Episode Fifty-Two - More on Light, Vision, and Reflections

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Welcome to Episode Fifty-Two of Lucretius Today.

I am your host Cassius, and together with my panelists from the EpicureanFriends.com forum, we'll walk you through the six books of Lucretius' poem, and discuss how Epicurean philosophy can apply to you today. Be aware that none of us are professional philosophers, and everyone here is a self-taught Epicurean. We encourage you to study Epicurus for yourself, and we suggest the best place to start is the book, "Epicurus and His Philosophy" by Canadian professor Norman DeWitt.

For anyone who is not familiar with our podcast, please check back to **Episode One** for a discussion of our goals and our ground rules. If you have any question about that, please be sure to contact us at Epicureanfriends.com for more information.

In today's episode, we read Latin Text 230-323

Munro Notes

230-268: we feel a thing in the dark, and know it to be the same as we saw in the light: if what we feel is square, what square object can come in the light to our sight except its image, since a like effect must have a like cause? images proceed from things in all directions; but as we only see with the eyes, we only see images where we turn our sight to them. Again an image pushes before it the air between it and the eye; this air all sweeps through the pupil, and lets us judge of the distance of the object seen; and all this takes place almost instantaneously: we do not see the images singly, but we see the object by a continuous succession of these; just as we do not feel each particle of wind, but the effect of the whole : and so too we thump the surface of a stone, but feel its inner hardness.

269-323 : the image is seen not at the surface of the mirror, but beyond and within it in the same way that real objects are seen through and beyond an open door, namely by two airs: it was explained above, how the distance of an object from the eye was perceived by means of the air between it and the eye; thus you see first the distance of the open doorway by one air, then comes another air between the doorway and the object outside, which lets you see how far it is beyond the door: thus too the mirror and its distance from us is seen by means of its image which propels before it the air between the mirror and the eye, which first sees this air, then the mirror; then when we have perceived the latter, the image which goes from us to it, comes back to us, but drives onward an air which is seen before the image, and makes it

appear so far distant beyond the mirror. Again our image in the mirror has the right answering to our left, the left to our right, because on coming against the mirror it is dashed straight out in the reverse direction, like a wet plaster-mask thrown against a post. Again a series of mirrors disposed in a certain way can bring into view all the recesses and turnings of a building. Again concave mirrors shew our image with right answering to right, left to left. Again the images step and move as we do, because when you withdraw from any part of the mirror, images cannot come from that part of the mirror.

1743 Browne

Besides, since any figure we feel with our hands in the dark, we know to be the same we before saw by day, and in the clearest light, the touch and sight must needs be moved by the same cause; and therefore, if we feel a quadrangular figure and distinguish its shape in the dark, what can present that shape to us in the light but its quadrangular image? The cause therefore of our sight must arise from the images, nor indeed can we distinguish any thing without them.

Now these images I am speaking of are carried about every way, and are thrown off and scattered on all sides; and therefore it is, since with our eyes alone we are able to see, that which way soever we turn our eyes, the objects strike upon them in their proper form and color. The image likewise is the cause that we discover, and takes care to satisfy us at what distance bodies are removed from us, for as soon as it is emitted, it instantly thrusts forward, and drives on the air that is placed between itself and the sight; this stream of air then glides to the eye, and as it were grates gently upon the ball, and so passes through. Hence it is that we perceive how far things are distant from our sight; for the more air there is that is driven before the image, and the longer the stream of it that rubs upon the ball, the longer the interval of space between the object and the eye must be allowed to be. All this is done with the utmost celerity, for we see what the object is and know its distance in the same instance. Nor are we to think it at all strange in this case that the objects may be perfectly seen, and yet the images that singly strike the eye cannot themselves be discovered, for when the wind blows gently upon us, and its sharp cold pierces our bodies, we cannot distinguish the several particles of wind or cold that so affect us, but we are sensible of their whole strength together; we perceive their blows laid upon our bodies as if something were beating us, and made us feel the effects of its outward force upon us. And so when we strike a stone with our fingers we touch the surface and out most color of the stone, but then we feel nothing of the color or surface by our touch, we perceive no more than the hardness of the stone that lies within.

And now learn why the image is always seen beyond the glass, for it certainly appears at a remote distance from us. For instance: when you are placed in an inner room, and things are seen at a distance from you, when the door is open, and gives you a clear prospect, and allows you plainly to discover any object without, your sight in this case is formed, as I may say, by a double air; the air that lies within the door is the first, then the door is placed in the middle between, and then the light without that rubs gently upon the eye, this is the other air; and at length the object is discovered. So when the image of the glass first flies off, as it makes a

passage to our sight, it strikes forward, and drives on the air that lies between itself and the eye, so that we feel all this interjacent air before we see anything of the glass; but when we discover the glass, the image that is emitted from us instantly flies to it, and being reflected and sent back, returns again to our sight, and forces the air that is before it, which is the reason that we perceive this interjacent air before the image is seen by us. Now when two airs are driven (the image of the glass forcing on one, and the image reflected another) the interval must of necessity be more extended, and even doubled. Hence it is that the images appears not in the surface of the glass, but beyond it, and therefore we are not to wonder at all that the images of things reflected to our sight, from the surface of a smooth glass, by means of a double air, because it appears plainly that they are so.

But more: That the part of the body that is the right side appears in the glass to be the left, because the image, when it strikes upon the surface of the glass, is not reflected again unchanged, but is turned a different way about. For instance: Take a mask made of clay, before it is dry, and dash it against a pillar or beam; if it preserves its figure entire, and appears inverted only so that the face fills up the hollow, the event will be that the right eye will now be the left, and the left the right. And then it may be contrived that the image shall pass from one glass into another, so that five or six images shall be reflected at once; and objects that are placed backwards in the inward part of the house, let them be ever so much out of sight, and the turnings ever so crooked, they may be drawn out through the winding passages, and by the placing of so many glasses be perfectly discovered. The image may be so transferred from one glass into another that it will change its left into its right, but when it is again reflected from the second glass into the third it will resume its left part again, and will continue to change in the same manner as it passes into all the glasses that follow. But in glasses joined together in the convex figure of a pillar, the side of the image reflected is returned so that the right part of the image answers to the right of the object or thing seen; either because the image, being transferred from one glass into another, is reflected twice, or that the image, when it comes to us, is turned about; for that the face is turned about as it passes backwards we learn from the figure of the glass. Besides, you would believe that the image moves with us, and attends all our steps, and imitates our gestures, because, when you retire from any part of the glass, the image cannot be reflected from that part; for Nature ordains that all images that are emitted from bodies should be returned and reflected by equal angles.

Munro

Again since a particular figure felt by the hands in the dark is known to be the same which is seen in the bright light of day, touch and sight must be excited by a quite similar cause. Well then if we handle a square thing and it excites our attention in the dark, in the daylight what square thing will be able to fall on our sight, except the image of that thing? Therefore the cause of it is plain lies in images and no thing can be perceived without them.

Well, the idols of things I speak of are borne along all round and are discharged and transmitted in all directions; but because we can see with the eyes alone, the consequence is that, to

whatever point we turn our sight, there all the several things meet and strike it with their shape and color. And the image gives the power to see and the means to distinguish how far each thing is distant from us; for as soon as ever it is discharged, it pushes before it and impels all the air which lies between it and the eyes; and thus that air all streams through our eyes and brushes so to say the pupils and so passes through. The consequence is that we see how far distant each thing is. And the greater the quantity of air which is driven on before it and the larger the current which brushes our eyes, the more distant each different thing is seen to be. You must know these processes go on with extreme rapidity, so that at one and the same moment we see what like a thing is and how far distant it is. And this must by no means be deemed strange herein that, while the idols which strike the eyes cannot be seen one at a time, the things themselves are seen. For thus when the wind too beats us with successive strokes and when piercing cold streams, we are not wont to feel each single particle of that wind and cold, but rather the whole result; and then we perceive blows take effect on our body just as if something or other were beating it and giving us a sensation of its body outside. Again when we thump a stone with a finger, we touch merely the outermost color on the surface of the stone, and yet we do not feel that color by our touch, but rather we feel the very hardness of the stone seated in its inmost depths.

Now mark, and learn why the image is seen beyond the mirror; for without doubt it is seen withdrawn far within. The case is just the same as with things which are viewed in their reality beyond a door, when it offers through it an unobstructed prospect and lets many things outside be seen from a house. That vision too is effected by two separate airs: first there is an air seen in such a case inside the doorway; next come the leaves of the door right and left; next a light outside brushes the eyes, then a second air, then those things outside which are viewed in their reality. Thus when the image of the mirror has first discharged itself, in coming to our sight it pushes forward and impels all the air which lies between it and the eyes, and enables us to see the whole of it before the mirror. But when we have perceived the mirror as well, at once the image which is conveyed from us reaches the mirror and then is reflected and comes back to our eyes, and drives on and rolls in front of it a second air and lets us see this before itself, and for this reason it looks so far withdrawn from the mirror.

Wherefore again and again I repeat there is no cause at all to wonder why the images give back the reflection from the surface of mirrors in the spot they do, since in both the given cases the result is produced by two airs. To proceed, the right side of our body is seen in mirrors to be on the left, because when the image comes and strikes on the plane of the mirror, it is not turned back unaltered, but is beaten out in a right line backwards, just as if you were to take a plaster mask before it is dry and dash it on a pillar or beam, and it forthwith were to preserve the lines of its features undistorted in front and were to strike out an exact copy of itself straight backwards. The result will be that the eye which was right will now be left; and conversely the left become the right. An image may also be so transmitted from one mirror to another that five or six idols are often produced. And thus all the things which lurk in the inmost corners of a house, however far they are withdrawn into tortuous recesses, may yet be all brought out

through winding passages by the aid of a number of mirrors and be seen to be in the house. So unfailingly does the image reflect itself from mirror to mirror; and when the left side is presented, it becomes the right in the new image; then it is changed back again and turns round to what it was. Moreover all little sides of mirrors which possess a curvature resembling our side, send back to us idols with their right corresponding to our right either for this reason, because the image is transmitted from one mirror to another, and then after it has been twice struck out flies to us, or else because the image, when it has come to the mirror, wheels about, because the curved shape of the mirror teaches it to turn round and face us. Again you would think that idols step out and put down their foot at the same time with us and mimic our action, because from before whatever part of a mirror you move away, from that part forthwith no idols can be reflected; since nature constrains all things, when they are carried back and recoil from things, to be given back at angles equal to those at which they impinged.

Bailey

Moreover, since a shape felt by the hands in the darkness is known to be in some way the same as is seen in the light and the clear brightness, it must needs be that touch and sight are stirred by a like cause. If then we handle a square thing, and it stirs our touch in the darkness, what square thing can fall upon our sight in the light, except its image? Wherefore it is clear that the cause of seeing lies in the images, nor without them can anything be seen.

Next those things which I call the idols of things are borne everywhere, and are cast off and meted out to every side. But because we can see them only with our eyes, for that cause it comes to pass that, to whatever side we turn our sight, all things there strike against it with their shape and hue. And how far each thing is away from us, the image causes us to see and provides that we distinguish. For when it is given off, straightway it pushes and drives before it all the air that has its place between it and the eyes, and thus it all glides through our eyeballs, and, as it were, brushes through the pupils, and so passes on. Therefore it comes to pass that we see how far away each thing is. And the more air is driven on in front, and the longer the breeze which brushes through our eyes, the further each thing is seen to be removed. But you must know that these things are brought to pass by means exceeding quick, so that we see what it is and at the same time how far it is away. Herein by no means must we deem there is cause to wonder why the idols which strike the eyes cannot be seen one by one, but the whole things are descried. For when wind too lashes us little by little, and when piercing cold streams on us, we are not wont to feel each separate particle of that wind and cold, but rather all at once, and then we perceive blows coming to pass on our body, just as if something were lashing us and giving us the feeling of its body without. Moreover, when we strike a stone with our finger, we touch the very outside of the rock and its colour on the surface, yet we do not feel the colour with our touch, but rather we feel the very hardness of the rock deep down beneath.

Come now and learn why the image is seen beyond the mirror; for indeed it seems removed far within. It is even as those things which in very truth are seen outside a door, when the door

affords an unhindered sight through it, and lets many things out of doors be seen from the house. For that vision too is brought to pass by two twin airs. For first the air on our side of the jambs is seen in such a case, then follow the folding doors themselves on right and left, afterwards the light outside brushes through the eyes, and a second air, and then those things which in very truth are seen without the doors. So when first the image of the mirror has cast itself adrift, while it is coming to our pupils, it pushes and drives before it all the air which has its place between it and our eyes, and so makes us able to perceive all this air before the mirror. But when we have perceived the mirror itself too, straightway the image which is borne from us passes to the mirror, and being cast back returns to our eyes and drives on and rolls in front of it another air, and makes us see this before itself, and therefore seems to be just so much distant from the mirror.

Wherefore, again and again, it is not right at all that we should wonder [that this appearance comes to be both for those things which are really seen out of doors, and also] for those things which send back a vision from the level surface of the mirrors; since in either case it is brought about by the two airs. Next it comes to pass that the part of our limbs which is on the right is seen in mirrors on the left, because when the image comes to the plane of the mirror and strikes against it, it is not turned round unchanged, but is dashed back straight; just as if one were to dash a plaster mask, before it is dry, against a pillar or a beam, and it at once were to preserve its shape turned straight to meet us, and were to mould again its own features dashed back towards us. Thus it will come to pass that what was before the right eye, now in turn is the left, and the left in exchange is now the right. It comes to pass too that the image is handed on from mirror to mirror, so that even five or six idols are wont to be made. For even when things are hidden far back in an inner part of the room, yet, however far distant from the sight along a twisting path, it may be that they will all be brought out thence by winding passages, and, thanks to the several mirrors, be seen to be in the house. So surely does the image reflect from mirror to mirror, and when a left hand is presented, it comes to pass that it is changed to the right, and then once again it is changed about and returns to where it was before. Moreover, all flank-curved mirrors, endowed with a curve like to our flanks, send back to us right-handed idols, either because the image is borne across from one part of the mirror to another, and then flies towards us, twice dashed back, or else because the image is twisted around, when it has arrived, because the curved shape of the mirror teaches it to turn round towards us. Moreover, you would believe that idols walk step by step and place their feet as we do, and imitate our gait, just because, from whatever part of the mirror you retire, straightway the idols cannot be turned back from it, inasmuch as nature constrains all things to be carried back, and leap back from things, sent back at equal angles.

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Episode Fifty-Two of the Lucretius Today Podcast is now available. In today's episode, we continue the discussion of images with more on light, vision, and reflections. As always we invite your comments and suggestions.

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