from Letter to Herodotus

by

Epicurus

I. INTRODUCTION

A. Reasons for the letter

This letter presents a brief compendium of the physics to refresh the memories of those already familiar with the theories.

Epicurus to Herodotus, greeting.

Some, Herodotus, are not able to study carefully all my works on natural science or to examine closely the longer treatises. For them I have already written an epitome of the whole system so that they may acquire a fair grasp of at least the general principles and thereby have confidence in themselves on the chief points whenever they take up the study of physics. Those, too, who have acquired a reasonably complete view of all the parts ought to keep in mind an outline of the principles of the whole; for such a comprehensive grasp is often required, the details not so often.You must continually return to these primary principles and memorize them thoroughly enough to secure a grasp of the essential parts of the system. Accurate knowledge of the details will follow once you have understood and memorized the outline of the whole. Even for the trained student this is the most important result of his accurate knowledge: he is able to make immediate use of the things he perceives and of the resulting concepts by assigning them to the simple classes and calling them by their own names; for it is not possible for anyone to hold in mind in condensed form the whole interrelated system unless he is able to comprehend by means of short formulas all that might be expressed in detail. Therefore, since such a course is useful to all who are engaged with natural science, I, who recommend continuous activity in this field and am myself gaining happiness from just this life, have composed for you such a brief compendium of the chief principles of my teaching as a whole.

B. Methods of Proof

Words must be used in their natural meanings. All natural science rests on the evidence of the senses.

First, Herodotus, we must understand the meanings of words in order that by expressing our opinions, investigations, and problems in exact terms, we may reach judgments and not use empty phrases, leaving matters undecided although we argue endlessly We must accept without further explanation the first mental image brought up by each word if we are to have any standard to which to refer a particular inquiry,

problem, or opinion. Next, we must use our sensations as the foundation of all our investigations; that is, we must base investigations on the mental apprehensions, upon the purposeful use of the several senses that furnish us with knowledge, and upon our immediate feelings. In these ways we can form judgments on those matters that can be confirmed bv the senses and also on those beyond their reach.

II. THE UNIVERSE

A. Basic Principles

Matter can be neither created nor destroyed. The universe as a whole is unchanging.

Now that this has been established we must consider the phenomena that cannot be perceived by the senses. The first principle is that nothing can be created from the nonexistent; for otherwise any thing would be formed from anything without the need of seed. If all that disappears were destroyed into the non-existent, all matter would be destroyed, since that into which it would be dissolved has no existence. Truly this universe has always been such as it now is, and so it shall always be; for there is nothing into which it can change, and there is nothing outside the universe that can enter into it and bring about a change.

B. Atoms and the Void

The universe consists of matter, recognized by the senses, and void, in which matter moves. Other conceivable things are "accidents" or "properties" of these. Sensible objects are composed of atoms, which themselves are indestructible.

Moreover, the universe consists of material bodies and void. That the bodies exist is made clear to all by sensation itself, on which reason must base its judgment. in regard to what is imperceptible, as I have said above. If that which we call "void" and "space" and "the untouchable" did not exist, the particles of matter would have no place in which to exist or through which to move, as it is clear they do move.

In addition to these two, there is nothing that we can grasp in the mind, either through concepts or through analogy with concepts, that has real existence and is not referred to merely as a property or an accident of material things or of the void.

Of material things, some are compounds, others are the simple particles from which the compounds are formed. The particles are indivisible and unchangeable, as is necessary if all is not to be dissolved to nothing, but something strong is to remain after the dissolution of the compounds, something solid, which cannot be destroyed in any way. Therefore, it is necessary that the first beginnings be indivisible particles of matter.

C. The Infinite of the Universe

i. *The universe is infinite, for there is nothing to bound it, and each of its elements is decided also infinite*.

Moreover, the universe as a whole is infinite, for whatever is limited has an outermost edge to limit it, and such an edge is defined by something beyond. Since the universe does not have an edge, it has no limit; and since it lacks a limit, it is infinite and unbounded. Moreover, the universe is infinite both in the number of its atoms and in the extent of its void. If, on the one hand, the void were infinite and matter finite, the atoms would not remain anywhere but would be carried away and scattered through the infinite void, since there would be no atoms from without to support them and hold them together by striking them. If, on the other hand, the void were finite, there would not be room in it for an infinite number of atoms.

ii. *To account for the differences in sensible objects, the atoms must exist in many forms, the number of different forms being inconceivably great but not infinite, while the number of atoms of each form is infinite.*

In addition, the indivisible, solid particles of matter, from which composite bodies are formed and into which such bodies are dissolved, exist in so many different shapes that the mind cannot grasp their number; for it would not be possible for visible objects to exhibit such great variation in form and quality if they were made by repeated use of atoms of conceivable variety The number of atoms of each shape is infinite; but the number of varieties cannot be infinite, only inconceivably great.

D. The Motion of the Atoms

The atoms move continuously, both freely in space, and with more limited motion forming gases, liquids, and solids.This motion had no beginning.

The atoms move without interruption through all time.Some of them (fall in a straight line; some swerve from their courses; and others move back and forth as the result of collisions. These last make up the objects that our senses recognize.Some of those that move in this way after collisions) separate far from each other; the others maintain a vibrating motion, either closely entangled with each other or confined by other atoms that have become entangled. There are two reasons for this continued vibration. The nature of the void that separates each of the atoms from the next permits it, for the void is not able to offer any resistance; and the elasticity that is characteristic of the atoms causes them to rebound after each collision. The degree of entanglement of the atoms determines the extent of the recoil from the collision. These motions had no beginning, for the atoms and the void have always existed. If all these things are remembered, a statement as brief as this provides a sufficient outline for our understanding of the nature of that which exists.

E. The Infinite Number of Worlds

Because atoms and space are infinite, the number of worlds, like or unlike ours, is also infinite.

Finally, the number of worlds, some like ours and some unlike, is also infinite. For the

atoms are infinite in number, as has been shown above, and they move through the greatest distances. The atoms suited for the creation and maintenance of a world have not been used up in the formation of a single world or of a limited number of them, whether like our world or different from it. There is nothing therefore that will stand in the way of there being an infinite number of worlds.

V. THE SOUL

A. Composition of the Soul

The soul is material, composed of finely divided particles, some like breath, some like fire, and some of a third, unnamed kind.

Next, referring to the sensations and the feelings as the most certain foundation for belief, we must see that, in general terms, the soul is a finely divided, material thing, scattered through the whole aggregation of atoms that make up the body, most similar to breath with a certain admixture of heat, in some ways resembling the one, in some ways the other.But there is also a part of the soul that goes beyond even these two in fineness, and for this reason it is more ready to share in the feelings of the body.All this is made evident to us by the powers of the soul, that is, by its feelings, its rapidity of action, its rational faculties, and its possession of those things whose loss brings death to us.

B. The Soul and the Body in Sensation

The soul experiences sensation only when enclosed in the body; and the body receives from the soul a share in this sensation. Sensation may survive the loss of parts of the body, but it ceases with the destruction of the soul or of the whole body.

Next, we must conclude that the primary cause of sensation is in the soul; yet it would not have acquired sensation if it had not been in some way enclosed by the rest of the body. But the rest of the body, having given the soul the proper setting for experiencing sensation, has itself also gained from the soul a certain share in this capacity. Yet it does not fully share with the soul, and for this reason when the soul departs, the body no longer experiences sensation; for the body did not have this capacity in itself but made sensation possible for that other that had come into existence along with it, namely the soul. The soul, thanks to the power perfected in it by the motions of the body, at once bringing to completion its own power to experience sensation, returned a share of this power to the body because of their close contact and conunon feelings, as I have said. For this reason, sensation is never lost while the soul remains, even though other parts of the body have been destroyed. Indeed, even if a portion of the soul is lost with the loss in whole or in part of that portion of the body that enclosed it, if any part at all of the soul survives, it will still experience sensation; but when the rest of the body survives both as a whole and part by part, it has no sensation if that collection of atoms, small though it be, that makes up the soul has been lost. However, if the whole body is destroyed, the soul is scattered and no longer enjoys the same powers and motions; and as a result, it no

longer possesses sensation.Whenever that in which the soul has existed is no longer able to confine and hold it in, we cannot think of the soul as still enjoying sensation, since it would no longer be within its proper system and would no longer have the use of the appropriate motions.

C. Material Nature of the Soul

*The term "incorporeal" is properly applied only to the void, which cannot act or be acted on. Since the soul can act and be acted upon, it is not incorporea*l.

Moreover, we must clearly observe this also, that the word "incorporeal" in its common use is applied only to that which we can think of as existing by itself. Now there is no incorporeal thing that we can think of as existing by itself except the void. The void can neither act nor be acted upon; it only gives to corporeal things a space through which to move. Therefore, those who say that the soul is some like incorporeal are talking nonsense; for in that case the soul would be unable to act or be acted upon, and we clearly see that the soul is capable of both.

D. Conclusion

If you refer all this discussion about the soul to your feelings and sensations, remembering what was said at the beginning of the discussion, you will find enough embraced in this outline to enable you, starting from it, to work out the details with certainty.

VII. THE WORLDS

A. The Creation of Worlds

Each world was formed by being separated from its own whirling mass, and will be dissolved again.

In addition to what we have said, it is necessary to believe that the worlds and every limited complex that has a continuous similarity to the visible world have been formed from the infinite, each of them, greater and smaller, separating out from its own whirling mass. We must suppose also that these will all be dissolved again, some more quickly and some more slowly, some afflicted by one calamity and others by another.

One must not suppose that because of necessity worlds in a single pattern (were created, or in every possible pattern...

B. Forms of Life in the Worlds

We may assume animal and vegetable life in the other worlds similar to that on ours.

...Moreover, we may believe that in all the worlds there are animals, plants, and the other things we see; for no one can show that the seeds from which grow animals, plants, and the other things we see might or might not have been included in one particular world and that in another kind of world this was impossible.

VIII. THE DEVELOPMENT OF CIVILIZATION

A. The Arts and Crafts

Instinct led men to the first developments, which reason then improved upon.

Moreover, we may assume that by the conditions that surround them, men were taught or forced by instinct to do many things of many kinds, but reason later elaborated on what had been begun by instinct and introduced new inventions. In some fields, great progress was made, in others, less; and in some times and ages reason (had more success in freeing men from their fears) of the powers above than in others.

B. Language

Language was a natural development, differing in different tribes. Later, speech was clarified by deliberate selection.

So too we may suppose that in the beginning words did not receive meaning by design. The natural characters of men who underwent different experiences and received different impressions according to their tribes, caused them to emit air from their lips formed in harmony with each of the experiences and impressions, the men of each tribe differing in their own separate ways as the tribes differed because of their differing environments. But later in each race, by common agreement, men assigned particular meanings to particular sounds so that what they said to each other might be less ambiguous and the meaning be more quickly made clear. When men who had known them introduced certain things not previously seen, they assigned names to them, sometimes being forced instinctively to utter the word, but sometimes making their meaning clear by logically selecting the sound in accordance with the general usage.

IX. THE PHENOMENA OF THE HEAVENS

A. Causes of Celestial Phenomena

No divinity directs the heavenly bodies, for this is inconsistent with divine happiness; nor are they themselves divine.

Now as to celestial phenomena, we must believe that these motions, periods, eclipses,

risings, settings, and the like do not take place because there is some divinity in charge of them, who so arranges them in order and will maintain them in that order, and who at the same time enjoys both perfect happiness and irrunortality; for activity and anxiety, anger and kindness are not in harmony with blessedness, but are found along with weakness, fear, and dependence on one's neighbors.We must also avoid the belief that masses of concentrated fire have attained a state of divine blessedness and undertaken these motions of their own free will. In all the terms with which we set forth our conceptions of such blessedness, we must preserve due reverence lest from irreverent words there grow opinions that deny this majesty. If we fail, this contradiction will cause the greatest confusion in our souls. Therefore we must believe that, at the time of the first formation of these bodies at the creation of the world, the law of their motions was fully ordained.

B. Purposes of, and Limitations on, the Study of Celestial Phenomena

i. *While knowledge of the general principles governing these matters is essential to our happiness, the study of the details is vain. We must accept the possibility of multiple causes.*

Now we must accept the following beliefs: that to acquire exact knowledge about basic causes is the task of natural philosophy; that, as far as the heavenly bodies are concerned, our happiness depends on this basic knowledge and upon knowing the general nature of the visible phenomena of the heavens and whatever is necessary for certainty up to this point; that in these first principles there is neither multiformity nor any possibility of variation; and that in the immortal and blessed nature there is absolutely nothing that causes doubt and confusion. That these statements are true without qualification we can ascertain by reason. But we must also know that whatever belongs to the investigations of settings and rising, periods and eclipses, and the like-that this is of no import for the happiness that comes from knowledge; and that those who have learned these things but are ignorant of the original nature and the basic causes are subject to fears as great as if they knew nothing, or perhaps to even greater fears because the amazement that follows the study of these phenomena is not able to solve the problem of their relation to the essential principles. Therefore, if we find that there are many possible causes for periods, settings, risings, eclipses, and the like, just as we found many possible causes in our investigation of details, we need not think that our investigation of these matters has not reached sometimes a certainty sufficient to secure for us peace of mind and happiness. We must search for the causes of celestial phenomena and in general of that which cannot be clearly perceived by first finding in how many ways similar phenomena are produced within the range of our senses; and we must pay no heed to those who, in the case of phenomena that can only be seen from a distance, fail to distinguish between that which is and remains single and that which may happen in many different ways, and who do not know under what conditions it is possible and under what conditions impossible to achieve peace of mind. If we know this, that phenomena may take place in many ways, we shall be as little disturbed if we merely think it possible that a particular phenomenon happens in some particular way as we would be if we knew this as an absolute fact.

ii. *Men imagine that the celestial bodies are divine yet ascribe to them purposes inconsistent with divinity; and they anticipate eternal suffering after death. Peace of mind follows freedom from such fears, and will be gained if we trust to our immediate feelings and sensations*.

In addition to these general matters, we must observe this also, that there are three things that account for the major disturbances in men's minds. First, they assume that the celestial bodies are blessed and eternal yet have impulses, actions, and purposes quite inconsistent with divinity. Next, they anticipate and foresee eternal suffering as depicted in the myths, or even fear the very lack of consciousness that comes with death as if this could be of concern to them. Finally, they suffer all this, not as a result of reasonable conjecture, but through time of the some sort of unreasoning imagination; and since in imagination they set no limit to suffering, they are beset by turmoil as great as if there were a reasonable basis for their dread, or even greater.But it is peace of mind to have been freed from all this and to have constantly in memory the essential principles of the whole system of belief. We must therefore turn our minds to immediate feelings and sensations--in matters of general concern to the common feelings and sensations of mankind, in personal matters, to our own--and to every immediate evidence from each of the means of judgment. If we heed these, we shall rightly track down the sources of disturbance and fear, and when we have learned the causes of celestial phenomena and of the other occasional happenings, we shall be free from what other men most dread.

X. CONCLUSION

This summary will be useful both for the beginner and also, as an easily remembered outline, for the more proficient.

Here then, Herodotus, you have the most important points in regard to natural science set down in such condensed form that this discourse may be accurately held in mind. I think that one who masters this, even if he does not progress to all the parts of a detailed study, will have very great strength compared with other men. He will also be able of himself to make clear many detailed points in regard to our system as a whole, and these general principles themselves will constantly aid him if he but hold them in memory. For these points are such that those who have made considerable progress and even those who are proficient in the detailed study, by solving their problems with reference to this survey, will make the greatest advances in the knowledge of the whole; and some of those who have made less progress toward perfect knowledge can, hastily and without oral instruction, run through the matters of most importance for peace of mind.