BOOK FOUR

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* All but the last two lines of the argument are lost.

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An important point relevant both to what follows and to what precedes: the (teleological) view that the sensory organs and limbs were created for the purposes that they fulfill is to be rejected (823–857)

All living creatures seek food to replace lost matter, and drink when they are thirsty (858–876)

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Explanation of sleep (907–961)

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How a plain woman can win a man's love (1278–1287)

I am penetrating the remote regions of the Pierian maids, hitherto untrodden by any foot. Joyfully I visit virgin springs and draw their water; joyfully I cull unfamiliar flowers, gathering for my head a chaplet of fame from spots whence the Muses have never before taken a garland for the brows of any person: first because I teach about important matters and endeavor to disentangle the mind from the strangling knots of superstition, and also because on an obscure subject I compose such luminous verses, overspreading all with the charm of the Muses. For obviously my actual technique does not lack a motive. Doctors who try to give children foul-tasting wormwood first coat the rim of the cup with the sweet juice of golden honey; their intention is that the children, unwary at their tender age, will be tricked into applying their lips to the cup and at the same time will drain the bitter draft of wormwood—victims of beguilement, but not of betrayal, since by this means they recover strength and health. I have a similar intention now: since this philosophy of ours often appears somewhat off-putting to those who have not experienced it, and most people recoil back from it, I have preferred to expound it to you in harmonious Pierian poetry and, so to speak, coat it with the sweet honey of the Muses. My hope has been that by this means I might perhaps

succeed in holding your attention concentrated on my verses, while you apprehend the nature of the universe and become conscious of the beneficial effect of my instruction.[1]

Well, now that I have demonstrated the nature of the soul, its constitution, the way in which it develops with the body, and the manner in which it is disaggregated and resolved into its component elements, I will begin to explain to you a matter that has an important bearing on these questions namely, the existence of what we term images[2] of things. Images are sort of membranes stripped from the surfaces of objects and float this way and that through the air. It is these that visit us when we are awake or asleep, and terrify our minds each time we see the weird forms and phantoms of people bereft of the light of life—visions that often make us start from our heavy slumber and tremble with terror. We must not imagine that spirits escape from Acheron, or that shades of the dead flit among the living, or that any part of us can survive after death, when both the body and the substance of the soul have been destroyed and dissolved into their respective elements. I contend, then, that things emit filmy forms and images from their surfaces; and the proofs that follow will enable even the dullest wit to understand that I am right.

[Well, now that I have demonstrated the nature of the primary elements of all things, the diversity of their forms, the spontaneous manner in which they fly about under the impulse of incessant movement, and their ability to create everything, I will begin to explain to you a matter that has an important bearing on these questions namely, the existence of what we term images of things. Images may be described as sort of membranes or bark, because each bears the appearance and form of the object from whose body it is shed and wanders away].[3]

In the first place, many things visibly discharge matter. Some of these discharges are rare and diffused, like the smoke emitted by wood or the heat by fire; others are of a closer and denser texture, like the sleek coats

1. **1–25:** These lines are repeated, with a few minor alterations, from 1.926 950. See notes there.

2. **30:** See pp. xxvii–xxviii.

3. **45–53:** These lines must have been written at a time when Lucr. intended Book 4 to follow Book 2. Lines 45–48, which are almost identical to 3.31 34, definitely refer to the subject matter of Books 1 and 2. When he changed his mind about the order of books, he wrote a new introductory passage (26 44), borrowing two lines (49–50) from the original version. If he had lived to complete the revision of his work, he would have struck out 45–53.

that cicadas periodically shed in summer, or the superficial membranes of which newborn calves divest themselves, or again the vesture that the slippery serpent works off on the thorns as is evidenced by the familiar sight of brambles decorated with its fluttering slough. In view of these visible discharges, there can be no doubt that subtle images too are emitted from the surfaces of things. For why should those coarser substances fall away and withdraw from objects more readily than these subtle films? It is impossible to say, especially when on the surfaces of things there are multitudes of minute particles, which could be discharged while preserving their previous order and configuration, and which could be thrown off with much more velocity, because, being comparatively few in number and stationed in the foremost positions, they are less liable to be impeded. It is an observable fact that many objects freely throw off particles emanating not only from deep within them, as is the case with the substances I mentioned earlier,[4] but often from their surfaces as well particles of their own color. This commonly happens, when the saffron, russet, and violet awnings stretched over great theaters,[5] unfurled over masts and crossbeams, flap and undulate. They dye all the scene below, projecting their rippling colors on to the audience packed on the benches and the entire spectacle of the stage . . . . . .[6] The more the theater is shut in by the surrounding hoardings, and the less daylight is admitted, the more the whole enclosed area laughs in a flood of gaiety. Now, since the canvas-canopies discharge color from their surfaces, there can be no doubt that all things discharge subtle images; for in both cases the emission is from the surface. There are therefore definite traces of the forms that float about everywhere — forms whose texture is so fine that they cannot be seen individually.

Again, the reason why smell, smoke, heat, and other similar things invariably issue from objects diffusedly is that they emanate from deep within and are divided up on their way to the surface, because the path is

4. **73:** The reference is to 56, where Lucr. mentions the smoke given off by wood and the heat by fire. But only in 90–94 does he explain that smell, smoke, and heat emanate from deep inside things.

5. **75–77:** Theater awnings were introduced in 78 B.C. They are mentioned again this time with reference to the noise that they make in 6.109–110. Rome did not have a stone theater until 55 B.C., and, since Lucr. almost certainly died in that year, it is probable that he is referring to temporary theaters with wooden seats and stage.

6. **79:** The text is seriously corrupt, and no convincing emendation has been proposed.

a tortuous one and there are no straight passages to enable them to speed out in a mass. However, when a fine, superficial film of color is discharged, there is nothing to tear it apart, since it is stationed in the front rank, ready to depart.

Lastly, since the reflections that we see in mirrors,[7] in water, and in every shining surface always resemble the objects themselves in appearance, they must be formed of images emitted by those objects. There are 100
therefore fine forms and semblances of things which, though no one can perceive them individually, are constantly and rapidly repelled and rejected by the smooth reflecting surfaces and so produce a visible image. It is evident that in no other way can they be so perfectly preserved that forms so closely resembling the actual objects are produced.

Now then, I want you to grasp how fine is the substance of an image. 110
To begin with, its elements are far beneath the range of our senses and are much smaller than the objects that are only just too small for our eyes to discern. In order that I may convince you of the truth of this, let me show you in a few words how subtle are the constituent atoms of all things.

First, there are some living creatures so minute that if they were one third of their actual size, they would be quite invisible. What are we to imagine that any one of their internal parts is like? What of their globular heart or eyes? What of their members? What of their limbs? Of what size 120
are they? And what of the individual elements that must compose their spirit and mind? Do you not conceive how subtle and how minute they are?

Then again, consider all those plants that give off a pungent smell, such as all-heal,[8] foul wormwood, aromatic southernwood, and styptic centaury: if you should happen to take any one of these herbs [and hold] it lightly between two [fingers, those fingers will be impregnated with a strong smell; and yet the particles that must have issued from the herb and attached themselves to your skin are so minute that they are quite invisible].[9]

7. **98:** Roman mirrors were usually made of burnished metal. Mirrors feature prominently in the arguments that follow: see 150–167, 269–323. Diogenes of Oinoanda too mentions reflections in mirrors as evidence that images are constantly discharged from the surfaces of things (*fr.* 9.I.4 12).

8. **124:** A plant of uncertain identity, apparently not what we call all-heal, which is valerian (*Valeriana officinalis*).

9. **126:** After 126 a passage, almost certainly of considerable length, has been lost. The words in brackets give the likely sense of the first part of it.

. . . but that you should rather recognize that many images of things stray about in many ways, lacking any faculty and without sensation.[10]

You must not imagine that the only images of things straying about are those that withdraw from objects. There are others that are spontaneously produced and self-created in the part of the sky that is called the air; these, formed in countless ways, are swept along on high. Compare how sometimes we see clouds effortlessly massing together in the lofty heaven, marring the serene countenance of the firmament and fanning the air with their motion. Often the faces of giants seem to glide by, trailing a massive shadow; sometimes a procession of mighty mountains and rocks wrenched from mountains appears to pass before the sun, followed by some monstrous beast leading another string of storm clouds. They constantly melt away and transform their appearance, assuming the contours of forms of every kind.

Now [I will explain] with what ease and speed the images are formed and constantly flow off from things and slip away; [do you be sure to lend attentive ears to my words].[11] The position is that the outermost surface of things is always being discharged in a perpetual stream. When an effluence meets certain objects, it passes through them—especially through glass; whereas when it strikes against rough rocks or solid wood, it is at once shattered and so prevented from producing any image. But when its path is blocked by an object that is both shiny and compact, especially by a mirror, neither of these things happens: for the effluence cannot pass through the object, as it can through glass; nor can it be shattered, because the smoothness of the surface never fails to secure its safety. Consequently the images come streaming back to us. Present to the mirror any object you like, as suddenly as you like, at any time you like: the image always appears; and this is a clear indication for you that filmy textures and filmy shapes flow in a perpetual stream from the surfaces of things. Therefore countless images are produced in an instant, and their creation can justly be described as rapid. And in precisely the same way that the sun must emit countless particles of light instantaneously in order that the whole world may constantly be filled with radiance, so all objects must in a moment of time throw off countless images in countless ways in all directions on every side, since, in what-

10. **127–128:** Thanks to Diogenes of Oinoanda (*fr.* 10, 43), we can be confident that 127–128 are the closing lines of a refutation of Democritus' belief that the images possess the faculties of speech, reason, and sensation.

11. **144:** A lacuna must be assumed after 144. Probably only one line is lost. It may have been similar or identical to 2.66 or 4.931.

ever direction we turn the mirror, the scene is reflected in it, similar in form and color.

Here is another point. The sky, perfectly clear a short while ago, suddenly becomes overcast and ugly. You might think that on every side all the darkness had fled from Acheron and occupied the vast vault of heaven: so menacingly does a dreadful night of storm clouds gather, and black faces of fear scowl from above.[12] And yet an image is minute compared with these clouds—just how minute no one could say or explain.[13]

Now then, how swiftly do the images move? What velocity is given to them as they glide through the air, enabling them to cover a long distance in a short hour, no matter what the place may be toward which their various inclinations carry them? I will explain in verses melodious rather than many: the swan's brief song is preferable to the clamoring of cranes that crowds the clouds of the southern sky.[14]

In the first place, it is an observable fact that swiftness is very often a characteristic of things that are light and made of minute particles. For example, this is true of the light and heat radiated by the sun, since they are composed of minute particles that hammer one another forward and, under the impulsion of blows from behind, unhesitatingly pass through the intervening air. Light instantly succeeds light, and flash spurs on flash in a continuous stream. Therefore the images must equally be able to race through an inexpressible distance of space in a moment of time, first because, although the force that projects and propels them is a slight one[15] far behind them, they travel on their way so fleetly and lightly; and secondly because, when they are emitted, the rarity of their texture is such that they can easily penetrate anything[16] and, as it were, percolate through the intervening air.

Moreover, if particles that emanate from deep inside things, like the

12. **170–173:** Repeated, with one minor variation, at 6.251–254.

13. **174–175:** The argument is compressed. The idea is: clouds can fill the sky in a short time; an image is far, far smaller than those clouds and therefore can be formed in a far, far shorter time.

14. **180–182:** These lines, repeated at 909–911, seem to have been influenced by an epigram by Antipater of Sidon (*Anthologia Palatina* 7.713), though Antipater has jackdaws instead of cranes. On singing swans, see note on 2.505.

15. **193:** The slight force is the vibration of the atoms that compose objects.

16. **197:** Not in fact "anything," because at 147–149 Lucr. tells us that certain objects, such as rocks and wood, are impervious to the images and indeed shatter them.

particles of solar light and heat, manifestly glide and diffuse themselves in an instant of time throughout the length and breadth of heaven, dart over the sea and lands, and inundate the sky, what then of particles that are stationed ready in the very front rank at the time of their discharge, so that nothing retards their emission? Do you not see how much swifter and farther they must travel, racing through a space many times as wide as the expanse of the sky that the sun's rays pervade in the same time?

Here is another striking and manifestly trustworthy illustration of the swift movement of the images. The moment glassy water is set beneath a star-spangled sky, the serene shining constellations of the firmament are reflected in it. Do you not see now that an image falls instantaneously from the ethereal regions to the regions of the earth?

So I insist that you must acknowledge [that the images move] at an extraordinary [speed].[17]

[. . . . . .]

[In the first place, all objects that are visible to us must necessarily discharge and scatter a continual stream][18] of particles that impinge on the eyes and provoke vision. Moreover, from certain things odors flow in a perpetual stream; cold emanates from rivers, heat from the sun, and spray from the waves of the sea—spray that erodes the walls skirting the shore. Various sounds are continually floating through the air. Again, when we walk near the sea, a briny taste often makes its way into our mouth; and when we watch wormwood being diluted and mixed, its bitterness affects our palate. So true is it that from all objects emanations flow away and are discharged in all directions on every side. These effluences stream away without any delay or interruption, since we constantly experience sensation, and we may at any time see, smell, and hear anything.

Here is a further point: when we handle an object of a particular shape in the dark, we recognize it as having the same shape that we see in the brilliant light of day. Therefore touch and sight must be effected by the same cause. Now then, if we feel a square object in the dark and receive the impression of a square, what in the light will be able to give us the visual impression of a square, except the image of the object? It is

17. **216:** There is a lacuna of uncertain length after 216. Those editors who think that only one line is missing must be mistaken, since at 217 Lucr. is already discussing a new topic. It may be that a page of the archetype dropped out, leaving a gap of fifty-two lines. It is to be noted that 217–229 are repeated, with a few minor alterations, at 6.923–935, and I have assumed that 217 was preceded by two lines identical to 6.921–922.

18. **217:** On the words in brackets, see previous note.

evident therefore that images are the cause of vision, and that without them nothing could be seen.

Now these images of which I have spoken come from all sides and are discharged and distributed in every direction. But because our eyes alone possess the power of vision, it is only from the direction in which we turn our eyes that all objects come to impinge on them with their form and color.

It is the image that gives us the power to see and the means to determine how far each object is distant from us. For, the moment it is emitted, it thrusts and drives before it all the air that lies between it and our eyes; all this air then glides through our eyeballs, brushes through our pupils, and so passes on. This is what enables us to gauge the distance of each object. The greater the quantity of air that is driven before the image, and the longer the current that brushes through our eyes, the remoter the object is seen to be. You must realize that these processes take place with extreme swiftness, so that we simultaneously identify the object and gauge its distance.

In this connection, you should not consider it strange that, although the images that impinge on our eyes are individually invisible, the objects themselves are visible. After all, when the wind whips us with fitful blasts, and when biting cold flows upon us, we do not feel the individual particles of wind or cold, but rather their combined effect; and we then perceive that blows are falling upon our body, just as if some external force were whipping us and giving us the sensation of its body. Moreover, when we tap a stone with a finger, what we touch is merely the superficial layer of color on the outside of the rock; but what we feel, when we touch the rock, is not its surface color, but rather the hardness deep down within it.

Now then, I want you to grasp why it is that reflected images are seen beyond the surface of the mirror; for they certainly do appear to recede into its depths. The position is the same as with those objects that we see in their reality[19] on the far side of a door, when the doorway affords an unobstructed view through it and enables us to see many things outside the house from inside. For in that case too vision is caused by a double current of air. First the air between us and the doorposts is perceived, followed by the leaves of the door itself on either side; next the light beyond the door brushes through our eyes, accompanied by a second current of air, then the objects outside that we see in their reality. Sim-

19. **270:** In contrast to the images in the mirror.

ilarly, as soon as the image of the mirror projects itself in the direction of our pupils, it thrusts and drives before it all the air that lies between it and our eyes, and causes us to perceive all this air before we perceive the mirror. When we have perceived the mirror itself, at once the image that is emitted from us travels to the mirror, is repulsed, and returns to our eyes, driving and rolling before it another current of air, and causes us to see this before we perceive the reflected image itself; and this is why the reflection appears to be so far behind the mirror. So I insist that we have no call to consider it strange [that this happens both in the case of those objects that we see through doors and][20] in the case of those that send back visible images from the surfaces of mirrors, since in each case the result is produced by two currents of air.

The reason why the right side of our body appears in mirrors on the left is that, when the image reaches the plane of the mirror and strikes against it, it does not turn about and so remain unaltered, but rebounds straight back. It is just as if someone were to dash a plaster mask, while it is still moist, against a pillar or post, and the mask, preserving its features undistorted in front, were to mold a copy of itself in reverse, with the result that what was previously the right eye would now become the left, and vice versa.

It is possible too for an image to be transmitted from mirror to mirror, so that as many as five or six reflections are produced. For even when objects are hidden away in the inner part of a house, no matter how long and tortuous a way separates them from the outside, the use of a sequence of mirrors enables us to draw them all out through winding passages and see that they are in the house. So unfailingly does the image glance from mirror to mirror; and whenever the left side is passed on, it becomes the right, and then changes back again, reverting to the same position as before.

It should be added that mirrors with curved sides, whose curvature is similar to that of our sides, always reflect images with the right on the right.[21] There are two possible explanations for this: either the image is transmitted from one side of the mirror to the other and is reflected twice before darting back to us; or else, when it has reached the mirror, it wheels around, because the curved shape guides it, causing it to turn about and face us.

Moreover, you may imagine that reflected images move as we move, tread as we tread, and mimic our gestures. The explanation of the illusion

20. **289:** At least one line seems to be lost after 289.

21. **311–313:** The reference is to horizontally concave mirrors that do not reverse images.

is this: the moment you retire from any part of a mirror, that part ceases to be able to return any images, since nature obliges all things to rebound and be reflected from objects at an angle equal to the angle of their incidence.[22]

Let us turn our attention to another matter. It is a fact that our eyes shrink from glaring objects and avoid looking at them. Indeed the sun blinds us if we try to gaze straight at it. This is because its own strength is great, and the images radiated by it, descending from a great height through pure air, move so impetuously that, when they impinge on our eyes, they disturb their atomic composition. Moreover, any object of glaring brightness is apt to burn the eyes, because it contains numerous seeds of fire that penetrate into the eyes and cause them pain.

Again, the reason why all looks yellow to jaundiced people is that many seeds of this color stream from their bodies to meet the images emitted by objects; many too are mingled in their eyes, and these tinge everything with their contagious paleness.

When we are in the dark, we can see objects that are in the light. This is because, when the black murky air, being nearer to us, has invaded our open eyes first and occupied them, it is followed instantly by the bright and luminous air that as it were purifies the eyes, dissipating the shadows of the dark air; for the bright air is far more mobile, far more subtle, and far more powerful. No sooner has it filled the ocular passages with light, and cleared those that previously had been blocked by the black air, than it is followed by the images emanating from objects situated in the light, and these provoke our vision.

On the other hand, when we are in the light, we cannot see objects that are in the dark, because the grosser, murky air arrives after the bright air; it fills all the pores and blocks up the ocular passages and so prevents any of the images from giving rise to vision when they are projected on the eyes.

The square towers of a city, viewed by us from a distance, often appear round. This is because every angle surveyed from afar is seen as obtuse—or rather is not seen at all. The image loses its sharpness before it can deliver a blow to our eyes, because the images, during their long journey through the air, are constantly buffeted and so become blunted. In this way every angle eludes our vision, with the result that the stone structures appear as though they were shaped on a lathe. Even so, they do

22. **318–323:** The illusion described and explained here is discussed in detail by K. Algra, *Elenchos* 20 (1999) 359–379.

not look like objects close at hand that really are round, but vaguely resemble them in a shadowy fashion.[23]

Our own shadows, moreover, appear to move with us in the sunlight, following our footsteps and mimicking our gestures—that is, if you believe that air deprived of light can walk, reproducing the movements and gestures of people. After all, what we call a shadow cannot be anything else but air devoid of light. What undoubtedly happens is that particular parts of the ground are successively deprived of the light of the sun that we intercept wherever we move, while the spot we have quit is again overspread with light. This explains why the shadow cast by our body keeps the same appearance and seems always to follow exactly opposite us. New rays of light are constantly streaming from the sun to replace the old that perish: the process is like that of spinning wool into a fire. In this way the ground is easily robbed of light, and with equal ease is again flooded with radiance and washes off the sooty shadows.

However, in this connection we do not allow that the eyes are in any way deceived. Their business is to observe the areas of light and shadow. But the question of whether the light is the same or not, and whether it is the same shadow passing from place to place, or whether the position is rather as I have stated it above—this can be decided only by the reasoning of the mind: the eyes cannot take cognizance of the real nature of things. Refrain, then, from foisting on the eyes the shortcomings of the mind.[24]

When we are on board a moving ship, the vessel appears to be stationary, while another, still moored at her berth, is thought to be going by; and the hills and plains past which our ship skims with soaring sails seem to be fleeing astern.

The stars all appear motionless, inlaid in the ethereal vault; and yet all are in perpetual motion, since they rise and traverse the length of heaven with their lucent orbs before returning to the distant parts where they set. Likewise the sun and moon seemingly remain stationary, whereas simple fact proves that they are moving.

23. **353–363:** Another Epicurean who explains why a square tower, seen from the distance, appears roundish, is Diogenes of Oinoanda (*fr.* 69). His explanation agrees completely with that of Lucr. For the same example, see also Plutarch *Moralia* 1121a c, Sextus Empiricus *Adversus Mathematicos* 7.208 209, Diogenes Laertius 10.34.

24. **379–386:** The point is that it is the function of the eyes only to record information like a camera. This they faithfully do. It is the business of the mind to interpret the information they supply. The mind may make mistakes. Cf. 462 468, Epicurus *IIdt.* 50 52, *PD* 24, Diogenes Laertius 10.34, and see pp. xxiv xxv.

Again, mountains rising up from the midst of the deep, though separated by a great channel wide enough for fleets to pass freely through, appear, when viewed from the distance, to coalesce to form a single island.

When children stop whirling themselves around, they have such a realistic impression of the room rotating and the pillars racing around that they can hardly believe that the whole building is not threatening to collapse on top of them.

Again, consider what happens when nature begins to hoist up on high the sun, orange-bright with quivering fires, and raise it above the mountains: the sun appears to stand over the mountains and suffuse them with its fervid fire from close at hand; the distance between us and those mountains is no more than two thousand bowshots—often no more than five hundred casts of a javelin; and yet between the mountains and the sun lie immense plains of ocean outspread beneath vast expanses of ether, and ten thousand tracts of land are interposed, occupied by many different peoples and species of animals.

In contrast, take the case of a pool of water that has collected between the paving stones of a street. Though no deeper than a finger-breadth, it affords a view down into the bowels of the earth as extensive as the gaping abyss of sky that stretches high above the earth, so that you seem to look down upon the clouds and the sky, and you see manifest objects miraculously embosomed in the earth.[25]

Again, when our mount, for all its mettle, has stuck fast in the middle of a river, and we look down at the impetuous waters, it seems to us that the horse's body, which is in fact stationary, is being swept sideways by some force and hurried upstream; and wherever we turn our eyes, everything appears to be moving and flowing in the same direction as ourselves.

Although a colonnade is supported from end to end by columns of equal height ranged in parallel lines, when its whole length is viewed from one end, it seems to taper into the apex of a narrow cone, gradually drawing roof to floor and right to left, until all converge into the vanishing point of the cone.

To sailors at sea it is as if the sun rises from the waves and in the waves

25. **414–419:** Shelley is probably recalling this passage in *To Jane: The Recollection* 53–58: "We paused beside the pools that lie / Under the forest bough, / Each seemed as 'twere a little sky / Gulfed in a world below; / A firmament of purple light / Which in the dark earth lay." In 418 419 there are textual problems of which there is no sure solution: for discussion, see M. F. Smith, *Classical Quarterly* 43 (1993) 337–338.

sets and buries its light. This is because nothing else but sea and sky meets their view; so you must not rashly assume that the evidence of our senses is wholly unreliable.

To people who know nothing of the sea, vessels in harbor look disabled and seem to be resisting the waves with broken sterns. As for the oars and rudders, all the parts raised above the dew-sparkling brine are straight, while all the parts submerged under water have a refracted and distorted appearance; indeed their apparent upward curve and backward bend are so pronounced that they seem almost to be floating on the surface of the water.

And when the winds sweep scattered clouds across the night sky, the shining stars seem to be gliding to meet the clouds and to be moving on high in a direction quite different from that in which they are really traveling.

Again, if we chance to place our hand beneath one of our eyes and press the eyeball, it happens, by a certain sensory impression, that, wherever we look, we appear to see everything double—double the light of each lamp flowering with flame, double the furniture throughout the house, double the faces of people, double their bodies.

Lastly, even when our limbs are prisoners of balmy slumber and our whole body is sunk in sound repose, we imagine that we are awake and moving our limbs; though enveloped by the blind blackness of night, we have the illusion of seeing the sun and daylight; though confined within our room, we fancy that we pass over sky and sea, rivers and mountains, and traverse plains on foot; though encompassed by the solemn stillness of night, we seem to hear sounds; and though quite silent, we imagine that we speak.

We experience an extraordinarily large number of other illusions of this kind. It is as though all of them are conspiring to undermine our confidence in the senses. Their efforts, however, are unavailing, since the majority of these errors are due to inferences added by our own minds, which cause us to imagine that we have seen what our senses have not seen. The truth is that nothing is more difficult than to separate patent facts from the dubious opinions that our mind at once adds of its own accord.[26]

Moreover, if people suppose that knowledge of anything is impossible, they do not even know whether knowledge of the impossibility of knowledge is possible, since, on their own admission, they know noth-

26. **462–468:** Cf. 379–386 and see note there.

ing.[27] Against such people, who have planted themselves with their head in their own footprints,[28] I disdain to argue. However, if I were to concede that they do have this knowledge, I would put the following questions to them. Since they have never before encountered anything true, how do they recognize knowledge and ignorance? What has given them their conception of truth and falsehood? What proof have they that the doubtful differs from the certain?

You will find that our conception of truth is derived ultimately from the senses, and that their evidence is unimpugnable.[29] You see, what we need is some specially reliable standard which by its own authority is able to ensure the victory of truth over falsehood. Well now, what standard can be regarded as more reliable than sensation? If the senses are false, will reason be competent to impeach them when it is itself entirely dependent upon the senses? If they are not true, all reason also is rendered false. Or can sight be corrected by hearing, or hearing by touch? Can the evidence of touch be challenged by taste, refuted by hearing, or invalidated by sight? Not so, in my opinion. The fact is that each sense has its own special sphere, its own separate function. Thus the discernment of softness, cold, and heat must be the province of one particular sense, while the perception of the various colors and everything connected with colors[30] must be the business of another. Taste too has its own distinct function; smell is produced separately, and so is sound. It

27. **469–521:** Skepticism in Greek philosophy has a long and complicated history, and our knowledge of it is far from complete. It is hardly surprising therefore that there has been much disagreement about the identity of Lucr.'s source(s) and target(s) in this passage. Some scholars have been too dogmatic in a case where it would be wiser to be skeptical! Even if, as is likely, our writer's main source is Epicurus, this does not mean that he cannot be aiming his argument at, or partly at, contemporary skeptics. That Epicurean writers after Epicurus were quite capable of taking account of skeptics who lived later than their master is shown by Diogenes of Oinoanda *fr.* 5.III.12–14, where, just before the text unfortunately breaks off, there is mention of Lacydes of Cyrene, who belongs to the second half of the third century B.C.

28. **472:** On this picture of the skeptic as one who takes up a position that is not only upside down, but also back to front, see M. F. Burnyeat, *Philologus* 122 (1978) 197–206.

29. **478–499:** With this argument that sensation is the primary criterion of truth, and that there is nothing that can refute it, compare Diogenes Laertius 10.31–32. See also 1.422–425, 693–700.

30. **493:** By "everything connected with colors" Lucr. presumably means shape, outline, etc.

necessarily follows therefore that one sense cannot refute another. It is also impossible for any sense to correct itself, since it must always be considered equally reliable. Therefore all sensations at all times are true.

And even if reason fails to resolve the problem of why objects, which close at hand were square, have a round appearance when viewed from a distance,[31] it is better, if one is ignorant of the reason, to give an erroneous explanation of the difference in shape than to let manifest facts slip from one's grasp and to undermine the first principles of belief and tear up all the foundations upon which our life and safety are based. For if you were not prepared to trust the senses, not only would all reason fall in ruin, but life itself would at once collapse, since you would be unable to avoid precipices and other such dangers and keep to places of safety. You may be sure, then, that the arguments that have been marshaled and arrayed against the senses are merely a multitude of empty words.

I conclude with an illustration. If, when you begin to construct a building, your rule is warped,[32] your square not truly rectilinear, and your level the slightest bit inexact in any part, the inevitable result is a structure full of faults -crooked, lopsided, leaning forward here and backward there, and all out of proportion, with some parts seemingly on the verge of collapse and others actually collapsing, all having been betrayed by those erroneous calculations at the outset. In the same way, then, your reasoning about things must of necessity be distorted and false if the senses upon which it is based are themselves false.

Now it remains to explain how each of the other senses receives impressions of the objects within its own sphere—a task that certainly does not involve treading a stony path.

In the first place, whenever sounds and voices are heard, it is because particles of their substance have insinuated themselves into the ears and impinged on the sense organ. The corporeal nature of voices and sounds must be acknowledged in view of their ability to stimulate the senses.

Besides, the voice often abrades the throat, and shouting in its egress roughens the windpipe. For when the vocal particles have crowded up through the narrow passage in an excessively dense throng and have begun to stream out, the crush in the windpipe causes the abrasion of the

31. **500–502:** See 353–363.

32. **513:** The Greek word for a builder's rule or straightedge, *kanōn*, was used metaphorically as the title of the work (not extant) in which Epicurus explained his theory of knowledge, known as the canonic. Therefore Lucr.'s illustration in 513–521 could not be more appropriate. For an account of the canonic, see pp. xxiv–xxv.

entrance to the mouth as well. Unquestionably, then, voices and words are composed of corporeal particles, seeing that they have the power to cause injury.

Moreover, you are well aware how much people's bodies are wasted and how much their energy and strength are sapped by an uninterrupted spell of talking protracted from the first gleam of dawn until the dark of dusky night, especially if their words are uttered in a loud voice. And since those who talk a lot sustain corporeal loss, the voice must be corporeal.

The roughness of a sound results from the roughness of its constituent elements, and its smoothness is caused by their smoothness. When the snarling barbarous trumpet brays loud and deep with raucous reverberating boom, the elements that invade the ears are not of the same form as those that enter when swans from Helicon's mazy mountain vales uplift the mournful strains of their melting melody.[33]

Now, when we expel these vocal particles from deep down within ourselves and emit them straight through the mouth, the supple tongue, the deft artificer of speech, molds them into articulate sounds, and the shaping of the lips plays its part in giving them form. When no great distance separates the source of each utterance from the hearer, the actual words are bound to be clearly audible, with every syllable distinct; for the vocal particles maintain their arrangement and configuration. But if the intervening distance is excessively great, it is inevitable that the words become indistinct and the voice distorted in the course of their lengthy flight through the breezy air. Consequently you receive an impression of the sound without being able to distinguish the meaning of the words: so confused and hampered is the voice when it reaches you.

Again, it often happens that a single word, sped from a crier's mouth, stirs the ears of a whole multitude. Thus a single utterance must at once divide into many utterances, since it distributes itself to the ears of all, impressing upon each the form and distinct sound of the words. Some of the utterances, failing to fall upon the ears, pass by and fade away, wastefully dissipated in the air, while others rebound from solid objects

33. **547:** The text is hopelessly corrupt. I have translated *et cycni tortis convallibus ex Heliconis,* a tentative suggestion of mine that owes much to earlier editors, including Lachmann. It is a mere stopgap. Even the swans are doubtful: Lucr. may have mentioned nightingales instead, but surely not, as has been recently suggested (M. H. Koenen, *Mnemosyne* 52 [1999] 454–455), swallows as well, in view of the poet's uncomplimentary reference to the swallow's twittering in 3.6–7.

against which they strike, and so return the sound and sometimes delude us with the echo of a word.

Once you have clearly understood this, you can explain to yourself and to others how it is that, in lonely places, rocks return counterparts of our words in due order, when, as we seek companions straying straggglingly among somber mountains, we call them with a loud voice. I have known places return as many as six or seven cries, when only one was uttered: the words were repeatedly flung to and fro from hill to hill, as though trained to come back.

Such places are fancied by local people to be the haunts of nymphs and goat-footed satyrs,[34] and to be the homes of fauns,[35] by whose night-pervading clamor and frolicsome revelry the still silence is, they say, often broken; sounds of strings are heard, and sweet notes ripple from the plaintive pipe as the players' fingers strike the stops.[36] They relate also that rustic folk far and wide hear the sound, when Pan,[37] shaking the sprays of pine that shadow his half-bestial head, time and again runs over the hollow reeds with pursed lips, making a ceaseless stream of sylvan music flow from his pipe. Country people tell other equally fantastic and amazing tales. Their motive for boasting of such miracles is perhaps fear of being regarded as inhabitants of parts so lonely that even the gods have forsaken them. But they may be prompted by some other reason, for human beings are always inordinately greedy for an audience.

To proceed, there is no need to wonder how it is that barriers, through which our eyes cannot see plain objects, allow sounds to penetrate them and impinge on our ears. The reason why we often witness a conversation taking place even through closed doors is undoubtedly that, whereas sound particles can pass unharmed through tortuous passages in objects, images refuse to do so; for the latter are shattered unless they have straight passages through which to glide, like those in glass, which is permeable to all images.

Moreover, a single utterance distributes itself in all directions, since it splits up at once into a multitude of particles that in turn produce others, just as a spark of fire often flies into fiery fragments. And so voices crowd places hidden away from sight and make them all astir and alive

34. **580:** Greek woodland spirits, in form partly human, partly bestial (here goatish).

35. **581:** Native Italian spirits of the countryside, very similar to satyrs.

36. **585:** Repeated at 5.1385.

37. **586:** Greek rural deity, represented as partly human, partly goatish (goat's legs, horns, and ears). The pine was sacred to him. He was a musical god, whose instrument was the syrinx or panpipe.

with sound. Images, on the other hand, from the moment of their emission invariably proceed in straight lines. This explains why it is never possible to see objects behind a wall, though it is possible to hear voices beyond it. Even so, the voice becomes dulled in passing through the walls of houses and penetrates our ears in a confused state, so that we seem to hear a sound rather than the actual words.

The organs of taste, namely the tongue and the palate, are equally easy to explain.

In the first place, we experience taste in the mouth when, by masticating our food, we squeeze out the juice. The process resembles that when someone begins to squeeze dry a sponge full of water. All that we squeeze out is then channeled through the ducts of the palate and the tortuous passages of the porous tongue. When the particles of oozing juice are smooth, they soothingly touch and soothingly stroke all the moist, salivary regions around the tongue. On the other hand, the rougher they are, the more they prick the sensory organs and tear them in their onset.

Moreover, the pleasure derived from taste is confined to the palate. Once the food has plunged down through the throat and is all being channeled into the limbs, no pleasure is experienced. And it does not matter at all with what kind of food your body is nourished, so long as you can digest what you take, channel it into the limbs, and keep the stomach in a constantly healthy condition.

I will now explain how it is that different creatures have different food, and why what tastes unpleasant and bitter to some can seem completely delicious to others. Differences and variations of taste are so great that what is food to one is rank poison to others: there is even a serpent that if touched by human saliva, perishes by biting itself to death;[38] and again, although to us hellebore is rank poison, goats and quails thrive on it.

In order to understand the reason for this, you should in the first place call to mind what I said earlier about the component seeds of objects being combined in manifold ways.[39] Just as all living creatures that take food differ in outward appearance, and the external contour of their frame varies according to their species, so the seeds of which they are formed differ in shape. And since the seeds vary in shape, there must be corresponding differences in the shape of the interstices and passages—

38. **638–639:** The notion that human saliva has a deadly or harmful effect on snakes is also found in Aristotle and Pliny the Elder.

39. **643–644:** See 1.814–829, 895–896, 2.333–380.

the pores, as we term them—in every part of the body, including the mouth and the palate itself. Some pores will be smaller, others larger; in some creatures they will be triangular, in others square; often they will be round, sometimes multifariously multangular. The shapes of the pores and passages are invariably determined by the shapes and movements of the atoms that constitute the surrounding tissue. So when something that tastes bitter to one creature proves sweet to another, undoubtedly what happens is this: if the food tastes sweet, extremely smooth particles are entering the pores of the palate with caressing touch; if, however, the same food tastes bitter, then rough and barbed particles are penetrating the orifices.

On the analogy of these examples it is easy to explain each individual case. Thus when fever has assailed someone through excess of bile, or when a violent disease has been provoked by some other cause, the whole body is at once disordered and the positions of the constituent elements are all changed. Consequently particles that previously suited the person's taste are now unsuitable to it; others prove better adapted to it, and these penetrate the pores and produce a bitter sensation. Honey, as I have often indicated to you before,[40] derives its flavor from a mixture of rough and smooth particles.

Now then, I will explain how smell reaches and affects the nostrils. First of all, there must be countless objects from which waves of various odors flow in a rolling tide; and we must suppose that these effluences are discharged and scattered in all directions. But, because of differences of atomic shape, certain smells are better suited to certain creatures. And so bees are drawn any distance through the air by the fragrance of honey, and vultures by the stench of carrion; powerful hounds, sent on ahead, lead the hunter along the track of the cloven-footed quarry; and the snow-white goose, the savior of the citadel of the descendants of Romulus,[41] is quick to detect human scent from afar. In this way different creatures are endowed with different powers of smell which, by guiding each to its own food and forcing it to recoil from foul poison, ensure the preservation of the species of wild beasts.

40. **671–672:** See 2.398–407, 3.191–195, though in neither passage does Lucr. state that honey contains rough particles as well as smooth. The inexactness of the reference and the abruptness of the mention of honey in this passage may well be due to lack of revision.

41. **683:** Tradition relates that, when the Gauls attacked Rome in 387 B.C., the warning given by the sacred geese of Juno enabled the Capitol to be saved.

Now, of the smells that impinge on our nostrils, some can be wafted through the air farther than others. None, however, travels as far as sound and voice or, needless to say, as far as the images that impinge on our eyes and provoke vision. Smell meanders and moves sluggishly and fades away before it reaches its goal, readily dispersing little by little into the breezy air. There are two reasons for this: first, it has difficulty in issuing from the depths of the object that is its source. That odors emanate and withdraw from the interior of objects is indicated by the patent fact that every substance diffuses a stronger smell when broken, bruised, or burned. Secondly, it is evidently composed of grosser elements than voice, since it does not penetrate stone walls,[42] which are always pervious to voice and sound. Consequently you will notice that it is less easy to trace the source of a smell than that of a sound. The emanation grows cool as it loiters through the air, instead of speeding in hot haste to the sense with news of the object. That is why hounds often lose the scent and have to search for the trail.

It is not only with respect to smell and taste that different creatures are differently affected. Forms and colors too are not all equally suited to the senses of all; indeed certain of them are too acrid to the eyes of certain animals. Consider how ravening lions cannot endure the sight of the cock,[43] whose habit it is to chase away the night with clapping wings and summon the dawn with shrill clarion. Their immediate reaction is to flee. Undoubtedly the explanation is that the cock's body contains certain seeds which, when projected into lions' eyes, stab the pupils and inflict such a stinging pain that the beasts, for all their courage, cannot bear it. And yet these particles have no power to hurt our eyes, either because they do not penetrate them or, if they do, because they find a free egress, so that they cannot by lingering hurt the eyes in any part.

Now then, listen and learn while I explain briefly the nature and source of the objects that enter the mind and stir it to thought. My first point is that countless subtle images of things roam about in countless ways in all directions on every side. When these meet in the air, they easily become interlinked, like cobwebs or gold leaf. They are far finer in texture than

42. **700–701:** This statement is inconsistent with 6.952, where Lucr. says that smell, like sound, cold, and heat, does penetrate stone walls.

43. **710–713:** The idea that lions are afraid of cocks is also found in Pliny the Elder, Seneca, and St. Ambrose. But Cuvier, who tried the experiment of placing a cock in a lion's cage, found that the lion devoured it.

the images that occupy our eyes and provoke sight, since they pass through the interstices of the body, stir the subtle substance of the mind within, and so provoke its sensation.[44]

In this way we see Centaurs,[45] the forms of Scyllas,[46] the faces of Cerberean hounds,[47] and the specters of people who are dead and whose bones are embosomed in the earth. For images of every kind are moving everywhere, some formed spontaneously in the air, others emanating from various things and compounded of their different shapes. Certainly the image of a Centaur is not derived from a living being, since no such creature ever existed.[48] But when the images of a horse and a human being chance to meet, they instantly and easily cohere, as we have said before, on account of the subtlety of their substance and the tenuity of their texture. The images of all other such monsters are produced in the same way. And since these subtle images, as I have already shown,[49] move swiftly and with extreme lightness, any one of them can easily stimulate our mind with a single impression. For the mind itself is subtle and extraordinarily mobile.

What follows will make it easy for you to recognize the correctness of this theory. The fact that mental vision is similar to ocular vision means that the two processes must be effected by similar means. Since I have shown that I see a lion, for example, by means of images that impinge on my eyes, you may be sure that the mind is moved in just the same way as the eyes—that is, by means of images of lions or of whatever else it sees. The only difference is that the images perceived by the mind are finer.

And if, when sleep has prostrated our limbs, our mind is awake, the reason is that it is stimulated by the same images as when we are wakeful. Indeed it receives such vivid impressions that we really seem to see persons who have departed from life and now belong to death and dust.

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44. **722–732:** On the way in which thought and dreams are caused by the entry of images into the mind, just as vision is caused by images entering the eyes, see also Epicurus *Hdt.* 49–51, Cicero *Fin.* 1.21, Diogenes of Oinoanda *fr.* 9–10. It is important to note the point, made in 728–729, that the images that penetrate the mind are much finer than those that strike our eyes.

45. **732:** Fabulous creatures, partly human, partly horse. Cf. 5.878–891.

46. **732:** Scylla was a mythological sea monster with six heads and twelve feet, mentioned again at 5.893. She lived in a cave opposite Charybdis (see 1.722).

47. **733:** See note on 3.1011.

48. **740:** For proof that Centaurs and suchlike can never have existed, see 5.878–924.

49. **746:** 4.176–215.

The reason why nature gives us these illusions is that the activity of all the bodily senses is suspended: they are at rest throughout the limbs and therefore cannot separate the true from the false.[50] What is more, the memory is inert and sluggish with slumber and so does not object that the person, whom the mind believes it sees alive, long ago fell a victim to death and destruction.

It should be added that there is nothing remarkable in the fact that images walk and rhythmically move their arms and other limbs. It is indeed true that images seen in sleep seem to do this, and the reason for it is this: when one image fades away and is succeeded by another in a different position, it looks as though the former image has changed its posture. Of course we must assume that this happens extremely rapidly: so immense is the velocity of the images, so immense is the store of them, and so immense is the store of particles emitted at any single perceptible point of time, to ensure that the supply of images is continuous.[51]

In connection with this subject, there are many questions to be asked and many points that need to be elucidated, if we wish to give a clear exposition of the truth.

First of all, we must ask how it is that the mind can instantly think of anything it wants. Do the images wait upon our will, so that, as soon as we wish it, one presents itself to us, whether the object of our desire be the sea or the earth or the sky? Assemblies of people, processions, banquets, battles—does nature provide and prepare all these spectacles for us at our command?—and that too when in the same region and place the minds of others are thinking of all sorts of quite different things.

Again, how is it that in sleep we see images advancing with rhythmic steps and swaying their lissome limbs, swiftly swinging supple arms alternately, while before our eyes[52] their feet again and again with measured movement fall? The roving images must indeed be gifted and expert performers, to be able to provide these nocturnal entertainments!

No, surely the true explanation of these problems is that in a single perceptible moment of time —that is, in the time it takes to utter a single sound—there are myriads of moments of time whose existence, though

50. **757–764:** Closely parallel with this passage, but in places more informative, is Diogenes of Oinoanda *fr.* 9.IV.7–VI.3.

51. **768–776:** Experience of cinematographic pictures makes it very easy for modern readers to follow Lucr.'s explanations.

52. **791:** Since Lucr. is describing a dream, "before our eyes" is, strictly speaking, inaccurate, but the inaccuracy is an entirely natural one.

imperceptible to our senses, is detected by reason.[53] That is why at any time in any place all kinds of images are ready at hand: so immense is their velocity, and so immense is the store of them. Thus, when one image fades away and is succeeded by another in a different position, it looks as though the former image has changed its posture.[54] And because of the subtlety of the images, the mind cannot perceive them distinctly unless it concentrates its attention on them. Consequently all pass away unnoticed, except those for which it has prepared itself. It should be added that it expectantly prepares itself to see the consequences of each happening, and therefore does see them.[55] Similarly have you not noticed that when the eyes endeavor to perceive minute objects, they strain themselves and prepare themselves, and that, unless they do this, we cannot see distinctly? And even in the case of objects within our field of vision, you may observe that, if you do not concentrate your attention on them, it is just as if they were all the time far removed and separated from you. Why then is it remarkable that the mind should miss all the images except those on which it is intent? Besides, we base sweeping opinions on slight indications and so involve ourselves in the error of self-deception.[56]

It sometimes happens that an image is succeeded by another of a different kind: a woman is seemingly metamorphosed into a man before our very eyes; or a change of features and age takes place. But oblivious sleep ensures that these transformations cause us no surprise.

In this connection,[57] I am extremely anxious that you should carefully avoid the mistake of supposing that the lustrous eyes were created to

53. **794–796:** Just as the atom, though physically indivisible, is to be thought of as having parts (1.599 634), so the smallest perceptible point of time is to be conceived of as capable of division into a multitude of parts.

54. **799–801:** Except for the alteration of one word, these lines are identical to 744, 771–772. Probably this is a section that Lucr. had not finished revising.

55. **805–806:** In other words, when the mind sees an image, it expects to see the series of images that follows. For example, if it sees two objects heading straight for one another, it prepares itself to see the collision; and the fact that it expects to see the collision causes it to select the image of the collision, so that this is indeed what it sees.

56. **816–817:** Cf. 4.462–468, but the relevance of the two lines here is obscure.

57. **823–857:** When Epicurus attacked the teleological view that the organs of the body were created for the purposes that they serve, his main target will have been Aristotle. But, given that the Stoics, the chief opponents of the Epicureans in Lucr.'s time, also held the teleological view, our author must surely be thinking of

enable us to see; or that the tapering shins and thighs were attached to the feet as a base to enable us to walk with long strides; or again that the forearms were jointed to the brawny upper arms, with ministering hands provided on either side, to enable us to perform the tasks necessary for the support of life. All such explanations are propounded preposterously with topsy-turvy reasoning. In fact, no part of our body was created to the end that we might use it, but what has been created gives rise to its own function. Sight did not exist before the birth of the eyes, nor speech before the creation of the tongue; rather the tongue came into being long before talking, and the ears were created long before a sound was heard. In short, I maintain that all the organs were in being before there was any function for them to fulfill. They cannot, then, have grown for the purpose of being used.

On the other hand, participation in the strife of battle, mutilation of limbs, and disfigurement of bodies with blood took place long before shining spears sped through the air; and people instinctively avoided wounds before they learned the technique of holding a buckler in the left hand for protection. Again, it is obvious that the practice of consigning the weary body to rest is much older than the soft-spread bed, and that the slaking of thirst preceded the invention of cups. Thus in the case of these instruments, which were invented to meet the needs of life, one is justified in believing that they were discovered for the purpose of being used. However, it is entirely different with all those things that were first created independently and suggested the notion of their utility afterward. And at the head of this class we see the sensory organs and the limbs. So I insist that you cannot possibly believe that they could have been created for the purpose of being useful to us.

Again, there is nothing remarkable in the fact that every living creature instinctively seeks food for its body. For, as I have shown,[58] many particles flow away and withdraw from things in many ways. But animals inevitably suffer the greatest loss of substance: being always restless and on the move, they exude many particles in sweat from deep within, and exhale many through the mouth when they pant from exhaustion. As a result of these losses the body becomes rarefied and the whole constitution is undermined. Consequently nourishment is taken to support the frame and restore the strength by its diffusion throughout the limbs and veins, and to stop the gaping craving for food. Similarly fluid

them as well. For the Stoic belief that divine providence is manifested in the design and structure of human beings, see Cicero *DND* 2.133–150.

58. **861:** 2.1128–1143.

is channeled into all the parts of the body that require fluid. The numerous particles of heat, whose accumulation causes a burning in the stomach, are dispersed and quenched, like a fire, on the arrival of the moisture, so that the parching heat can no longer consume the frame. In this way, then, our body's panting thirst is swilled away, and the craving of hunger satisfied.

Now I will explain how it is that we can step forward when we wish, and move our limbs at will, and what the force is that propels the huge bulk of our body. I want you to take in what I say.

I maintain, as I have maintained before,[59] that first of all images of movement present themselves to the mind and impinge on it. Then comes the act of will: no one can begin to do anything until the mind has foreseen what it wills to do; and what it foresees is determined by the image. So, as soon as the mind stirs itself in such a way that it wishes to move forward, it acts on the spirit, whose force is disseminated through all the limbs and members of the body; and this is easily done, since mind and spirit are intimately connected. The spirit in its turn acts on the body, and so little by little a forward motion is imparted to the whole mass.

Moreover, once in motion, the body becomes rarefied,[60] and air, as one would expect of a substance that is always quick to move, penetrates the opened pores in an abundant stream and is thus distributed to every minute part of the body. So the body is driven forward by these two separate forces,[61] like a vessel propelled by the action of wind upon its sails.

There is nothing remarkable in the fact that such tiny particles can maneuver such a large body and turn about our whole bulk. Consider how the wind, though finely formed of subtle substance, drives before it a mighty vessel with mighty momentum, while a single hand guides the ship, no matter how swift its speed, and a single helm steers it in any direction; consider, too, how a crane, with the help of pulleys and wheels, moves massive loads, hoisting them with slight effort.

Now, by what means does sleep send repose flooding through our limbs, and disburden our breast of cares? I will explain in verses melodious rather than many: the swan's brief song is preferable to the clamor-

59. **882:** 4.724–731.

60. **892:** Cf. 4.862–865.

61. **896:** The two forces are the limbs and the air: the action of the latter upon the former is likened to the action of the wind upon the sails of a ship. For a similar comparison, see 6.1031–1033.

ing of cranes that crowds the clouds of the southern sky.[62] I want you to lend me attentive ears and an alert mind. Be sure that you do not deny the validity of my account and turn from me with a breast impervious to true precepts, when you yourself are at fault and cannot see.

In the first place, sleep occurs when the substance of the spirit throughout the body has been disturbed, and has partly been expelled from the limbs and dispersed, and has partly been thrust down into the deep recesses of the body. It is then that the limbs become relaxed and limp. You see, there is no doubt that the sensation in our body is caused by the spirit, and when this sensation is suspended by sleep, it can only be assumed that the spirit has been disordered and expelled from the body. Not all of it is expelled, however, for, if that were so, the body would be sunk in the eternal chill of death. If no part of the spirit remained concealed in the limbs, like fire lurking beneath a deep layer of ashes, how could sensation suddenly be rekindled throughout the limbs, as flame springs up from a smoldering fire?

I will now explain how this change of condition comes about, and what causes the spirit to be disordered and the body to grow limp. I want you to ensure that I do not scatter my words to the winds.

In the first place, the exterior of the body, as an inevitable result of its close contact with the breezy air, is continually battered and buffeted by its blows. And that is why almost all bodies are invested with hide or shell or tough skin or bark. The interior of the body too is beaten by the air that we breathe, when it is inspired and expired. Since our body is battered both within and without, and since the blows penetrate through the tiny pores to its ultimate particles and primary elements, a kind of ruin gradually spreads through the limbs: the elements of body and spirit[63] are disarranged; then part of the spirit is expelled from the body, and part retires into its inner recesses, while a third part, dispersed throughout the limbs, cannot maintain its cohesion or engage in interchange of motion because nature barricades all its paths of communication. These disturbances drive sensation deep down in the body; and, in the absence of anything to support the frame, the body becomes weak and all the limbs grow limp; the arms and eyelids droop; and even when one is going to bed, it often happens that the knees give way and lose their strength.

62. **909–911:** Repeated from 180–182. See note there.

63. **944:** Translating *animae,* tentatively suggested by Bailey for *animi.* The reference should certainly be to the spirit, not to the mind. If Lucr. wrote *animi,* either he made a mistake or he meant it to mean "mind and spirit," but elsewhere in his discussion of sleep only the spirit is mentioned.

The reason why food induces sleep is that it produces precisely the same effect as air, while it is being channeled into all the veins; and the reason why you enjoy the heaviest sleep when you are replete or weary is that then the greatest number of atoms are disturbed in consequence of the strain of their heavy labor. At the same time, the part of the spirit thrust downward is driven deeper, the part expelled from the body is more considerable, and there is greater internal discord and dislocation.

Now, whatever activity is the object of our closest interest and attachment, or whatever business has occupied much of our time in the past and has received our mind's special attention—this is usually the subject of our dreams. Lawyers dream that they are pleading cases and drafting contracts; generals that they are fighting battles; mariners that they are continuing to wage war with the winds; and I that I am tackling my task of constantly investigating the nature of things and expounding my discoveries in my native tongue.[64] The position is usually the same when other pursuits and arts occupy people's minds with delusions in their dreams. In the case of those who have devoted all their attention to public entertainments for many days in succession, we generally find that, even when they have ceased to observe the shows with their senses, in their minds paths remain open through which images of the spectacles can pass.[65] Thus for many days the same sights keep presenting themselves before their eyes, so that, even when awake, they seemingly see dancers swaying lissome limbs, and hear melting melodies struck from the strings of the eloquent lyre, and survey the same seated assembly with the varied splendor of the stage in all its brilliance.

So great is the importance of enthusiasm and inclination; so great too is the influence of habitual employment—and not only on human beings, but on all animals. Thus you will see spirited steeds, even when their limbs are stretched out in sleep, perpetually perspiring and panting, as though exerting all their strength to win the palm of victory or [bursting]

64. **969–970:** No doubt Lucr. did dream of his work, but, as in 1.410–417 (see note there), where he tells Memmius that he will, if necessary, bombard him with arguments until old age has overtaken the pair of them, a touch of humor is evident.

65. **973–977:** Cf. Diogenes of Oinoanda *fr.* 9.III.6–IV.2: "And after the impingements of the first images, our nature is rendered porous in such a manner that, even if the objects that it first saw are no longer present, images similar to the first ones are received by the mind, [creating visions both when we are awake and in sleep]."

past the opened starting gates.[66] Often hunters' hounds, though subdued by downy slumber, abruptly twitch their legs and give sudden yelps and keep snuffing the air, as if they were following the newly discovered tracks of wild animals; and often, when awakened, they pursue illusive semblances of stags, as though they saw them in flight, until the delusion is dispelled and they recover their senses. Similarly the fawning breed of domesticated dogs suddenly start and snatch their bodies from the ground, just as if they were seeing unfamiliar faces and features. The wilder the breed, the more fiercely it will behave in its dreams. Even the various kinds of birds abruptly take flight and with flapping wings disturb the nocturnal stillness of sacred groves, if, when wrapped in soothing sleep, they have dreamed of hawks swooping after them with hostile intent.

Similarly, human beings, whose minds with mighty motions effect mighty deeds, often repeat their actions and exploits in their dreams: kings capture cities, are themselves led captive, join battle, and cry out aloud as if they were being stabbed then and there. Many struggle desperately and give groans of pain and, as though they were being devoured by the jaws of a panther or savage lion, fill the whole place with loud shrieks. Many talk in their sleep about important schemes and have often divulged their own crimes.[67] Many meet their death. Many, under the illusion of plunging earthward with all their weight from precipitous heights, are terror-stricken; and when they awake like people out of their minds, they are so severely shaken by the ferment of the body that they have difficulty in returning to their senses. One who is thirsty sits down beside a river or delightful spring and all but gulps down the whole stream. When they are prisoners of sleep and fancy that they are lifting their dress beside a urinal or chamber pot, many people[68] often discharge the filtered fluid of their whole body, and Babylonian quilts get a wetting despite their sumptuous splendor. Then too a boy through whose adolescent body the seed is just beginning to surge, when the ripeness of time has created it in his limbs, is visited by images from some body or other, introducing an exquisitely fair face and a beautiful complexion. These visions excite and stimulate the parts that are

66. **990:** See note on 2.263–264.

67. **1018–1019:** Cf. 5.1158–1160.

68. **1026:** I translate Avancius' *multi* for *puri,* reverting to the reading I adopted in the 1982 Loeb. In the 1992 Loeb I preferred M. L. Clarke's *parvi,* "children," but R. D. Brown, *Harvard Studies in Classical Philology* 96 (1994) 191–196, has persuaded me that the correct reading is either *multi* or Merrill's *poti,* "intoxicated persons."

turgid with an abundance of seed, often causing him, as though in consummation of the act, to ejaculate great waves of fluid and stain his night clothes.[69]

The stirring of the seed within us takes place, as I have said above, when adolescence is just beginning to strengthen our limbs.[70] Different things are moved and stimulated by different causes; and human seed can be elicited from the human body only by the influence of a human being. As soon as the seed is ejected from its places of lodgement all over the body, it passes through the limbs and members, concentrates in certain parts of the groin, and at once arouses the genitals themselves. These parts are stimulated and swell with seed, and the desire arises to emit the seed toward the object of our dire craving. The body seeks the object that has wounded the mind with love. For, as a general rule, all fall toward their wound: out gushes the blood in the direction from which the blow has been dealt, and, if the assailant is at close quarters, he is stained by the crimson jet. The same is true of the man who is wounded by the darts of Venus: whether they are launched by a boy with effeminate limbs or by a woman whose whole body radiates love, he moves toward the source of the blow, yearning to copulate and ejaculate the accumulated fluid from body to body;[71] for his speechless desire augurs the pleasure to come.

69. **1030–1036:** The explanation of wet dreams neatly effects the transition from dreams to sexual passion.

70. **1037–1287:** Lucr.'s chief philosophical source in his treatment of sex is undoubtedly Epicurus. Not much of what Epicurus wrote on the subject survives, but all the indications are that Lucr.'s views are in harmony with those of his master. Epicurus placed sexual desire in his "natural-but-unnecessary" category of desire, which means that those affected by it must proceed with caution. Since its satisfaction brings physical pleasure (albeit a brief one), there is no reason to avoid it *provided that* it does not also bring pain. But in practice it often does bring pain, especially if an emotional entanglement has developed. So the recommendation (see 1069–1076) is either to abstain from sexual intercourse or, if one cannot do without it, to have it on a casual basis so that one gets the physical pleasure, but avoids the mental pain. Lucr.'s literary sources in this section are complex and varied: they include the Greek epigrammatists, the Roman dramatists Plautus and Terence, the Roman satirist Lucilius, and in one famous passage (1160–1169) Plato and the Greek poet Theocritus. For full and excellent treatment of the sources and indeed of everything else to do with the closing section of Book 4, see R. D. Brown, *Lucretius on Love and Sex*.

71. **1048–1056:** Wound imagery is common in Greek erotic poetry, and Lucr. deploys it to devastating effect. The comparison of an ejaculation of semen, during sexual intercourse, to a spurt of blood when someone has been wounded is

This is what we call Venus. This is also what gives us our name for love;[72] this is the source of that honeyed drop of Venus' sweetness that is first distilled into our heart, to be followed by chilling care. For even if your loved one is absent, images of her are with you and the darling name keeps ringing in your ears. It is advisable to shun such images, to abstain from all that feeds your love, and to turn your attention elsewhere: you should ejaculate the accumulated fluid into any woman's body rather than reserve it for a single lover who monopolizes you and thus involve yourself in inevitable anxiety and anguish. The fact is that feeding the ulcer increases its strength and renders it inveterate: day by day the frenzy grows and the misery is intensified, unless you obliterate the old wounds with new blows and heal them while still fresh by taking at random some random-roaming Venus, or unless you divert the motions of your mind into some other channel.

The man who avoids love does not deprive himself of the joys of Venus, but rather chooses those that involve no penalty. For it is undeniable that the pleasure of intercourse is purer for the healthy-minded than for the lovesick. Even in the hour of possession the passion of lovers fluctuates and wanders in uncertainty: they cannot decide what to enjoy first with their eyes and hands. They tightly squeeze the object of their desire and cause bodily pain, often driving their teeth into one another's lips and crushing mouth against mouth. This is because their pleasure is not pure: there are secret spurs that stimulate them to hurt the very object, whatever it may be, from which these germs of madness spring.

But during the act of love Venus mitigates the lovers' penalties, and the admixture of seductive pleasure curbs their bites. For the hope is that the same body that kindled the burning passion can also extinguish the flame. However, nature objects that quite the reverse happens. So far as this one thing is concerned, the more of it we have, the more fiercely our breast burns with dire craving. Food and drink are taken into our body and, since they are able to occupy fixed parts, easily assuage our hunger and thirst. But from the fair face and complexion of a human being nothing passes into the body for enjoyment except impalpable images, a sorry hope often snatched away by the wind. Just like thirsty people who in dreams desire to drink and, instead of obtaining water to quench the fire that consumes their limbs, with vain effort pursue images of water

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designed to deglamorize sexual passion; so is the play in 1054 and 1056 on the similarity of the words *amorem* ("love") and *umorem* ("fluid," i.e., semen).

72. **1058:** If *nomen amoris* is correct (the conjectural *momen amoris,* "love's impulse," is quite tempting), the reference is apparently to Cupid, the Roman god of love, a personification of *cupido,* "desire."

and remain thirsty, though they drink in the midst of a torrent stream, so, in love, lovers are deluded by Venus with images: no matter how intently they gaze at the beloved body, they cannot sate their eyes; nor can they remove anything from the velvety limbs that they explore with roving, uncertain hands. At last, with limbs interlocked, they enjoy the flower of youth: the body has a presentiment of ecstasy, and Venus is on the point of sowing the woman's fields; they greedily press body to body and intermingle the salivas of their mouths, drawing deep breaths and crushing lips with teeth. But it is all in vain, since they cannot take away anything from their lover's body or wholly penetrate it and merge into it. At times they do indeed seem to be striving and struggling to do this: so eagerly do they remain fettered in the bonds of Venus, while their limbs are slackened and liquefied by the force of the ecstasy. At length, when the accumulated desire has burst from their genitals, there is a brief respite in their raging passion. Then the same madness returns, and they have another fit of frenzy: they seek to attain what they desire, but fail to find an effective antidote to their suffering: in such deep doubt do they pine away with an invisible wound.

Remember too that the lover consumes his strength and is exhausted by the strain; remember that his life is ruled by another. His duties are neglected; his reputation totters and dwindles. Meanwhile the hard-earned family fortune melts away, transformed into Babylonian perfumes. His mistress's feet sparkle with lovely slippers from Sicyon.[73] You may be sure too that she wears huge green-gleaming emeralds enchased in gold, and that her sea-blue gown, worn out by constant use, soaks up the sweat of Venus. The honest earnings of his fathers are converted into tiaras and headdresses[74] and sometimes into a Greek cloak and stuffs of Alinda[75] and Ceos.[76] Banquets with exquisite draperies and dainties are prepared, not to mention entertainments, drinks in profusion, perfumes, garlands, and festoons of flowers. But it is all in vain, since from the heart of the fountain of bliss there wells up something sour to pain him among the very flowers. Perhaps his conscience experiences a twinge of remorse at the thought of a life spent in sloth and

73. **1125:** Greek city, Corinth's western neighbor.

74. **1129:** Headdresses (*mitrae*) were associated by the Romans with eastern luxury and loose morals.

75. **1130:** A town in Caria, southwest Asia Minor.

76. **1130:** If "of Ceos" is what Lucr. wrote, he made a mistake: it was not Ceos, one of the Sporades, that produced fine silk cloth, but Cos, one of the Cyclades. If he has confused the two islands, he is not the only ancient author to have done so.

squandered in debauchery; perhaps his mistress has thrown out an ambiguous word and left it embedded in his passionate heart, where it burns like living fire; or perhaps he fancies that her eyes are wandering too freely, or that she is ogling some other man, while he detects in her face the trace of a smile.

These ills are experienced even in love that is steadfast and supremely successful; but when love is frustrated and unrequited, the miseries you can spot with your eyes shut are countless. So it is better to be wary beforehand, as I have recommended,[77] and to take care that you are not ensnared. For it is easier to avoid being lured into the traps of love than, once caught, to extricate yourself from the nets and burst the strong knots of Venus. And yet even when enmeshed and entangled you can still escape the danger, unless you stand in your own way and at the outset overlook all the mental and physical imperfections of the woman for whom you yearn and long. For men who are blinded by passion generally do this and attribute to their mistresses virtues that in reality they do not possess. Thus we find women with numerous defects of body and behavior being fondly loved and held in high esteem. One man derides another and advises him to appease Venus because he is cursed with a vile passion, often failing to see, poor fool, that his own plight is far worse. To such men a swarthy skin is "honey-gold,"[78] a slovenly slut "beauty unadorned," the gray-eyed "a miniature Athena,"[79] a wiry and woody wench "a gazelle," the dumpy and dwarfish "one of the Graces, the quintessence of all charms," while a huge hulking giantess is "a sheer marvel, the embodiment of majesty." The stammerer, who cannot speak a word, "has a lisp"; the dumb is "modest," the fiery-tempered, spiteful gossip "a sparkler." One becomes "a slender little darling," when she is a victim of consumption; another, fighting a losing battle with bronchitis, is "a delicate creature." The bulging and big-breasted is "Ceres suckling Iacchus,"[80] the snub-nosed "a lady-Silenus"[81] or "a she-satyr"; the thick-

77. **1145:** See 1063–1073.

78. **1160–1169:** This famous list of euphemistic descriptions of imperfect women seems to have been influenced, directly or indirectly, by Plato (*Republic* 474d–e) and Theocritus (10.24–27). It is possible that it is still more closely modeled on a lost source. Most of the euphemisms are Greek words.

79. **1161:** Homer gives the goddess Athena the epithet "gray-green-eyed."

80. **1168:** A minor deity, often identified with Bacchus. He was associated with the Eleusinian mysteries and was sometimes regarded as the son of Demeter (Ceres).

81. **1169:** Silenus, the attendant of Bacchus, was represented with a snub nose.

lipped was "made to be kissed." It would be a tedious task if I were to try to run through the whole list.

But even supposing the beauty of her face is all that could be desired, and the power of Venus radiates from all her limbs, what of it? There are others like her; we have lived without her until now; and her behavior is, as we know, just the same as that of an ugly woman. The wretched creature fumigates herself with such foul perfumes that her maids give her a wide berth and giggle behind her back. Her lover, so long as he is shut out, often tearfully buries her threshold under a mound of flowers and garlands, smears the disdainful doorposts with oil of marjoram, and plants lovesick kisses on the door. But if, once he is admitted, he should get just one whiff as he enters, he would seek a plausible pretext to take his leave; his plaintive speech, deep-drawn and long-rehearsed, would be forgotten; and then and there he would own himself a fool, on seeing that he had attributed to her more qualities than one ought to ascribe to a mortal. All this is well known to our Venuses; and that is why they take particular trouble to conceal all the behind-the-scenes activities of their lives from those whom they wish to keep fettered in the chains of love. But it is all in vain, since, despite their efforts, your mind can drag out all their secrets into the light and discover the reason for all the giggling; and if the woman is good-natured and not disagreeable, you can in your turn shut your eyes to her faults and make allowances for human weaknesses.

The woman is not always sighing with sham passion, when she joins her body to the man's and holds him in a close embrace, sucking his lips and moistening them with kisses. Often she is sincere and in search of mutual joys spurs him on to run the race of love to the goal. The same applies to female birds and beasts, cows, ewes, and mares: they could not submit to the male, were it not that their own exuberant nature is in heat and aflame with desire and gladly draws in the penis of the mounting male. Moreover, you must have observed how couples enchained by mutual pleasure are often tortured in common chains: a common sight at a crossroads is that of two dogs, longing to separate, straining eagerly and with all their strength in opposite directions, but still remaining fettered in the bonds of Venus. They would never get themselves into this position, unless they experienced mutual delights strong enough to lure them into the trap and keep them enchained. So I insist that sexual pleasure is shared.

And if at the intermingling of seed it happens that the woman with sudden strength masters the man's might and overpowers it, children are

conceived of the maternal seed and resemble their mother;[82] if the reverse happens, children are conceived of the paternal seed and resemble their father. But what of those in whom you see resemblances to each parent, and a combination of the characteristics of both? Well, they spring equally from the father's body and the mother's blood; and this comes about when mutual passion has conspired to dash together the seeds roused throughout the limbs by the goads of Venus, and neither partner's semen has been victorious or vanquished.

Furthermore, children sometimes may resemble their grandparents and not infrequently reproduce the features of their great-grandparents. This is because their parents often keep concealed in their bodies many elements, mingled in many ways, that are derived from the ancestral stock and transmitted from father to father. From this material Venus produces a chance combination of various features, recalling the expressions, voices, and hair of forebears; for these characteristics are derived from a specific seed just as much as our faces, limbs, and bodies.

Then, too, female children may spring from the father's seed, and males may be produced from the mother's body. For every offspring is formed from the seed of both parents, but it is predominantly composed of the seed of whichever parent it more closely resembles. You may see that this is so, whether the child is male or female.

It is not the divine powers that deprive any man of procreative capacity so that he is prevented from ever being called father by sweet children and is condemned to live a life cursed with sterility. This is indeed a widespread belief, which induces men mournfully to saturate the sacrificial slabs with streams of blood and set the altars ablaze with offerings, in the hope of making their wives pregnant with a full flow of semen. They importune the gods and their oracles in vain. For the cause of their sterility is either the excessive thickness of their semen, or its undue fluidity and thinness. The thin semen, failing to attach itself firmly to the appropriate parts, trickles away at once and withdraws without causing conception. The excessively thick semen, on the other hand, being discharged in an unduly condensed state, either does not spurt forward sufficiently far or does not properly penetrate the appropriate parts or, having penetrated them, has difficulty in mixing with the woman's semen. It is a patent fact that sexual harmony varies widely: some men impregnate some women more easily than others, while some

82. **1211:** Epicurus was one of several Greek philosophers who thought that the female, as well as the male, emits semen.

women receive the burden of pregnancy from some men more readily than from others. Often a woman, having proved infertile in several earlier marriages, has at last found a husband from whom she could conceive babies and be enriched with sweet offspring. Often too a man whose previous wives, in spite of their fertility, had been unable to have babies, has found a partner of compatible makeup who could give him children to be the prop of his old age. All this shows how very important it is that semen should be able to mix with semen in a manner suited to produce conception, thick seed blending with fluid, and fluid with thick.
1260 And here diet plays an important part; for some foods thicken the semen in our limbs, while others dilute and weaken it.

Another factor of paramount importance is the position in which the seductive pleasures of sex are enjoyed. The generally accepted view is that wives conceive most readily in the style and manner of four-footed beasts, because in this position, with the breasts below and the loins raised, the semen can occupy the appropriate parts. It should be added that wives have no need to make voluptuous movements: the woman
1270 opposes and prevents conception, if in her delight she receives the man's penis with her buttocks while making undulating movements with her body all limp; for she drives the furrow out of the direct path of the plowshare and diverts the seed from the vital parts. Whores regularly make these movements for their own ends, to minimize the risk of conception and pregnancy and at the same time to make sexual intercourse itself more pleasing to men. But obviously our wives have no need of such methods.

It is not due to divine intervention or the arrows of Venus that a woman
1280 with little pretension to beauty sometimes comes to be loved. Not infrequently the woman herself, by her behavior, by her obliging ways, and by the scrupulous neatness of her person, easily accustoms a man to spend his life with her. Furthermore, mere habit generates love. For anything that is struck by incessant blows, no matter how lightly, in long lapse of time is overpowered and made to yield. Have you not noticed that even drops of water falling upon a rock in long lapse of time hollow out that rock?