

CONCERNING THE FIRST PRINCIPLE OF COLD.

1. Is there then, Favorinus, any first or principal power or existence of cold, as fire is the principle of heat, by the presence and imparting of which all other things of the same nature become cold? Or rather is not cold the privation of heat, as they say darkness is the privation of light, and rest the privation of motion? In regard that cold seems to be firm and stable, and heat always in motion; and for that the refrigeration of hot things is not caused by the presence of any active power, but by the departure of the heat. For we find the heat go off in great quantity, and then that which remains grows cold. Thus the vapor which boiling water sends forth ceases also when the heat is gone. Therefore refrigeration, expelling the heat, diminishes the quantity, while nothing supplies the place of it.

2. First, we might question this way of arguing, as being that which would abolish several manifest faculties, as being neither qualities nor habits, but the privations of habits and qualities; so as to make ponderosity the privation of levity, hardness the privation of softness, black of white, bitter of sweet, and so with other things which are naturally opposed to each other in their power and not as a privation to a habit. Or else for this reason, because all privation is a thing altogether sluggish and without action, as blindness, deafness, silence, and death; for they are the

departure of forms, and the utter defacings of substances, not being natures nor substances of themselves; but cold, wherever it resides, causes no less affections and alterations in bodies than heat. For many things are congealed by cold, many things thereby condensed. So that whatever is solid in it and difficult to be moved cannot be said to be sluggish and void of action, but firm and ponderous, as being supported by its own strength, which is endued with a power to preserve it in its proper station. Wherefore privation is the deficiency and departure of the opposite power, but many things are subject to be cold, though abounding with heat within themselves. And there are some things which cold the more condenses and consolidates the hotter they are, as iron quenched in water. The Stoics also affirm, that the spirit which is in the bodies of infants is quickened by refrigeration, and changing its Nature, turns to a soul. But this is a thing much to be disputed. Neither is it rational to believe that cold, which is the productive agent in many other things, can be a privation.

3. Besides, no privation is capable of more and less. Neither can any man say, that one among those that cannot see is more blind than another, or that one among those that cannot speak is more silent than another, or that any thing is more dead than another among those things that never had life. But in cold things there is more and less, and excess and diminution to several degrees; in a word, there is both intensity and remission as well as in hot things; because the matter suffers in some things more violently, in others more languidly, and therefore some things are hotter, some things colder than others, according to the nature of the matter. For there is no mixture of habit with privation. Neither does any power admit of privation opposite to it, nor associate with it in the same subject, but it withstands it altogether. Hot things allow themselves to be mixed

with cold things to a certain degree, as black with white, heavy with light, and sour with sweet, — this community and harmony of colors, sounds, medicaments, and sauces generating several tastes and pleasures grateful to the senses. But the opposition of privation and habit is an antipathy never to be reconciled; the being of the one enforcing the destruction of the other. Which destruction, if it fall out seasonably, according to the opposition of contrary powers, the arts make great use of, but chiefly Nature, not only in her other creations, but especially in the alterations of the air, and in all other things of which the Deity being the adorer and dispenser obtains the attribute of harmonical and musical. Not that those attributes are given him for the disposal of deep and shrill, black and white, so as to make them agree together; but for his governing in the world the sympathies and antipathies of cold and heat in such a manner that they may unite and separate again, and for reducing both to a decent order, by taking that which we called “the overmuch” from both.

4. Then again, we find that there is the same sense and feeling of cold as of heat; but privation is neither to be seen, heard, or felt, neither is it known to any of the other senses. For the object of sense is substance; but where no substance appears, there we understand privation to be, — which is a negation of substance, as blindness of sight, silence of voice, and vacuity of corporeal substance. For there is no sense or perception of vacuity by feeling; but where there is no body to be felt, there a vacuity is implied. Neither do we hear silence; but where we do not hear any thing at all, there we imply silence. In like manner we have no perception of blindness, nakedness, or being unarmed; but we know them from the negation of our sense. Therefore if cold were a privation of heat, there would be no being sensible of cold; but

only where heat ceased to be, there cold would be implied. But if, as heat is perceptible by the warmth and laxative softness of the flesh, so cold is no less perceptible by the contraction and condensation of it, it is from thence apparent, that there is some peculiar original and fountain of cold as well as heat.

5. Further then, privation of every kind is something single and simply particular; but in substances there are several differences and efficacies. For silence is a thing but of one sort; but of sounds there are great variety, sometimes molesting, sometimes delightful to the sense. There are also the same differences in colors and figures, which vary as they occur to the senses. But that which is not to be felt, which is without color and void of quality, can never be distinguished, but is always like itself.

6. Is cold therefore to be numbered among those privations that are not distinguished in their action? Rather the contrary, in regard that pleasures very great and beneficial to our bodies arise from cold things; as no less terrible mischiefs, pains, and stupefaction on the other side; which the heat does not always avoid and give way to, but many times enclosed within the body, withstands and opposes. Which contention of theirs is called quivering and shaking, at what time, if the cold overcome the heat, thence proceed numbness and stiffness of the limbs; but if the cold be vanquished by the heat, there follow a pleasing warmth and opening of the skin, which Homer expresses by the word *καίνοσθαί*. These things are past dispute; and chiefly by these passive qualities it is, that we find cold to be opposite to heat, as substance to substance, or passive quality to passive quality, not as negation or privation; neither is it the destruction or abolishing of hot, but a kind of nature and power tending to its destruction. Otherwise we should exempt the winter out of the seasons, and the north winds out of the number of the winds, as

being privations of the warmer seasons and the southern gales, and not having any proper original.

7. Now in regard there are four first bodies in the universe, which, by reason of their number, their being uncompounded, and their efficacy, are allowed for the most part to be the principles and beginnings of all other, — that is to say, fire and water, air and earth, — is there not the same necessity that there should be as many first and uncompounded qualities? And what are they but heat and cold, drought and moisture, by virtue of which it comes to pass that all the principles act and suffer? Thus, as there are in grammar lengthenings and shortenings of sounds, in music, deep and acute sounds, though not one of them is the privation of the other; we must leave the dry opposed to the moist principles, and the hot to the cold, if we intend to have the effects answerable to reason and what is visible in Nature. Unless, as it was the opinion of the ancient Anaximenes, we will not allow either cold or hot to be in substance, but only to be common passive qualities accompanying the alterations of the matter. For he affirms the contraction and condensation of the matter to be cold; but the rarefaction and laxation of it (for by that word he calls it) to be hot. Whence it may not be improperly said, that a man breathes hot and cold at once. For the breath grows cold being compressed and thickened by the lips, but coming out of the open mouth it is hot, as being rarefied by that emission. But for this, Aristotle convinces the same person of ignorance; for that when we blow with the mouth open, we blow hot from our own bodies; but when we blow with compressed lips, we do not breathe forth the air from ourselves, but the air that is before our mouths, being cold, is thrust forward, and lights upon what is next it.

8. But if we must grant that both heat and cold are substances, let us proceed a little farther in our discourse, and

enquire what sort of substance is cold, and what is its first principle and nature.

They then who affirm that there are certain irregular triangular figures in our body, and tell us also that shuddering, trembling, and quivering, and whatever else we suffer of the same nature, proceed from the roughness of those figures, if they mistake in the parts, nevertheless derive the beginning from whence they ought. For we ought to begin the question — as it were from Vesta — from the substance of all things. By which it chiefly appears wherein a philosopher differs from a physician, a husbandman, or a piper. For it is sufficient for these to contemplate the last causes. For if the consideration of the nearest causes of the affection go no farther than to find that the cause of a fever is intenseness of heat, or the lighting of some humor where it ought not to be, that the cause of blasting is the scorching heat of the sun after rain, and that the cause why pipes give a bass sound is the inclination of the pipes or the bringing them near one to another ; this is enough for the artist to know in reference to his business. But when a philosopher for contemplation's sake scrutinizes into the truth, the knowledge of remote causes is not the end but the beginning of his proceeding in search of the first and ultimate causes. Wherefore Plato and Democritus, enquiring after the cause of heat and gravity, did not stop at the consideration of earth and fire, but bringing things perceptible to sense to beginnings intelligible only by the mind, they went on even to the smallest, as it were the seeds of what they sought for.

9. But it is much the better way for us in the first place to move forward upon those things which are perceptible to sense, wherein Empedocles, Strato, and the Stoics placed the substances of active qualities ; the Stoics ascribing primitive cold to the air, Empedocles and Strato

to the water ; and perhaps there might be somebody else who might affirm the earth to be the substance of cold. But first let us consider the opinions of those already named.

Seeing then that fire is both hot and bright, therefore there must be something opposite to fire which is cold and dark. For as dark is opposite to light, so is cold to hot. Besides, as dark confounds the sight, so cold confounds the feeling. But heat diffuses the sense of feeling, as light diffuses the sense of seeing. Therefore that which is first dark in nature is first cold. Now that the air is first dark, was not unknown to the poets ; for that they call the air darkness .

The thickened air the fleet with darkness covered,
Nor could the moonlight be from heaven discovered.*

And again :

Then darkness scattered and the fog dispelled,
The sun brake forth, and all the fight beheld.†

They also call the air, when it is without light *νεφας*, as being as it were *κενὸν φάους* (*void of light*.) The air collected and condensed into a cloud is called *νέφος*, from its negation of light (*νή-φάος*). The words also *ἀχλύς* and *ὀμίχλη* (*mist*), and whatever else restrains the perception of light from the sense, are but distinctions of the air ; insomuch that the same part of it which is invisible and without color (*ἄειδες* and *ἀχρωστον*) is called Hades and Acheron. So that, as the air grows dark when the splendor of it fails, in like manner when heat fails, that which is left is no more than cold air, which by reason of its coldness is called Tartarus. And this Hesiod makes manifest, when he calls it *Τάρταρον ἡερόεντα* (or *cloudy Tartarus*) ; and when a man quakes and shivers for cold, he is said to tartarize. And so much for this.

* *Odys.* IX. 144.

† *Il.* XVI. 649.

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