Basic Texts on Epicurus's Opposition To Speculation Based Purely on Math / Geometry

Post by “Cassius” of July 30, 2019 at 4:41 PM

Here are some key references on this subject:

1. Lucian, Hermotimus.

The selection ends with an attack on Platonic mathematics, and the point it makes is a great companion to Torquatus’ defense of Epicurus in Cicero’s *De Finibus*:

Perhaps an illustration will make my meaning clearer: when one of those audacious poets affirms that there was once a three-headed and six-handed man, if you accept that quietly without questioning its possibility, he will proceed to fill in the picture consistently—six eyes and ears, three voices talking at once, three mouths eating, and thirty fingers instead of our poor ten all told; if he has to fight, three of his hands will have a buckler, wicker targe, or shield apiece, while of the other three one swings an axe, another hurls a spear, and the third wields a sword. It is too late to carp at these details, when they come; they are consistent with the beginning; it was about that that the question ought to have been raised whether it was to be accepted and passed as true. Once grant that, and the rest comes flooding in, irresistible, hardly now susceptible of doubt, because it is consistent and accordant with your initial admissions. That is just your case; your love-yearning would not allow you to look into the facts at each entrance, and so you are dragged on by consistency; it never occurs to you that a thing may be self- consistent and yet false; if a man says twice five is seven, and you take his word for it without checking the sum, he will naturally deduce that four times five is fourteen, and so on ad libitum.

This is the way that weird geometry proceeds: it sets before beginners certain strange assumptions, and insists on their granting the existence of inconceivable things, such as points having no parts, lines without breadth, and so on, builds on these rotten foundations a superstructure equally rotten, and pretends to go on to a demonstration which is true, though it starts from premises which are false.

Just so you, when you have granted the principles of any school, believe in the deductions from them, and take their consistency, false as it is, for a guarantee of truth. Then with some of you, hope travels through, and you die before you have seen the truth and detected your deceivers, while the rest, disillusioned too late, will not turn back for shame: what, confess at their years that they have been abused with toys all this time? So they hold on desperately, putting the best face upon it and making all the converts they can, to have the consolation of good

company in their deception; they are well aware that to speak out is to sacrifice the respect and superiority and honor they are accustomed to; so they will not do it if it may be helped, knowing the height from which they will fall to the common level. Just a few are found with the courage to say they were deluded, and warn other aspirants. Meeting such a one, call him a good man, a true and an honest; nay, call him philosopher, if you will; to my mind, the name is his or no one's; the rest either have no knowledge of the truth, though they think they have, or else have knowledge and hide it, shamefaced cowards clinging to reputation.

2. Lucian's Dialog "Icaromenippus, An Aerial Expedition:"

"Menippus. Ah, but keep your laughter till you have heard something of their pretentious mystifications. To begin with, their feet are on the ground; they are no taller than the rest of us 'men that walk the earth'; they are no sharper-sighted than their neighbors, some of them purblind, indeed, with age or indolence. And yet they say they can distinguish the limits of the sky, they measure the sun's circumference, take their walks in the supra-lunar regions, and specify the sizes and shapes of the stars as though they had fallen from them. Often one of them could not tell you correctly the number of miles from Megara to Athens, but has no hesitation about the distance in feet from the sun to the moon. How high the atmosphere is, how deep the sea, how far it is round the earth— they have the figures for all that. Moreover, they have only to draw some circles, arrange a few triangles and squares, add certain complicated spheres, and lo, they have the cubic contents of Heaven.

Then, how reasonable and modest of them, dealing with subjects so debatable, to issue their views without a hint of uncertainty; thus it must be and it shall be; *contra gentes* they will have it so. They will tell you on oath the sun is a molten mass, the moon inhabited, and the stars water-drinkers, moisture being drawn up by the sun's rope and bucket and equitably distributed among them."

3. Principal Doctrines

PD 22 We must consider both the real purpose and all the evidence of direct perception, to which we always refer the conclusions of opinion; otherwise, all will be full of doubt and confusion.

PD 23 If you fight against all sensations, you will have no standard by which to judge even those of them which you say are false.

PD 24 If you reject any single sensation and fail to distinguish between the conclusion of opinion as to the appearance awaiting confirmation and that which is actually given by the sensation or feeling, or each intuitive apprehension of the mind, you will confound all other sensations as well with the same groundless opinion, so that you will reject every standard of

judgment. And if among the mental images created by your opinion you affirm both that which awaits confirmation and that which does not, you will not escape error, since you will have preserved the whole cause of doubt in every judgment between what is right and what is wrong.

4. Diogenes of Oinoanda

Fr. 5

[Others do not] explicitly [stigmatise] natural science as unnecessary, being ashamed to acknowledge [this], but use another means of discarding it. For, when they assert that things are inapprehensible, what else are they saying than that there is no need for us to pursue natural science? After all, who will choose to seek what he can never find?

Now Aristotle and those who hold the same Peripatetic views as Aristotle say that nothing is scientifically knowable, because things are continually in flux and, on account of the rapidity of the flux, evade our apprehension. We on the other hand acknowledge their flux, but not its being so rapid that the nature of each thing [is] at no time apprehensible by sense-perception. And indeed [in no way would the upholders of] the view under discussion have been able to say (and this is just what they do [maintain] that [at one time] this is [white] and this black, while [at another time] neither this is [white nor] that black, [if] they had not had [previous] knowledge of the nature of both white and black.

5. Lucretius Book 4 On Images

And when we see from afar off the square towers of a town, it comes to pass for this cause that they often look round, because every angle from a distance is seen flattened, or rather it is not seen at all, and the blow from it passes away, nor does its stroke come home to our eyes, because, while the idols are being borne on through much air, the air by its frequent collisions constrains it to become blunted. When for this cause every angle alike has escaped our sense, it comes to pass that the structures of stone are worn away as though turned on the lathe; yet they do not look like things which are really round to a near view, but a little resembling them as though in shadowy shape. Likewise our shadow seems to us to move in the sunshine, and to follow our footsteps and imitate our gait; if indeed you believe that air bereft of light can step forward, following the movements and gait of men. For that which we are wont to name a shadow can be nothing else but air devoid of light. But in very truth it is because in certain spots in due order the ground is bereft of the light of the sun wherever we, as we move on, cut it off, and likewise the part of it which we have left is filled again; for this cause it comes to pass that, what was but now the shadow of our body, seems always to follow unaltered straight along with us. For always new rays of light are pouring out, and the former perish, like wool

drawn into a flame. Therefore readily is the ground robbed of light, and is likewise filled again and washes away its own black shadows.

And yet we do not grant that in this the eyes are a whit deceived. For it is theirs to see in what several spots there is light and shade: but whether it is the same light or not, whether it is the same shadow which was here, that now passes there, or whether that rather comes to pass which I said a little before, this the reasoning of the mind alone must needs determine, nor can the eyes know the nature of things. Do not then be prone to fasten on the eyes this fault in the mind. The ship, in which we journey, is borne along, when it seems to be standing still; another, which remains at anchor, is thought to be passing by. The hills and plains seem to be flying towards the stern, past which we are driving on our ship with skimming sail. All the stars, fast set in the vault of the firmament, seem to be still, and yet they are all in ceaseless motion, inasmuch as they rise and return again to their distant settings, when they have traversed the heaven with their bright body. And in like manner sun and moon seem to abide in their places, yet actual fact shows that they are borne on. And mountains rising up afar off from the middle of the waters, between which there is a free wide issue for ships, yet seem united to make a single island.

When children have ceased turning round themselves, so sure does it come to appear to them that the halls are turning about, and the pillars racing round, that scarcely now can they believe that the whole roof is not threatening to fall in upon them. And again, when nature begins to raise on high the sunbeam ruddy with twinkling fires, and to lift it above the mountains, those mountains above which the sun seems to you to stand, as he touches them with his own fire, all aglow close at hand, are scarce distant from us two thousand flights of an arrow, nay often scarce five hundred casts of a javelin: but between them and the sun lie the vast levels of ocean, strewn beneath the wide coasts of heaven, and many thousands of lands are set between, which diverse races inhabit, and tribes of wild beasts. And yet a pool of water not deeper than a single finger-breadth, which lies between the stones on the paved street, affords us a view beneath the earth to a depth as vast as the high gaping mouth of heaven stretches above the earth; so that you seem to descry the clouds and the heaven and bodies wise hidden beneath the earth—yet in a magic sky. Again, when our eager horse has stuck fast amid a river, and we look down into the hurrying waters of the stream, the force seems to be carrying on the body of the horse, though he stands still, athwart the current, and to be thrusting it in hot haste up the stream; and wherever we cast our eyes all things seem to be borne on and flowing forward, as we are ourselves.

Though a colonnade runs on straight-set lines all the way, and stands resting on equal columns from end to end, yet when its whole length is seen from the top end, little by little it contracts to the pointed head of a narrow cone, joining roof with floor, and all the right hand with the left, until it has brought all together into the point of a cone that passes out of sight. It happens to sailors on the sea that the sun seems to rise from the waves, and again to set in the waves, and hide its light; since verily they behold nothing else but water and sky; so that you must not

lightly think that the senses waver at every point. But to those who know not the sea, ships in the harbour seem to press upon the water maimed, and with broken poop. For all the part of the oars which is raised up above the salt sea spray, is straight, and the rudders are straight above; but all that is sunk beneath the water, seems to be broken back and turned round, yes, and to turn upwards again and twist back so that it almost floats on the water's surface. And when winds in the night season carry scattered clouds across the sky, then the shining signs seem to glide athwart the storm-clouds, and to be moving on high in a direction far different from their true course. Then if by chance a hand be placed beneath one eye and press it, it comes to pass by a new kind of perception that all things which we look at seem to become double as we look, double the lights of the lamps with their flowery flames, double the furniture throughout the whole house in twin sets, and double the faces of men, double their bodies. Again, when sleep has bound our limbs in sweet slumber, and all the body lies in complete rest, yet then we seem to ourselves to be awake and moving our limbs, and in the blind gloom of night we think to see the sun and the light of day, and, though in some walled room, we seem to pass to new sky, new sea, new streams, and mountains, and on foot to cross over plains, and to hear sounds, when the stern silence of night is set all about us, and to give answer, when we do not speak. Wondrously many other things of this sort we see, all of which would fain spoil our trust in the senses; all in vain, since the greatest part of these things deceives us on account of the opinions of the mind, which we add ourselves, so that things not seen by the senses are counted as seen. For nothing is harder than to distinguish things manifest from things uncertain, which the mind straightway adds of itself.

Again, if any one thinks that nothing is known, he knows not whether that can be known either, since he admits that he knows nothing. Against him then I will refrain from joining issue, who plants himself with his head in the place of his feet. And yet were I to grant that he knows this too, yet I would ask this one question; since he has never before seen any truth in things, whence does he know what is knowing, and not knowing each in turn, what thing has begotten the concept of the true and the false, what thing has proved that the doubtful differs from the certain? You will find that the concept of the true is begotten first from the senses, and that the senses cannot be gainsaid. For something must be found with a greater surety, which can of its own authority refute the false by the true. Next then, what must be held to be of greater surety than sense? Will reason, sprung from false sensation, avail to speak against the senses, when it is wholly sprung from the senses? For unless they are true, all reason too becomes false. Or will the ears be able to pass judgement on the eyes, or touch on the ears? or again will the taste in the mouth refute this touch; will the nostrils disprove it, or the eyes show it false? It is not so, I trow. For each sense has its faculty set apart, each its own power, and so it must needs be that we perceive in one way what is soft or cold or hot, and in another the diverse colours of things, and see all that goes along with colour. Likewise, the taste of the mouth has its power apart; in one way smells arise, in another sounds. And so it must needs be that one sense cannot prove another false. Nor again will they be able to pass judgement on themselves, since equal trust must at all times be placed in them.

Therefore, whatever they have perceived on each occasion, is true. And if reason is unable to unravel the cause, why those things which close at hand were square, are seen round from a distance, still it is better through lack of reasoning to be at fault in accounting for the causes of either shape, rather than to let things clear seen slip abroad from your grasp, and to assail the grounds of belief, and to pluck up the whole foundations on which life and existence rest. For not only would all reasoning fall away; life itself too would collapse straightway, unless you chose to trust the senses, and avoid headlong spots and all other things of this kind which must be shunned, and to make for what is opposite to these. Know, then, that all this is but an empty store of words, which has been drawn up and arrayed against the senses. Again, just as in a building, if the first ruler is awry, and if the square is wrong and out of the straight lines, if the level sags a whit in any place, it must needs be that the whole structure will be made faulty and crooked, all awry, bulging, leaning forwards or backwards, and out of harmony, so that some parts seem already to long to fall, or do fall, all betrayed by the first wrong measurements; even so then your reasoning of things must be awry and false, which all springs from false senses.

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Commentary

(1) From David Furley, in his Two Studies in the Greek Atomists.

In this work Furley, directs our attention to both “indivisible magnitudes” and “voluntary action:

“With Epicurus, the position [that of responding to the mind-games set up by those philosophers who advocated that matter was infinitely divisible] may have been much simpler [than Aristotle]. His [Epicurus’] view was that the real world of atoms and void was composed of minima. Any account of the basic structure of the world therefore must consist of counting the minima: there is nothing more to it.

What we should expect, therefore, a priori, is that Epicurus would regard geometry as irrelevant to the study of nature, because one of its essential principles (that of infinite divisibility) was contrary to the facts of nature.

There is little evidence for Epicurus’ views about geometry, but such as it is it exactly confirms this expectation. Sextus, at the beginning of his Adversus Mathematicos, reports that the Epicureans regarded the matlzemata (a class of subjects to be learnt which included geometry)

as “contributing nothing to the perfection of wisdom.”

Proclus, in his Commentary on Euclid (Friedlein, p. 199), divides the critics of geometry into two classes: those who object to its principles, and those who complain that its theorems do not follow from the principles as given. The former class is divided into those who criticize the principles of knowledge in general (the Sceptics), and those who criticize the principles of geometry alone (the Epicureans).

The Epicurean theory of minimal parts, if it has been correctly described in this essay, was a typical piece of Epicurean philosophy. We might say that Epicurus was confronted with a choice between infinite divisibility and minimal parts. He thought he saw that the former alternative would lead him into positions inconsistent with experience: for instance, it would be necessary for a man to be able to “reach infinity in thought,” and this was contrary to experience.

There was no counter-evidence against the existence of minimal parts in nature; the analogy of the senses suggested that there was a minimum; so he opted for this alternative, and doggedly worked out the details, in so far as he thought it necessary. But he made no attempt, apparently, to work out a fully systematic mathematical theory to support his physics. On his own premises, there was no reason why he should. His purpose was to teach peace of mind.”