Episode One Hundred Thirty Two - Letter to Pythocles 06 - More On The Weather

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Welcome to Episode One Hundred Thirty-Two of Lucretius Today.

This is a podcast dedicated to the poet Lucretius, who wrote "On The Nature of Things," the only complete presentation of Epicurean philosophy left to us from the ancient world.

I am your host Cassius, and together with our panelists from the EpicureanFriends.com forum, we'll walk you through the ancient Epicurean texts, and we'll 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.

If you find the Epicurean worldview attractive, we invite you to join us in the study of Epicurus at EpicureanFriends.com, where you will find a discussion thread for each of our podcast episodes and many other topics.

Today we continue Epicurus' Letter to Pythocles and we look at the implications of the Epicurean position on certain weather phenomena. Now let's join Martin reading today's text:

BAILEY:

Earthquakes may be brought about both because wind is caught up in the earth, so that the earth is dislocated in small masses and is continually shaken, and that causes it to sway. This wind it either takes into itself from outside, or else because masses of ground fall in into cavernous places in the earth and fan into wind the air that is imprisoned in them. And again, earthquakes may be brought about by the actual spreading of the movement which results from the fall of many such masses of ground and the return shock, when the first motion comes into collision with more densely packed bodies of earth.

[106] There are also many other ways in which these motions of the earth may be caused.

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The winds may be produced when from time to time some alien matter is continually and gradually forcing its way in, or owing to the gathering of a vast quantity of water. The other winds arise when a few (currents of air) fall into many hollow spaces, and cause a spreading of wind.

Hail is produced both by a powerful congelation, when certain windy bodies form together from all sides and split up: also by a more moderate congelation of watery bodies and their simultaneous division, which causes at one and the same time their coagulation and separation, so that they cling together as they freeze in their separate parts as well as in their whole masses.

[107] Their circular shape may possibly arise because the comers melt off all round or because at their conformation bodies, whether watery or windy, come together evenly from all directions part by part, as is alleged.

Snow may be produced when fine particles of rain are poured out of the clouds owing to the existence of pores of suitable shape and the strong and constant compression by winds of clouds of the right kind; and then the water is congealed in its descent owing to some conformation of excessive coldness in the clouds in the lower regions.

[108] Or else owing to congelation in clouds of uniform thinness an exudation of this kind might arise from watery clouds lying side by side and rubbing against one another: for they produce hail by causing coagulation, a process most frequent in the atmosphere. Or else, owing to the friction of congealed clouds, these nuclei of snow may find occasion to break off. And there are many other ways in which snow may be produced.

Dew may be produced both when such particles as are productive of this kind of moisture issue from the atmosphere and meet one another, and also when particles rise from moist regions or regions containing water, in which dew is most naturally produced, and then meet together and cause moisture to be produced, and afterwards fall back on the ground below, as (is) frequently (seen) to be the case in phenomena on earth as well. (And frost is produced by a change) in the dew-particles, when such particles as we have described undergo a definite kind of congelation owing to the neighborhood of a cold atmosphere.

[109] Ice is caused both by the squeezing out from the water of particles of round formation and the driving together of the triangular and acute-angled particles which exist already in the water, and again by the addition from without of particles of this kind, which when driven together produce a congelation in the water, by squeezing out a certain number of the round particles.

The rainbow is caused by light shining from the sun on to watery atmosphere: or else by a peculiar union of light and air, which can produce the special qualities of these colours whether all together or separately; from it as it reflects back again the neighbouring regions of the air can take the tint which we see, by means of the shining of the light on to its various parts.

[110] The appearance of its round shape is caused because it is perceived by our sight at equal distance from all its points, or else because the atoms in the air or those in the clouds which are derived from the same air, are pressed together in this manner, and so the combination spreads out in a round shape.

A halo round the moon is caused either when air is carried towards the moon from all sides, or when the air checks the effluences carried from the moon so equably that it forms them into this cloudy ring all round without any gaps or differences, or else when it checks the air round the moon uniformly on all sides so as to make that which encircles it round and thick in texture.

[111] This comes to pass in different parts either because some current outside forces the air or because heat blocks the passages in such a way as to produce this effect.

HICKS:

Earthquakes may be due to the imprisonment of wind underground, and to its being interspersed with small masses of earth and then set in continuous motion, thus causing the earth to tremble. And the earth either takes in this wind from without or from the falling in of foundations, when undermined, into subterranean caverns, thus raising a wind in the imprisoned air. Or they may be due to the propagation of movement arising from the fall of many foundations and to its being again checked when it encounters the more solid resistance of earth.

[106] And there are many other causes to which these oscillations of the earth may be due.

"Winds arise from time to time when foreign matter continually and gradually finds its way into the air; also through the gathering of great store of water. The rest of the winds arise when a few of them fall into the many hollows and they are thus divided and multiplied.

"Hail is caused by the firmer congelation and complete transformation, and subsequent distribution into drops, of certain particles resembling wind: also by the slighter congelation of certain particles of moisture and the vicinity of certain particles of wind which at one and the same time forces them together and makes them burst, so that they become frozen in parts and in the whole mass.

[107] The round shape of hailstones is not impossibly due to the extremities on all sides being melted and to the fact that, as explained, particles either of moisture or of wind surround them evenly on all sides and in every quarter, when they freeze.

"Snow may be formed when a fine rain issues from the clouds because the pores are symmetrical and because of the continuous and violent pressure of the winds upon clouds which are suitable; and then this rain has been frozen on its way because of some violent change to coldness in the regions below the clouds.

[108] Or again, by congelation in clouds which have uniform density a fall of snow might occur through the clouds which contain moisture being densely packed in close proximity to each other; and these clouds produce a sort of compression and cause hail, and this happens mostly in spring. And when frozen clouds rub against each other, this accumulation of snow might be thrown off. And there are other ways in which snow might be formed.

"Dew is formed when such particles as are capable of producing this sort of moisture meet each other from the air: again by their rising from moist and damp places, the sort of place where dew is chiefly formed, and their subsequent coalescence, so as to create moisture and fall downwards, just as in several cases something similar is observed to take place under our eyes. And the formation of hoar-frost is not different from that of dew, certain particles of such a nature becoming in some such way congealed owing to a certain condition of cold air.

[109] Ice is formed by the expulsion from the water of the circular, and the compression of the scalene and acute-angled atoms contained in it; further by the accretion of such atoms from without, which being driven together cause the water to solidify after the expulsion of a certain number of round atoms.

"The rainbow arises when the sun shines upon humid air; or again by a certain peculiar blending of light with air, which will cause either all the distinctive qualities of these colours or else some of them belonging to a single kind, and from the reflection of this light the air all around will be coloured as we see it to be, as the sun shines upon its parts.

[110] The circular shape which it assumes is due to the fact that the distance of every point is perceived by our sight to be equal; or it may be because, the atoms in the air or in the clouds and deriving from the sun having been thus united, the aggregate of them presents a sort of roundness.

"A halo round the moon arises because the air on all sides extends to the moon; or because it equably raises upwards the currents from the moon so high as to impress a circle upon the cloudy mass and not to separate it altogether; or because it raises the air which immediately surrounds the moon symmetrically from all sides up to a circumference round her and there forms a thick ring.

[111] And this happens at certain parts either because a current has forced its way in from without or because the heat has gained possession of certain passages in order to effect this.