; and neither of these is •appropriate to an extended thing. [That last clause is puzzling. Descartes's *propriæ* has a narrower meaning of 'appropriate to x'—roughly the sense of 'appropriate to x and to nothing else', but that merely trades in one

puzzle for another.] Remember that *nothing has no properties*, and that what is commonly called 'empty space' is not •nothing, but •a real body deprived of all its accidents (i.e. everything that can be present or absent without the body going out of existence). Anyone who has fully realised this, and who has observed how each part of this space or body differs from all others and is impenetrable, will easily see that no other thing can have the same divisibility, tangibility and impenetrability.

I said that God is extended in virtue of his power, because that power does or can manifest itself in extended being. It is certain that God's essence must be present everywhere for his power to be able to manifest itself everywhere; but I deny that it is there in the way extended being is there, i.e. in the way in which I just described an extended thing.

[A paragraph about aspects of motion and rest. Then:]

The transfer that I call 'motion' is no less something existent than shape is: it is a mode in a body." The power causing motion may be the power of God himself preserving the same amount of transfer in matter as he put in it in the first moment of creation; or it may be the power of a created substance, like our mind, or of any other such thing to which he gave the power to move a body. In a created substance this power is a mode, but it is not a mode in God. Since this is not easy for everyone to understand, I didn't want to discuss it in my writings. I was afraid of seeming inclined to favour the view of those [such as More] who consider God as a world-soul united to matter.

I agree that 'if matter is left to itself and receives no impulse from anywhere' it will remain entirely still. But it receives an impulse from God, who preserves the same amount of motion or transfer in it—i.e. in the material world—as he placed in it at the beginning. And this transfer is no more violent [see Glossary] for matter than rest is: the term

‘violent’ refers only to our will, which is said to suffer violence when something happens that goes against it. In nature, however, nothing is violent: it is equally natural for bodies •to collide with each other, and perhaps to disintegrate, as it is for them •to be still. What causes you difficulty in this matter, I think, is that you conceive of a motionless body as containing a force by which it resists motion, regarding this force as something positive—a certain action distinct from the body’s being at rest—whereas in fact the force is nothing but a modal entity.

You observe correctly that ‘motion, being a mode of body, can’t pass from one body to another’; and I didn’t say that it can. . . . And when I said that the same amount of motion always remains in matter, I meant this about the force which impels its parts, which is applied at different times to different parts of matter in accordance with the rules set out in *Principles* 2:45 and following. [Assuming that Descartes’s *leges* = ‘laws’ was a slip for *regulae* = ‘rules’, as in *Principles* 2:45 and following.] So there’s no need for you to worry about the transmigration of rest from one object to another, since not even motion, considered as a mode that is the contrary to rest, transmigrates in that fashion.

You add that body seems to you to be ‘alive with a stupid and drunken life’. This, I take it, is just a fine phrase; but I must tell you once for all, with the candour that you permit me, that nothing takes us further from the discovery of truth than setting up as true something that we have no positive reason for but are merely attracted to. That’s what happens when we have invented or imagined something and afterwards take pleasure in our fictions, as you do in your corporeal angels, your shadow of the divine essence, and the rest. No-one should entertain any such thoughts, because that blocks the road to truth.

⊕ [30.viii.49: Descartes writes to Picot with detailed instructions about how the money in his estate is to be distributed if he should die on the journey to Stockholm.]

⊕ [30.viii.49: Descartes writes to Hogelande about which of his papers should be burned and which saved if he dies on the journey to Stockholm. He wants the letters Voetius wrote to Mersenne to be kept for possible legal use; but (he ends up saying) Hogelande can decide for himself which of the other ones to burn.]

⊕ [18.xii.49: Descartes writes to Brégy on various minor matters, including the dreadfulness of the Stockholm weather starting shortly after Brégy left.]

to Brégy, 15.i.1650:

Since I had the pleasure of last writing, I have seen the Queen only four or five times, always in the morning in her library, in the company of Freinshemius. So I have had no opportunity to speak about any matter that concerns you. A fortnight ago she went to Uppsala. I didn’t go with her, nor have I seen her since she returned on Thursday evening. I know also that our ambassador saw her only once before her visit to Uppsala, apart from his first audience at which I was present. [This was Chanut, promoted.] I haven’t made any other visits, nor have I heard about any. This makes me think that during the winter men’s thoughts are frozen here, like the water. . . . I swear to you that my desire to return to my ·Dutch· solitude grows stronger with each passing day, and indeed I don’t know whether I can wait here until you return. I do still fervently wish to serve the Queen, and she does show me as much good-will as I can reasonably hope for. But I am not in my element here. I desire only peace and quiet, which are benefits that the most powerful kings on earth can’t give to those who are unable to acquire them for themselves. I pray God that you are granted the good things

you desire. Be assured that I am, Sir, your most humble and obedient servant, DESCARTES.

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Not long after that letter was written Chanut fell ill with pneumonia; Descartes helped to nurse him through it, but contracted the disease himself and died of it on the 11th of February 1650.

The following notes on people—mostly Descartes’s contemporaries—aim only to give the bare minimum needed to understand why each person figures in the Correspondence in the way he does: nationality, clerical or lay, Catholic or Protestant, position or profession, and so on. For more about those who participated in the Correspondence see CSMK, which is the basis for most of what follows.

Arnauld, Antoine: French theologian and philosopher.

Balzac, Jean-Louis Guez de: French writer and patron of the arts.

Bannius (Johannes Albertus Ban): Catholic Archbishop of Harlem, musician and musical theorist.

Beaugrand, Jean de: French artist and mathematician.

Beeckman, Isaac: Dutch physician and scholar. Eventually academic head of the University of Utrecht.

Brasset, Henri: French diplomat, for some years the French diplomatic representative in The Hague.

Brégy, Vicomte de Flécelles: French diplomat. Arrived in Stockholm shortly after Descartes.

Buitendijk: Official of the University or Dordrecht.

Carcavi, Pierre de: French government official.

Cavendish, William: Marquess of Newcastle,

Chandoux, Sieur de: French physicist and chemist.

Chanut, Hector-Pierre: French diplomat who served his government at the Swedish court.

Charlet, Etienne: Jesuit priest and theologian. Taught at the College of la Flèche; Descartes was one of his pupils; later head of the Jesuits in Rome.

Christina, Queen of Sweden (1626-89): Lively and influential; also flighty and unpredictable; turned Catholic and abdicated at the age of 28.

Ciermans, Jean: Dutch Jesuit, professor of mathematics at Louvain.

Clerselier, Claude: French government official; edited/published several of Descartes’s works (including his correspondence) after Descartes’s death. Brother-in-law of Chanut.

Colvius, Andreas: Dutch Protestant minister and amateur scientist.

Debeaune, Florimond: French mathematician and student of astronomy.

Delaunay, the Abbé: Not identified for sure.

Dinet, Jacques: French Jesuit priest, taught Descartes in College; rose to a commanding position in the Society of Jesus in Paris.

Emilius, Anthony: Professor of history at the university of Utrecht.

Ferrier, Jean: French instrument maker.

Freinshemius (Johannes Freinsheim): German classical scholar, Queen Christina’s librarian at the time of Descartes’s visit to Stockholm.

Fromondus (Libert Froidmont): Belgian Protestant theologian.

Gibieuf, Guillaume: French Catholic priest and theologian; teacher at the Sorbonne.

Gillot. Jean: French. A pupil and then protégé of Descartes.

Golius (Jacob Gool): Dutch mathematician, professor of Mathematics at Leiden.

Grandamy, Jacques: French Jesuit priest, physicist, astronomer, and teacher of philosophy

Hardy, Claude: French mathematician: reported to have known 35 oriental languages.

Hogelande, Cornelis van: Dutch physician.

Huygens, Constantijn: Dutch diplomat and amateur scientist; poet, composer, and musicologist; secretary to the Prince of Orange, sometimes having to accompany him into war zones.

le Conte, Antoine: Adviser to the French king, and friend of Chanut.

Lull, Raymond: 13th-14th century philosopher who wrote a manual purporting to provide a method for solving all problems.

Mersenne, Marin: Catholic priest, theologian, and physicist; a 'monk' because he belonged to the monastic order of Minims.

Mesland, Denis: Jesuit priest. For more, see first paragraph of Descartes's letter to him on page 181.

Meyssonier, Lazare: French physician.

More, Henry: English philosopher and poet.

Morin, Jean-Baptiste: French mathematician, physician, and astrologer.

Mydorge, Claude: French court official and amateur mathematician and scientist.

Naudé, Gabriel: French scholar, librarian, and physician.

Noël, Etienne: Jesuit priest and physicist.

Pascal, Blaise: French mathematician, physicist, polymath.

Pascal, Étienne: French mathematician, father of Blaise.

Petit, Pierre: French military engineer and amateur physicist.

Plempius (Vopiscus-Fortunatus Plem): Dutch physician and philosopher.

Pollot, Alphonse: French soldier and courtier, on the staff of the Prince of Orange.

Raei, Johannes de: Dutch philosopher; pupil of Regius.

Regius (Henri le Roy): Dutch physician and professor of medicine.

Reneri (Henri Regnier): French philosopher.

Sainte-Croix: This name seems to refer to André Jumeau, Prior of the monastery of Sainte-Croix and a mathematician.

Scheiner, Christophe: German Jesuit and astronomer.

Schichardus (Wilhelm Schickardt): German professor philosophy.

Schooten, Franciscus van: Dutch mathematician.

Schurman, Anne-Marie de: German-Dutch painter, engraver, scholar and poet; proficient in 14 languages.

Silhon, Jean de: French government official and amateur theologian.

Stampoien, Johan: Dutch mathematician.

Thuillerie, Gaspard Coignet de la: French ambassador to Sweden.

van der Hoolck, Gisbert: Mayor of Utrecht.

Vanini, Cesare: Ex-priest who flamboyantly proclaimed atheism; condemned and brutally executed in Toulouse in 1619.

Vatier, Antoine: French Jesuit priest and theologian.

Vesalius, Andreas: Influential 16th-century anatomist.

Viète, François: French mathematician, whose work helped pave the way for Descartes's analytic geometry.

Ville-Bressieu, Etienne de: French physicist, chemist, and engineer to the King of France.

Villiers, Christophe: French physician.

Voetius (Gisbert Voët): Dutch theologian and professor at the University of Utrecht.

Vorstius (Adolph Vorster): Dutch physician, became professor of medicine at the University of Utrecht.

Wassenaer, Jacques: Dutch mathematician.

White, Thomas: English philosopher and controversialist.

Wilhelm, David le Leu de: Dutch banker, collector, aficionado of ideas; brother-in-law of Constantijn Huygens.