Episode Seventy-Three - More on The Sun, The Moon, And Related Astronomical Questions

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Welcome to Episode Seventy-Three 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. 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 questions about those, please be sure to contact us at EpicureanFriends.com for more information.

In this Episode 73 we will read approximately Latin line 614-704 of Book Five. We will talk about the rising and setting of the sun and moon. Now let's join Martin reading today's text.

Latin Lines 614 - 704

Munro Notes-

614-649: it is by no means clear how the sun performs its annual course, and how the moon in a month goes through the same journey: Democritus may be right who says that the nearer any body is to the earth, it is carried on less swiftly by the revolution of the heaven; now the moon is nearer than the sun, the sun than the signs of the zodiac; therefore the moon seems to travel faster than the sun, the sun than the signs, because in truth they in their revolution with the heaven catch up the moon which is slowest first, and then the sun: or two airs may blow in turns in cross directions, one of which drives the sun from the summer to the winter signs, the other drives it from the latter to the former: and so with moon and stars.

650-655: night comes, either because the sun is extinguished, or, if that is not so, because he passes beneath the earth in the same way as he passed above this and the following paragraphs he leaves you your choice between the hypothesis that the sun dies daily and a new one takes its place in the morning, and theories more resembling the ordinary belief of astronomers; experience being unable to decide: just so his master in Diog. x

656-679: daylight returns at stated hours, either because the same unchanged sun passes under the earth and comes above it again, or because the fires of a new sun collect every morning at the proper time: this may well be; for many things, such as puberty in man, come at a certain time; and many things such as snow rain and lightning return pretty regularly: so it

has been from the beginning and so it continues to be.—The alternative here allowed is the same as that given in the preceding passage; see Epicurus there cited: the old sun returns, or a fresh one is born every day.

680-704: days and nights lengthen and shorten time about, either because the sun continuing the same chooses to run in unequal curves above and below the horizon, his course above being as much more or less than a semicircle, as his course below is less or more, until at each equinox the two are equal: all this you may see marked on a map of heaven: or else the air is denser in some parts than in others, so that he travels more slowly through the former: and thus the winter nights are longer: or else a new sun is always born, and in successive parts of the year his fires collect more or less quickly and so rise in particular quarters.—Again three courses are open to your choice, the first most resembling the theory of vulgar philosophers.

Browne 1743

Nor can one certain reason be assigned why the sun declines from its summer height and bends his winter course toward the tropic of Capricorn, and then returning, reaches the tropic of Cancer, and makes summer solstice; and that the moon in every month finishes the same course through the twelve signs, as the sun takes up a whole year in running through. I say, one certain reason cannot be assigned for these events, for perhaps the cause may be what the venerable opinion of that great man Democritus has laid down, that the nearer the stars are to the Earth, they are carried more slowly about by the general motion of the heavens. For the rapid force and celerity of the upper sky are much lessened before they reach the inferior orbs, and therefore the sun, with the lower signs that follow it, is in some measure left, because it is much lower than the high region of the stars. And the moon is much lower still, and the greater distance from the heavens she observes in her course, and the nearer she approaches the earth, the less is she capable of keeping pace with the motions of the signs, and the slower she is in her motion than the sun as she moves below him; and the signs may the more easily overtake her, and pass about and beyond her the oftener. And therefore the moon seems the sooner to run through all the signs when in reality the signs return to her. Or perhaps two several airs may at certain seasons blow from the opposite parts of the world by turns; the one may drive the sun down from the summer signs into his winter course, and the extremity of cold; the other may raise it from the cold winter signs into the summer solstice. And for the same reason the moon and the stars, which fulfill their periods and revolutions in their long courses, may be forced upwards and downwards in the heavens by two several streams of air likewise. Don’t you observe the clouds, driven by contrary winds, move different ways, the lower opposite to those above? What then should hinder that the stars should not be carried on by contrary blasts of air through the great circles of the sky?

And the night, we imagine, covers the earth with thick darkness, either because the sun in his long course has reached the extremity of the heavens, and being tired, has blown out his fire scattered by the swiftness of his motion, and decayed by the tract of air he passed through, or the same force that raised his orb, and drove it round above, compels him to change his course and roll beneath the earth. And Matuta, the goddess of the morning, at a fixed time leads

Aurora blushing through the regions of the sky, and opens the day, either because the sun, returning from under the earth, attempts to enlighten the world with his rays, before he appears himself; or because the seeds of fire that were dispersed abroad in his journey the day before flow together in the eastern sky, and illustrate the Earth with a faint light, before they have kindled up anew the globe of the sun. This (they say) is easily discovered from the top of Mount Ida; where, upon the rising of the sun, we first discovery his scattered rays, which are afterward contracted into one orb and make up one ball of light. Nor are you to wonder that these seeds of fire should flow together constantly every day and repair the splendor of the sun; for we observe many things in nature that act regularly and at a fixed time. The trees look green at a certain season, and at a certain season cast their leaves. Children at a certain time shed their teeth, and the boy grows ripe at a certain time, and shows the soft down upon his cheeks. And lastly, the thunder, the snow, the rains, the clouds, the winds, are no less certain, and fall out in fixed seasons of the year, for the course which things observed from the beginning of the world they pursue the same, and continue still to act in the same certain order.

The days likewise increase, and the nights grow shorter, and the nights increase, and the days shorten, either because the sun, in his course above and below the earth, moves obliquely in unequal lines, and divides the heavens into unequal parts, and what he takes off from one part of the heavens he adds so much to the opposite part again, till he arrives at that sign in the heavens where he cuts the Aequinoctial line, and makes equal day and night, for this line is equally distant from the two tropics, which are the bounds of the sun’s motions toward the north and south; and this is owing to the obliquity of the zodiac through which the sun finishes his annual revolution, and shines upon the earth and the heavens with an oblique light, such is the opinion of those who have marked out all the regions of the heavens, and adorned them with twelve constellations. Or because, at certain seasons of the year, the seeds of light which repair the decayed splendor of the sun flow together sooner or later and so occasion his rising in different parts of the heavens.

The moon may shine with rays borrowed from the sun, and appear to us every day with greater light, as she retires further from the sun’s orb, till being directly opposite to him, she shines out with full beams, and climbing up the earth, views him from above setting in the west; and then goes backwards as it were, and hides her light gradually as she passes through the different signs in her nearer approaches to the sun. Thus they explain her phases who conclude her round like a ball, and that she moves below the sun, and they seem to be right in their opinion, and speak the truth. But the moon, possibly, may steer her course by her own light, and show different phases and forms of brightness, for another body may move below her, and attending to all her motions, may interpose and hinder her light from being seen; but this body, being thick and dark, cannot be discovered by the eye. And perhaps the moon may roll around her axis like a ball, whose one half only is bright. This ball, as it moves round its center, will express the different appearances of light, till it turns the whole bright side to us, and shines full upon the open eye, and then by degrees it turns backward, and takes away its bright side as it rolls, and we see no more of it. This was the doctrine of the Chaldeans, who followed the hypothesis

of Berosus, and attempted to overthrow the vulgar astrology of the Greeks; as if the schemes of both could not be true, or you had less reason to embrace the one than the other.

Munro 1886

Nor with regard to the sun is there one single explanation, certain and manifest, of the way in which he passes from his summer positions to the midwinter turning-point of Capricorn and then coming back from thence bends his course to the solstitial goal of cancer, and how the moon is seen once a month to pass over that space, in traversing which the sun spends the period of a year. No single plain cause, I say, has been assigned for these things. It seems highly probable that that may be the truth which the revered judgment of the worthy man Democritus maintains: the nearer the different constellations are to the earth, the less they can be carried along with the whirl of heaven; for the velocity of its force, he says, passes away and the intensity diminishes in the lower parts, and therefore the sun is gradually left behind with the rearward signs, because he is much lower than the burning signs. And the moon more than the sun: the lower her path is and the more distant she is from heaven and the nearer she approaches to earth, the less she can keep pace with the signs. For the fainter the whirl is in which she is borne along, being as she is lower than the sun, so much the more all the signs around overtake and pass her. Therefore it is that she appears to come back to every sign more quickly, because the signs go more quickly back to her. It is quite possible too that from quarters of the world crossing the sun’s path two airs may stream each in its turn at a fixed time; one of which may force the sun away from the summer signs so far as his midwinter turning-point and freezing cold, and the other may force him back from the freezing shades of cold as far as the heat-laden quarters and burning signs. And in like manner we must suppose that the moon, and the stars which make revolutions of great years in great orbits may pass by means of airs from opposite quarters in turn. See you not too that clouds from contrary winds pass in contrary directions, the upper in a contrary way to the lower? Why may not yon stars just as well be borne on through their great orbits in ether by currents contrary one to the other?

But night buries the earth in thick darkness, either when the sun after his long course has struck upon the utmost parts of heaven and now exhausted has blown forth all his fires shaken by their journey and weakened by passing through much air: or else because the same force which has carried on his orb above the earth, compels him to change his course and pass below the earth. At a fixed time too Matuta spreads rosy morning over the borders of ether and opens up her light, either because the same sun, coming back below the earth, seizes heaven before his time trying to kindle it with his rays; or because fires meet together and many seeds of heat are accustomed to stream together at a fixed time, which cause new sunlight to be born every day. Thus they tell that from the high mountains of Ida scattered fires are seen at day-break, that these then unite as it were into a single ball and make up an orb. And herein it ought to cause no surprise that these seeds of fire stream together at a time so surely fixed and reproduce the radiance of the sun. For we see many occurrences which take place at a fixed time in all things. At a fixed time trees blossom and at a fixed time shed their blossoms; and at a time no less surely fixed age bids the teeth be shed and the boy put on the soft dress of

puberty and let a soft beard fall down equally from each cheek. Lastly lightnings, snow, rains, clouds, and winds take place at not very irregular seasons of year. For where causes from their very first beginnings have been in this way and things have thus fallen out from the first birth of the world, in due sequence too they now come round after a fixed order.

Likewise days may lengthen and nights wane, and days shorten when the nights receive increase, either because the same sun running his course below the earth and above in curves of unlike length parts the borders of ether and divides his orbit into unequal halves; and as he comes round adds on in the opposite half just as much as he has subtracted from the other of the two halves, until he has arrived at that sign of heaven, where the node of the year makes the shades of night of the same length as the daylight. For when the sun's course lies midway between the blast of the north and of the south, heaven keeps his two goals apart at distances now rendered exactly equal on account of the position of the whole starry circle, in gliding through which the sun takes up the period of a year, lighting with slanting rays earth and heaven; as is clearly shown by the plans of those who have mapped out all the quarters of heaven as they are set off with their array of signs. Or else because the air is denser in certain parts, therefore the quivering beam of fire is retarded below the earth and cannot easily pass through and force its way out to its place of rising: for this reason in winter-time nights linger long, ere the beamy badge of day arrive. Or else, because in the way just mentioned at alternate parts of the year fires are accustomed to stream together more slowly and more quickly, which cause the sun to rise in a certain point, therefore it is that those appear to speak the truth [who suppose a fresh sun to be born every day.]

The moon may shine because struck by the sun's rays, and turn that light every day more and more directly towards our sight, in proportion as she recedes from the sun's orb, until just opposite to him she has shone out with full light and at her rising as she soars aloft has beheld his setting; and then by slow steps reversing as it were her course she must in the same way hide her light, the nearer and nearer she now glides to the sun from a different quarter through the circle of the signs; according to the theory of those who suppose the moon to be like a ball and to hold on her course under the sun. She may also very possibly revolve with her own light and display various phases of brightness; for there may well be another body which is carried on and glides in her company getting before her path and obstructing her in all manner of ways and yet cannot be seen, because it glides on without light. She may also revolve, like it may be to a spherical ball steeped over one half in shining light, and as she rolls round this sphere she may present changing phases, until she has turned that half which is illuminated full towards our sight and open eyes; then by slow steps she whirls back and withdraws the light-fraught half of the spherical ball; as the Babylonian science of the Chaldees refuting the system of the astronomers essays to prove in opposition to them; just as though that which each party fights for might not be equally true, or there were any reason why you should venture to embrace the one theory less than the other.

Bailey 1921

Nor is there any single and straightforward account of the sun, to show how from the summer regions he draws near the winter turning-point of Capricorn, and how turning back thence, he betakes himself to the solstice-goal of Cancer; and how the moon is seen in single months to traverse that course, on which the sun spends the period of a year as he runs. There is not, I say, any single cause assigned for these things. For, first and foremost, it is clear that it may come to pass, as the judgement of the holy man, Democritus, sets before us, that the nearer the several stars are to earth, the less can they be borne on with the whirl of heaven. For its swift keen strength passes away and is lessened beneath, and so little by little the sun is left behind with the hindmost signs, because it is much lower than the burning signs. And even more the moon: the lower her course, the further it is from the sky and nearer to earth, the less can she strain on her course level with the signs. Moreover the weaker the whirl with which she is borne along, being lower than the sun, the more do all the signs catch her up all around and pass her. Therefore, it comes to pass that she seems to turn back more speedily to each several sign, because the signs come back to her. It may be too that from quarters of the world athwart his path two airs may stream alternately, each at a fixed season, one such as to push the sun away from the summer signs right to the winter turning-places and their icy frost, and the other to hurl him back from the icy shades of cold right to the heat-laden quarters and the burning signs. And in like manner must we think that the moon and those stars which roll through the great years in great orbits, can be moved by airs from the opposite quarters in turn. Do you not see how by contrary winds the lower clouds too are moved in directions contrary to those above? Why should those stars be less able to be borne on by currents contrary one to the other through the great orbits in the heaven?

But night shrouds the earth in thick darkness, either when after his long journey the sun has trodden the farthest parts of heaven, and fainting has breathed out his fires shaken by the journey and made weak by much air, or because the same force, which carried on his orb above the earth, constrains him to turn his course back beneath the earth. Likewise at a fixed time Matuta sends abroad the rosy dawn through the coasts of heaven, and spreads the light, either because the same sun, returning again beneath the earth, seizes the sky in advance with his rays, fain to kindle it, or because the fires come together and many seeds of heat are wont to stream together at a fixed time, which each day cause the light of a new sun to come to birth. Even so story tells that from the high mountains of Ida scattered fires are seen as the light rises, and then they gather as if into a single ball, and make up the orb. Nor again ought this to be cause of wonder herein, that these seeds of fire can stream together at so fixed a time and renew the brightness of the sun. For we see many events, which come to pass at a fixed time in all things. Trees blossom at a fixed time, and at a fixed time lose their flower. Even so at a fixed time age bids the teeth fall, and the hairless youth grow hairy with soft down and let a soft beard flow alike from either cheek. Lastly, thunder, snow, rains, clouds, winds come to pass at seasons of the year more or less fixed. For since the first-beginnings of causes were ever thus and things have so fallen out from the first outset of the world, one after the other they come round even now in fixed order.

And likewise it may be that days grow longer and nights wane, and again daylight grows less, when nights take increase; either because the same sun, as he fulfills his course in unequal arcs below the earth and above, parts the coasts of heaven, and divides his circuit into unequal portions; and whatever he has taken away from the one part, so much the more he replaces, as he goes round, in the part opposite it, until he arrives at that sign in the sky, where the node of the year makes the shades of night equal to the daylight. For in the mid-course of the blast of the north wind and of the south wind, the sky holds his turning-points apart at a distance then made equal, on account of the position of the whole starry orbit, in which the sun covers the space of a year in his winding course, as he lights earth and heaven with his slanting rays: as is shown by the plans of those who have marked out all the quarters of the sky, adorned with their signs in due order. Or else, because the air is thicker in certain regions, and therefore the trembling ray of his fire is delayed beneath the earth, nor can it easily pierce through and burst out to its rising. Therefore in winter time the long nights lag on, until the radiant ensign of day comes forth. Or else again, because in the same way in alternate parts of the year the fires, which cause the sun to rise from a fixed quarter, are wont to stream together now more slowly, now more quickly, therefore it is that those seem to speak the truth [who say that a new sun is born every day].

The moon may shine when struck by the sun’s rays, and day by day turn that light more straightly to our sight, the more she retires from the sun’s orb, until opposite him she has glowed with quite full light and, as she rises, towering on high, has seen his setting; then little by little she must needs retire back again, and, as it were, hide her light, the nearer she glides now to the sun’s fire from the opposite quarter through the orbit of the signs; as those have it, who picture that the moon is like a ball, and keeps to the path of her course below the sun. There is also a way by which she can roll on with her own light, and yet show changing phases of brightness. For there may be another body, which is borne on and glides together with her, in every way obstructing and obscuring her; yet it cannot be seen, because it is borne on without light. Or she may turn round, just like, if it so chance, the sphere of a ball, tinged over half its surface with gleaming light, and so by turning round the sphere produces changing phases, until she turns to our sight and open eyes that side, whichever it be, that is endowed with fires; and then little by little she twists back again and carries away from us the light-giving part of the round mass of the ball; as the Babylonian teaching of the Chaldaeans, denying the science of the astronomers, essays to prove in opposition; just as if what each of them fights for may not be the truth, or there were any cause why you should venture to adopt the one less than the other.