Timaeus, by Plato

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TIMAEUS

by Plato

Translated by Benjamin Jowett

INTRODUCTION AND ANALYSIS.

Of all the writings of Plato the Timaeus is the most obscure and

repulsive to the modern reader, and has nevertheless had the greatest

influence over the ancient and mediaeval world. The obscurity arises in

the infancy of physical science, out of the confusion of theological,

mathematical, and physiological notions, out of the desire to conceive

the whole of nature without any adequate knowledge of the parts, and

from a greater perception of similarities which lie on the surface than

of differences which are hidden from view. To bring sense under the

control of reason; to find some way through the mist or labyrinth of

appearances, either the highway of mathematics, or more devious paths

suggested by the analogy of man with the world, and of the world with

man; to see that all things have a cause and are tending towards an

end--this is the spirit of the ancient physical philosopher. He has no

notion of trying an experiment and is hardly capable of observing

the curiosities of nature which are 'tumbling out at his feet,' or of

interpreting even the most obvious of them. He is driven back from the

nearer to the more distant, from particulars to generalities, from the

earth to the stars. He lifts up his eyes to the heavens and seeks to

guide by their motions his erring footsteps. But we neither appreciate

the conditions of knowledge to which he was subjected, nor have the

ideas which fastened upon his imagination the same hold upon us. For he

is hanging between matter and mind; he is under the dominion at the same

time both of sense and of abstractions; his impressions are taken almost

at random from the outside of nature; he sees the light, but not

the objects which are revealed by the light; and he brings into

juxtaposition things which to us appear wide as the poles asunder,

because he finds nothing between them. He passes abruptly from persons

to ideas and numbers, and from ideas and numbers to persons,--from the

heavens to man, from astronomy to physiology; he confuses, or rather

does not distinguish, subject and object, first and final causes, and

is dreaming of geometrical figures lost in a flux of sense. He contrasts

the perfect movements of the heavenly bodies with the imperfect

representation of them (Rep.), and he does not always require strict

accuracy even in applications of number and figure (Rep.). His mind

lingers around the forms of mythology, which he uses as symbols or

translates into figures of speech. He has no implements of observation,

such as the telescope or microscope; the great science of chemistry is

a blank to him. It is only by an effort that the modern thinker can

breathe the atmosphere of the ancient philosopher, or understand how,

under such unequal conditions, he seems in many instances, by a sort of

inspiration, to have anticipated the truth.

The influence with the Timaeus has exercised upon posterity is due

partly to a misunderstanding. In the supposed depths of this dialogue

the Neo-Platonists found hidden meanings and connections with the Jewish

and Christian Scriptures, and out of them they elicited doctrines quite

at variance with the spirit of Plato. Believing that he was inspired by

the Holy Ghost, or had received his wisdom from Moses, they seemed to

find in his writings the Christian Trinity, the Word, the Church,

the creation of the world in a Jewish sense, as they really found the

personality of God or of mind, and the immortality of the soul. All

religions and philosophies met and mingled in the schools of Alexandria,

and the Neo-Platonists had a method of interpretation which could

elicit any meaning out of any words. They were really incapable of

distinguishing between the opinions of one philosopher and another--

between Aristotle and Plato, or between the serious thoughts of Plato

and his passing fancies. They were absorbed in his theology and were

under the dominion of his name, while that which was truly great

and truly characteristic in him, his effort to realize and connect

abstractions, was not understood by them at all. Yet the genius of

Plato and Greek philosophy reacted upon the East, and a Greek element of

thought and language overlaid and partly reduced to order the chaos of

Orientalism. And kindred spirits, like St. Augustine, even though they

were acquainted with his writings only through the medium of a Latin

translation, were profoundly affected by them, seeming to find 'God and

his word everywhere insinuated' in them (August. Confess.)

There is no danger of the modern commentators on the Timaeus falling

into the absurdities of the Neo-Platonists. In the present day we are

well aware that an ancient philosopher is to be interpreted from himself

and by the contemporary history of thought. We know that mysticism is

not criticism. The fancies of the Neo-Platonists are only interesting to

us because they exhibit a phase of the human mind which prevailed widely

in the first centuries of the Christian era, and is not wholly extinct

in our own day. But they have nothing to do with the interpretation

of Plato, and in spirit they are opposed to him. They are the feeble

expression of an age which has lost the power not only of creating

great works, but of understanding them. They are the spurious birth of

a marriage between philosophy and tradition, between Hellas and the

East--(Greek) (Rep.). Whereas the so-called mysticism of Plato is purely

Greek, arising out of his imperfect knowledge and high aspirations, and

is the growth of an age in which philosophy is not wholly separated from

poetry and mythology.

A greater danger with modern interpreters of Plato is the tendency to

regard the Timaeus as the centre of his system. We do not know how

Plato would have arranged his own dialogues, or whether the thought

of arranging any of them, besides the two 'Trilogies' which he has

expressly connected; was ever present to his mind. But, if he had

arranged them, there are many indications that this is not the place

which he would have assigned to the Timaeus. We observe, first of all,

that the dialogue is put into the mouth of a Pythagorean philosopher,

and not of Socrates. And this is required by dramatic propriety; for

the investigation of nature was expressly renounced by Socrates in the

Phaedo. Nor does Plato himself attribute any importance to his guesses

at science. He is not at all absorbed by them, as he is by the IDEA of

good. He is modest and hesitating, and confesses that his words partake

of the uncertainty of the subject (Tim.). The dialogue is primarily

concerned with the animal creation, including under this term the

heavenly bodies, and with man only as one among the animals. But we can

hardly suppose that Plato would have preferred the study of nature to

man, or that he would have deemed the formation of the world and the

human frame to have the same interest which he ascribes to the mystery

of being and not-being, or to the great political problems which he

discusses in the Republic and the Laws. There are no speculations on

physics in the other dialogues of Plato, and he himself regards the

consideration of them as a rational pastime only. He is beginning to

feel the need of further divisions of knowledge; and is becoming aware

that besides dialectic, mathematics, and the arts, there is another

field which has been hitherto unexplored by him. But he has not as

yet defined this intermediate territory which lies somewhere between

medicine and mathematics, and he would have felt that there was as

great an impiety in ranking theories of physics first in the order of

knowledge, as in placing the body before the soul.

It is true, however, that the Timaeus is by no means confined to

speculations on physics. The deeper foundations of the Platonic

philosophy, such as the nature of God, the distinction of the sensible

and intellectual, the great original conceptions of time and space,

also appear in it. They are found principally in the first half of the

dialogue. The construction of the heavens is for the most part ideal;

the cyclic year serves as the connection between the world of absolute

being and of generation, just as the number of population in the

Republic is the expression or symbol of the transition from the ideal

to the actual state. In some passages we are uncertain whether we are

reading a description of astronomical facts or contemplating processes

of the human mind, or of that divine mind (Phil.) which in Plato is

hardly separable from it. The characteristics of man are transferred

to the world-animal, as for example when intelligence and knowledge are

said to be perfected by the circle of the Same, and true opinion by

the circle of the Other; and conversely the motions of the world-animal

reappear in man; its amorphous state continues in the child, and in both

disorder and chaos are gradually succeeded by stability and order. It

is not however to passages like these that Plato is referring when he

speaks of the uncertainty of his subject, but rather to the composition

of bodies, to the relations of colours, the nature of diseases, and the

like, about which he truly feels the lamentable ignorance prevailing in

his own age.

We are led by Plato himself to regard the Timaeus, not as the centre or

inmost shrine of the edifice, but as a detached building in a different

style, framed, not after the Socratic, but after some Pythagorean model.

As in the Cratylus and Parmenides, we are uncertain whether Plato is

expressing his own opinions, or appropriating and perhaps improving

the philosophical speculations of others. In all three dialogues he is

exerting his dramatic and imitative power; in the Cratylus mingling a

satirical and humorous purpose with true principles of language; in

the Parmenides overthrowing Megarianism by a sort of ultra-Megarianism,

which discovers contradictions in the one as great as those which

have been previously shown to exist in the ideas. There is a similar

uncertainty about the Timaeus; in the first part he scales the heights

of transcendentalism, in the latter part he treats in a bald and

superficial manner of the functions and diseases of the human frame. He

uses the thoughts and almost the words of Parmenides when he discourses

of being and of essence, adopting from old religion into philosophy the

conception of God, and from the Megarians the IDEA of good. He agrees

with Empedocles and the Atomists in attributing the greater differences

of kinds to the figures of the elements and their movements into and out

of one another. With Heracleitus, he acknowledges the perpetual flux;

like Anaxagoras, he asserts the predominance of mind, although admitting

an element of necessity which reason is incapable of subduing; like the

Pythagoreans he supposes the mystery of the world to be contained in

number. Many, if not all the elements of the Pre-Socratic philosophy

are included in the Timaeus. It is a composite or eclectic work of

imagination, in which Plato, without naming them, gathers up into a kind

of system the various elements of philosophy which preceded him.

If we allow for the difference of subject, and for some growth in

Plato's own mind, the discrepancy between the Timaeus and the other

dialogues will not appear to be great. It is probable that the relation

of the ideas to God or of God to the world was differently conceived

by him at different times of his life. In all his later dialogues we

observe a tendency in him to personify mind or God, and he therefore

naturally inclines to view creation as the work of design. The creator

is like a human artist who frames in his mind a plan which he executes

by the help of his servants. Thus the language of philosophy which

speaks of first and second causes is crossed by another sort of

phraseology: 'God made the world because he was good, and the demons

ministered to him.' The Timaeus is cast in a more theological and less

philosophical mould than the other dialogues, but the same general

spirit is apparent; there is the same dualism or opposition between the

ideal and actual--the soul is prior to the body, the intelligible and

unseen to the visible and corporeal. There is the same distinction

between knowledge and opinion which occurs in the Theaetetus and

Republic, the same enmity to the poets, the same combination of music

and gymnastics. The doctrine of transmigration is still held by him, as

in the Phaedrus and Republic; and the soul has a view of the heavens

in a prior state of being. The ideas also remain, but they have

become types in nature, forms of men, animals, birds, fishes. And the

attribution of evil to physical causes accords with the doctrine which

he maintains in the Laws respecting the involuntariness of vice.

The style and plan of the Timaeus differ greatly from that of any other

of the Platonic dialogues. The language is weighty, abrupt, and in some

passages sublime. But Plato has not the same mastery over his instrument

which he exhibits in the Phaedrus or Symposium. Nothing can exceed the

beauty or art of the introduction, in which he is using words after his

accustomed manner. But in the rest of the work the power of language

seems to fail him, and the dramatic form is wholly given up. He could

write in one style, but not in another, and the Greek language had not

as yet been fashioned by any poet or philosopher to describe physical

phenomena. The early physiologists had generally written in verse; the

prose writers, like Democritus and Anaxagoras, as far as we can judge

from their fragments, never attained to a periodic style. And hence

we find the same sort of clumsiness in the Timaeus of Plato which

characterizes the philosophical poem of Lucretius. There is a want of

flow and often a defect of rhythm; the meaning is sometimes obscure, and

there is a greater use of apposition and more of repetition than occurs

in Plato's earlier writings. The sentences are less closely connected

and also more involved; the antecedents of demonstrative and relative

pronouns are in some cases remote and perplexing. The greater frequency

of participles and of absolute constructions gives the effect of

heaviness. The descriptive portion of the Timaeus retains traces of

the first Greek prose composition; for the great master of language was

speaking on a theme with which he was imperfectly acquainted, and had

no words in which to express his meaning. The rugged grandeur of the

opening discourse of Timaeus may be compared with the more harmonious

beauty of a similar passage in the Phaedrus.

To the same cause we may attribute the want of plan. Plato had not

the command of his materials which would have enabled him to produce

a perfect work of art. Hence there are several new beginnings and

resumptions and formal or artificial connections; we miss the 'callida

junctura' of the earlier dialogues. His speculations about the

Eternal, his theories of creation, his mathematical anticipations, are

supplemented by desultory remarks on the one immortal and the two

mortal souls of man, on the functions of the bodily organs in health and

disease, on sight, hearing, smell, taste, and touch. He soars into

the heavens, and then, as if his wings were suddenly clipped, he walks

ungracefully and with difficulty upon the earth. The greatest things in

the world, and the least things in man, are brought within the compass

of a short treatise. But the intermediate links are missing, and we

cannot be surprised that there should be a want of unity in a work which

embraces astronomy, theology, physiology, and natural philosophy in a

few pages.

It is not easy to determine how Plato's cosmos may be presented to the

reader in a clearer and shorter form; or how we may supply a thread of

connexion to his ideas without giving greater consistency to them than

they possessed in his mind, or adding on consequences which would

never have occurred to him. For he has glimpses of the truth, but no

comprehensive or perfect vision. There are isolated expressions about

the nature of God which have a wonderful depth and power; but we are

not justified in assuming that these had any greater significance to

the mind of Plato than language of a neutral and impersonal character...

With a view to the illustration of the Timaeus I propose to divide this

Introduction into sections, of which the first will contain an outline

of the dialogue: (2) I shall consider the aspects of nature which

presented themselves to Plato and his age, and the elements of

philosophy which entered into the conception of them: (3) the theology

and physics of the Timaeus, including the soul of the world, the

conception of time and space, and the composition of the elements: (4)

in the fourth section I shall consider the Platonic astronomy, and the

position of the earth. There will remain, (5) the psychology, (6) the

physiology of Plato, and (7) his analysis of the senses to be briefly

commented upon: (8) lastly, we may examine in what points Plato

approaches or anticipates the discoveries of modern science.

Section 1.

Socrates begins the Timaeus with a summary of the Republic. He lightly

touches upon a few points,--the division of labour and distribution

of the citizens into classes, the double nature and training of the

guardians, the community of property and of women and children. But

he makes no mention of the second education, or of the government of

philosophers.

And now he desires to see the ideal State set in motion; he would like

to know how she behaved in some great struggle. But he is unable to

invent such a narrative himself; and he is afraid that the poets are

equally incapable; for, although he pretends to have nothing to say

against them, he remarks that they are a tribe of imitators, who can

only describe what they have seen. And he fears that the Sophists, who

are plentifully supplied with graces of speech, in their erratic way of

life having never had a city or house of their own, may through want of

experience err in their conception of philosophers and statesmen. 'And

therefore to you I turn, Timaeus, citizen of Locris, who are at once

a philosopher and a statesman, and to you, Critias, whom all Athenians

know to be similarly accomplished, and to Hermocrates, who is also

fitted by nature and education to share in our discourse.'

HERMOCRATES: 'We will do our best, and have been already preparing; for

on our way home, Critias told us of an ancient tradition, which I

wish, Critias, that you would repeat to Socrates.' 'I will, if Timaeus

approves.' 'I approve.' Listen then, Socrates, to a tale of Solon's,

who, being the friend of Dropidas my great-grandfather, told it to my

grandfather Critias, and he told me. The narrative related to ancient

famous actions of the Athenian people, and to one especially, which I

will rehearse in honour of you and of the goddess. Critias when he told

this tale of the olden time, was ninety years old, I being not more than

ten. The occasion of the rehearsal was the day of the Apaturia called

the Registration of Youth, at which our parents gave prizes for

recitation. Some poems of Solon were recited by the boys. They had not

at that time gone out of fashion, and the recital of them led some one

to say, perhaps in compliment to Critias, that Solon was not only the

wisest of men but also the best of poets. The old man brightened up

at hearing this, and said: Had Solon only had the leisure which was

required to complete the famous legend which he brought with him from

Egypt he would have been as distinguished as Homer and Hesiod. 'And what

was the subject of the poem?' said the person who made the remark. The

subject was a very noble one; he described the most famous action in

which the Athenian people were ever engaged. But the memory of their

exploits has passed away owing to the lapse of time and the extinction

of the actors. 'Tell us,' said the other, 'the whole story, and where

Solon heard the story.' He replied--There is at the head of the Egyptian

Delta, where the river Nile divides, a city and district called Sais;

the city was the birthplace of King Amasis, and is under the protection

of the goddess Neith or Athene. The citizens have a friendly feeling

towards the Athenians, believing themselves to be related to them.

Hither came Solon, and was received with honour; and here he first

learnt, by conversing with the Egyptian priests, how ignorant he and

his countrymen were of antiquity. Perceiving this, and with the view of

eliciting information from them, he told them the tales of Phoroneus and

Niobe, and also of Deucalion and Pyrrha, and he endeavoured to count

the generations which had since passed. Thereupon an aged priest said to

him: 'O Solon, Solon, you Hellenes are ever young, and there is no old

man who is a Hellene.' 'What do you mean?' he asked. 'In mind,' replied

the priest, 'I mean to say that you are children; there is no opinion

or tradition of knowledge among you which is white with age; and I

will tell you why. Like the rest of mankind you have suffered from

convulsions of nature, which are chiefly brought about by the two great

agencies of fire and water. The former is symbolized in the Hellenic

tale of young Phaethon who drove his father's horses the wrong way, and

having burnt up the earth was himself burnt up by a thunderbolt. For

there occurs at long intervals a derangement of the heavenly bodies, and

then the earth is destroyed by fire. At such times, and when fire is the

agent, those who dwell by rivers or on the seashore are safer than those

who dwell upon high and dry places, who in their turn are safer when

the danger is from water. Now the Nile is our saviour from fire, and as

there is little rain in Egypt, we are not harmed by water; whereas in

other countries, when a deluge comes, the inhabitants are swept by the

rivers into the sea. The memorials which your own and other nations

have once had of the famous actions of mankind perish in the waters at

certain periods; and the rude survivors in the mountains begin again,

knowing nothing of the world before the flood. But in Egypt the

traditions of our own and other lands are by us registered for ever in

our temples. The genealogies which you have recited to us out of your

own annals, Solon, are a mere children's story. For in the first place,

you remember one deluge only, and there were many of them, and you know

nothing of that fairest and noblest race of which you are a seed or

remnant. The memory of them was lost, because there was no written

voice among you. For in the times before the great flood Athens was the

greatest and best of cities and did the noblest deeds and had the best

constitution of any under the face of heaven.' Solon marvelled, and

desired to be informed of the particulars. 'You are welcome to hear

them,' said the priest, 'both for your own sake and for that of the

city, and above all for the sake of the goddess who is the common

foundress of both our cities. Nine thousand years have elapsed since she

founded yours, and eight thousand since she founded ours, as our annals

record. Many laws exist among us which are the counterpart of yours as

they were in the olden time. I will briefly describe them to you,

and you shall read the account of them at your leisure in the sacred

registers. In the first place, there was a caste of priests among the

ancient Athenians, and another of artisans; also castes of shepherds,

hunters, and husbandmen, and lastly of warriors, who, like the warriors

of Egypt, were separated from the rest, and carried shields and spears,

a custom which the goddess first taught you, and then the Asiatics, and

we among Asiatics first received from her. Observe again, what care the

law took in the pursuit of wisdom, searching out the deep things of the

world, and applying them to the use of man. The spot of earth which the

goddess chose had the best of climates, and produced the wisest men; in

no other was she herself, the philosopher and warrior goddess, so likely

to have votaries. And there you dwelt as became the children of the

gods, excelling all men in virtue, and many famous actions are recorded

of you. The most famous of them all was the overthrow of the island of

Atlantis. This great island lay over against the Pillars of Heracles, in

extent greater than Libya and Asia put together, and was the passage to

other islands and to a great ocean of which the Mediterranean sea was

only the harbour; and within the Pillars the empire of Atlantis reached

in Europe to Tyrrhenia and in Libya to Egypt. This mighty power was

arrayed against Egypt and Hellas and all the countries bordering on the

Mediterranean. Then your city did bravely, and won renown over the

whole earth. For at the peril of her own existence, and when the other

Hellenes had deserted her, she repelled the invader, and of her own

accord gave liberty to all the nations within the Pillars. A little

while afterwards there were great earthquakes and floods, and your

warrior race all sank into the earth; and the great island of Atlantis

also disappeared in the sea. This is the explanation of the shallows

which are found in that part of the Atlantic ocean.'

Such was the tale, Socrates, which Critias heard from Solon; and I

noticed when listening to you yesterday, how close the resemblance was

between your city and citizens and the ancient Athenian State. But I

would not speak at the time, because I wanted to refresh my memory.

I had heard the old man when I was a child, and though I could not

remember the whole of our yesterday's discourse, I was able to recall

every word of this, which is branded into my mind; and I am prepared,

Socrates, to rehearse to you the entire narrative. The imaginary State

which you were describing may be identified with the reality of Solon,

and our antediluvian ancestors may be your citizens. 'That is excellent,

Critias, and very appropriate to a Panathenaic festival; the truth of

the story is a great advantage.' Then now let me explain to you

the order of our entertainment; first, Timaeus, who is a natural

philosopher, will speak of the origin of the world, going down to the

creation of man, and then I shall receive the men whom he has created,

and some of whom will have been educated by you, and introduce them to

you as the lost Athenian citizens of whom the Egyptian record spoke.

As the law of Solon prescribes, we will bring them into court and

acknowledge their claims to citizenship. 'I see,' replied Socrates,

'that I shall be well entertained; and do you, Timaeus, offer up a

prayer and begin.'

TIMAEUS: All men who have any right feeling, at the beginning of any

enterprise, call upon the Gods; and he who is about to speak of the

origin of the universe has a special need of their aid. May my words

be acceptable to them, and may I speak in the manner which will be most

intelligible to you and will best express my own meaning!

First, I must distinguish between that which always is and never becomes

and which is apprehended by reason and reflection, and that which always

becomes and never is and is conceived by opinion with the help of sense.

All that becomes and is created is the work of a cause, and that is

fair which the artificer makes after an eternal pattern, but whatever is

fashioned after a created pattern is not fair. Is the world created or

uncreated?--that is the first question. Created, I reply, being visible

and tangible and having a body, and therefore sensible; and if sensible,

then created; and if created, made by a cause, and the cause is the

ineffable father of all things, who had before him an eternal archetype.

For to imagine that the archetype was created would be blasphemy, seeing

that the world is the noblest of creations, and God is the best of

causes. And the world being thus created according to the eternal

pattern is the copy of something; and we may assume that words are akin

to the matter of which they speak. What is spoken of the unchanging or

intelligible must be certain and true; but what is spoken of the created

image can only be probable; being is to becoming what truth is to

belief. And amid the variety of opinions which have arisen about God and

the nature of the world we must be content to take probability for

our rule, considering that I, who am the speaker, and you, who are the

judges, are only men; to probability we may attain but no further.

SOCRATES: Excellent, Timaeus, I like your manner of approaching the

subject--proceed.

TIMAEUS: Why did the Creator make the world?...He was good, and

therefore not jealous, and being free from jealousy he desired that all

things should be like himself. Wherefore he set in order the visible

world, which he found in disorder. Now he who is the best could

only create the fairest; and reflecting that of visible things the

intelligent is superior to the unintelligent, he put intelligence

in soul and soul in body, and framed the universe to be the best and

fairest work in the order of nature, and the world became a living soul

through the providence of God.

In the likeness of what animal was the world made?--that is the third

question...The form of the perfect animal was a whole, and contained all

intelligible beings, and the visible animal, made after the pattern of

this, included all visible creatures.

Are there many worlds or one only?--that is the fourth question...One

only. For if in the original there had been more than one they would

have been the parts of a third, which would have been the true pattern

of the world; and therefore there is, and will ever be, but one created

world. Now that which is created is of necessity corporeal and visible

and tangible,--visible and therefore made of fire,--tangible and

therefore solid and made of earth. But two terms must be united by a

third, which is a mean between them; and had the earth been a surface

only, one mean would have sufficed, but two means are required to unite

solid bodies. And as the world was composed of solids, between the

elements of fire and earth God placed two other elements of air and

water, and arranged them in a continuous proportion--

fire:air::air:water, and air:water::water:earth,

and so put together a visible and palpable heaven, having harmony and

friendship in the union of the four elements; and being at unity with

itself it was indissoluble except by the hand of the framer. Each of the

elements was taken into the universe whole and entire; for he considered

that the animal should be perfect and one, leaving no remnants out of

which another animal could be created, and should also be free from old

age and disease, which are produced by the action of external forces.

And as he was to contain all things, he was made in the all-containing

form of a sphere, round as from a lathe and every way equidistant from

the centre, as was natural and suitable to him. He was finished and

smooth, having neither eyes nor ears, for there was nothing without

him which he could see or hear; and he had no need to carry food to

his mouth, nor was there air for him to breathe; and he did not require

hands, for there was nothing of which he could take hold, nor feet, with

which to walk. All that he did was done rationally in and by himself,

and he moved in a circle turning within himself, which is the most

intellectual of motions; but the other six motions were wanting to him;

wherefore the universe had no feet or legs.

And so the thought of God made a God in the image of a perfect body,

having intercourse with himself and needing no other, but in every part

harmonious and self-contained and truly blessed. The soul was first made

by him--the elder to rule the younger; not in the order in which our

wayward fancy has led us to describe them, but the soul first and

afterwards the body. God took of the unchangeable and indivisible and

also of the divisible and corporeal, and out of the two he made a third

nature, essence, which was in a mean between them, and partook of the

same and the other, the intractable nature of the other being compressed

into the same. Having made a compound of all the three, he proceeded

to divide the entire mass into portions related to one another in the

ratios of 1, 2, 3, 4, 9, 8, 27, and proceeded to fill up the double and

triple intervals thus--

- over 1, 4/3, 3/2, - over 2, 8/3, 3, - over 4, 16/3, 6, - over 8:

- over 1, 3/2, 2, - over 3, 9/2, 6, - over 9, 27/2, 18, - over 27;

in which double series of numbers are two kinds of means; the one

exceeds and is exceeded by equal parts of the extremes, e.g. 1, 4/3, 2;

the other kind of mean is one which is equidistant from the extremes--2,

4, 6. In this manner there were formed intervals of thirds, 3:2, of

fourths, 4:3, and of ninths, 9:8. And next he filled up the intervals

of a fourth with ninths, leaving a remnant which is in the ratio of

256:243. The entire compound was divided by him lengthways into two

parts, which he united at the centre like the letter X, and bent into an

inner and outer circle or sphere, cutting one another again at a point

over against the point at which they cross. The outer circle or sphere

was named the sphere of the same--the inner, the sphere of the other

or diverse; and the one revolved horizontally to the right, the other

diagonally to the left. To the sphere of the same which was undivided

he gave dominion, but the sphere of the other or diverse was distributed

into seven unequal orbits, having intervals in ratios of twos and

threes, three of either sort, and he bade the orbits move in opposite

directions to one another--three of them, the Sun, Mercury, Venus,

with equal swiftness, and the remaining four--the Moon, Saturn, Mars,

Jupiter, with unequal swiftness to the three and to one another, but all

in due proportion.

When the Creator had made the soul he made the body within her; and

the soul interfused everywhere from the centre to the circumference of

heaven, herself turning in herself, began a divine life of rational

and everlasting motion. The body of heaven is visible, but the soul

is invisible, and partakes of reason and harmony, and is the best of

creations, being the work of the best. And being composed of the same,

the other, and the essence, these three, and also divided and bound

in harmonical proportion, and revolving within herself--the soul when

touching anything which has essence, whether divided or undivided, is

stirred to utter the sameness or diversity of that and some other thing,

and to tell how and when and where individuals are affected or related,

whether in the world of change or of essence. When reason is in the

neighbourhood of sense, and the circle of the other or diverse is moving

truly, then arise true opinions and beliefs; when reason is in the

sphere of thought, and the circle of the same runs smoothly, then

intelligence is perfected.

When the Father who begat the world saw the image which he had made

of the Eternal Gods moving and living, he rejoiced; and in his joy

resolved, since the archetype was eternal, to make the creature eternal

as far as this was possible. Wherefore he made an image of eternity

which is time, having an uniform motion according to number, parted into

months and days and years, and also having greater divisions of past,

present, and future. These all apply to becoming in time, and have no

meaning in relation to the eternal nature, which ever is and never was

or will be; for the unchangeable is never older or younger, and when

we say that he 'was' or 'will be,' we are mistaken, for these words are

applicable only to becoming, and not to true being; and equally wrong

are we in saying that what has become IS become and that what becomes

IS becoming, and that the non-existent IS non-existent...These are the

forms of time which imitate eternity and move in a circle measured by

number.

Thus was time made in the image of the eternal nature; and it was

created together with the heavens, in order that if they were dissolved,

it might perish with them. And God made the sun and moon and five other

wanderers, as they are called, seven in all, and to each of them he gave

a body moving in an orbit, being one of the seven orbits into which the

circle of the other was divided. He put the moon in the orbit which was

nearest to the earth, the sun in that next, the morning star and

Mercury in the orbits which move opposite to the sun but with equal

swiftness--this being the reason why they overtake and are overtaken by

one another. All these bodies became living creatures, and learnt their

appointed tasks, and began to move, the nearer more swiftly, the remoter

more slowly, according to the diagonal movement of the other. And since

this was controlled by the movement of the same, the seven planets in

their courses appeared to describe spirals; and that appeared fastest

which was slowest, and that which overtook others appeared to be

overtaken by them. And God lighted a fire in the second orbit from the

earth which is called the sun, to give light over the whole heaven, and

to teach intelligent beings that knowledge of number which is derived

from the revolution of the same. Thus arose day and night, which are

the periods of the most intelligent nature; a month is created by the

revolution of the moon, a year by that of the sun. Other periods of

wonderful length and complexity are not observed by men in general;

there is moreover a cycle or perfect year at the completion of which

they all meet and coincide...To this end the stars came into being, that

the created heaven might imitate the eternal nature.

Thus far the universal animal was made in the divine image, but the

other animals were not as yet included in him. And God created them

according to the patterns or species of them which existed in the divine

original. There are four of them: one of gods, another of birds, a third

of fishes, and a fourth of animals. The gods were made in the form of a

circle, which is the most perfect figure and the figure of the universe.

They were created chiefly of fire, that they might be bright, and were

made to know and follow the best, and to be scattered over the heavens,

of which they were to be the glory. Two kinds of motion were assigned to

them--first, the revolution in the same and around the same, in peaceful

unchanging thought of the same; and to this was added a forward motion

which was under the control of the same. Thus then the fixed stars were

created, being divine and eternal animals, revolving on the same spot,

and the wandering stars, in their courses, were created in the manner

already described. The earth, which is our nurse, clinging around the

pole extended through the universe, he made to be the guardian and

artificer of night and day, first and eldest of gods that are in the

interior of heaven. Vain would be the labour of telling all the

figures of them, moving as in dance, and their juxta-positions and

approximations, and when and where and behind what other stars they

appear to disappear--to tell of all this without looking at a plan of

them would be labour in vain.

The knowledge of the other gods is beyond us, and we can only accept the

traditions of the ancients, who were the children of the gods, as they

said; for surely they must have known their own ancestors. Although they

give no proof, we must believe them as is customary. They tell us that

Oceanus and Tethys were the children of Earth and Heaven; that Phoreys,

Cronos, and Rhea came in the next generation, and were followed by Zeus

and Here, whose brothers and children are known to everybody.

When all of them, both those who show themselves in the sky, and those

who retire from view, had come into being, the Creator addressed them

thus:--'Gods, sons of gods, my works, if I will, are indissoluble. That

which is bound may be dissolved, but only an evil being would dissolve

that which is harmonious and happy. And although you are not immortal

you shall not die, for I will hold you together. Hear me, then:--Three

tribes of mortal beings have still to be created, but if created by me

they would be like gods. Do ye therefore make them; I will implant in

them the seed of immortality, and you shall weave together the mortal

and immortal, and provide food for them, and receive them again in

death.' Thus he spake, and poured the remains of the elements into

the cup in which he had mingled the soul of the universe. They were no

longer pure as before, but diluted; and the mixture he distributed into

souls equal in number to the stars, and assigned each to a star--then

having mounted them, as in a chariot, he showed them the nature of the

universe, and told them of their future birth and human lot. They were

to be sown in the planets, and out of them was to come forth the most

religious of animals, which would hereafter be called man. The souls

were to be implanted in bodies, which were in a perpetual flux, whence,

he said, would arise, first, sensation; secondly, love, which is a

mixture of pleasure and pain; thirdly, fear and anger, and the opposite

affections: and if they conquered these, they would live righteously,

but if they were conquered by them, unrighteously. He who lived

well would return to his native star, and would there have a blessed

existence; but, if he lived ill, he would pass into the nature of a

woman, and if he did not then alter his evil ways, into the likeness of

some animal, until the reason which was in him reasserted her sway over

the elements of fire, air, earth, water, which had engrossed her, and

he regained his first and better nature. Having given this law to his

creatures, that he might be guiltless of their future evil, he sowed

them, some in the earth, some in the moon, and some in the other

planets; and he ordered the younger gods to frame human bodies for them

and to make the necessary additions to them, and to avert from them all

but self-inflicted evil.

Having given these commands, the Creator remained in his own nature. And

his children, receiving from him the immortal principle, borrowed from

the world portions of earth, air, fire, water, hereafter to be returned,

which they fastened together, not with the adamantine bonds which bound

themselves, but by little invisible pegs, making each separate body out

of all the elements, subject to influx and efflux, and containing the

courses of the soul. These swelling and surging as in a river moved

irregularly and irrationally in all the six possible ways, forwards,

backwards, right, left, up and down. But violent as were the internal

and alimentary fluids, the tide became still more violent when the body

came into contact with flaming fire, or the solid earth, or gliding

waters, or the stormy wind; the motions produced by these impulses pass

through the body to the soul and have the name of sensations. Uniting

with the ever-flowing current, they shake the courses of the soul,

stopping the revolution of the same and twisting in all sorts of ways

the nature of the other, and the harmonical ratios of twos and threes

and the mean terms which connect them, until the circles are bent

and disordered and their motion becomes irregular. You may imagine a

position of the body in which the head is resting upon the ground, and

the legs are in the air, and the top is bottom and the left right. And

something similar happens when the disordered motions of the soul come

into contact with any external thing; they say the same or the other in

a manner which is the very opposite of the truth, and they are false

and foolish, and have no guiding principle in them. And when external

impressions enter in, they are really conquered, though they seem to

conquer.

By reason of these affections the soul is at first without intelligence,

but as time goes on the stream of nutriment abates, and the courses

of the soul regain their proper motion, and apprehend the same and the

other rightly, and become rational. The soul of him who has education

is whole and perfect and escapes the worst disease, but, if a man's

education be neglected, he walks lamely through life and returns good

for nothing to the world below. This, however, is an after-stage--at

present, we are only concerned with the creation of the body and soul.

The two divine courses were encased by the gods in a sphere which is

called the head, and is the god and lord of us. And to this they gave

the body to be a vehicle, and the members to be instruments, having the

power of flexion and extension. Such was the origin of legs and arms.

In the next place, the gods gave a forward motion to the human body,

because the front part of man was the more honourable and had authority.

And they put in a face in which they inserted organs to minister in all

things to the providence of the soul. They first contrived the eyes,

into which they conveyed a light akin to the light of day, making it

flow through the pupils. When the light of the eye is surrounded by the

light of day, then like falls upon like, and they unite and form one

body which conveys to the soul the motions of visible objects. But when

the visual ray goes forth into the darkness, then unlike falls upon

unlike--the eye no longer sees, and we go to sleep. The fire or light,

when kept in by the eyelids, equalizes the inward motions, and there

is rest accompanied by few dreams; only when the greater motions remain

they engender in us corresponding visions of the night. And now we shall

be able to understand the nature of reflections in mirrors. The fires

from within and from without meet about the smooth and bright surface

of the mirror; and because they meet in a manner contrary to the usual

mode, the right and left sides of the object are transposed. In

a concave mirror the top and bottom are inverted, but this is no

transposition.

These are the second causes which God used as his ministers in

fashioning the world. They are thought by many to be the prime causes,

but they are not so; for they are destitute of mind and reason, and the

lover of mind will not allow that there are any prime causes other

than the rational and invisible ones--these he investigates first, and

afterwards the causes of things which are moved by others, and which

work by chance and without order. Of the second or concurrent causes of

sight I have already spoken, and I will now speak of the higher purpose

of God in giving us eyes. Sight is the source of the greatest benefits

to us; for if our eyes had never seen the sun, stars, and heavens, the

words which we have spoken would not have been uttered. The sight of

them and their revolutions has given us the knowledge of number and

time, the power of enquiry, and philosophy, which is the great blessing

of human life; not to speak of the lesser benefits which even the vulgar

can appreciate. God gave us the faculty of sight that we might behold

the order of the heavens and create a corresponding order in our own

erring minds. To the like end the gifts of speech and hearing were

bestowed upon us; not for the sake of irrational pleasure, but in order

that we might harmonize the courses of the soul by sympathy with the

harmony of sound, and cure ourselves of our irregular and graceless

ways.

Thus far we have spoken of the works of mind; and there are other

works done from necessity, which we must now place beside them; for

the creation is made up of both, mind persuading necessity as far as

possible to work out good. Before the heavens there existed fire, air,

water, earth, which we suppose men to know, though no one has explained

their nature, and we erroneously maintain them to be the letters or

elements of the whole, although they cannot reasonably be compared even

to syllables or first compounds. I am not now speaking of the first

principles of things, because I cannot discover them by our present mode

of enquiry. But as I observed the rule of probability at first, I will

begin anew, seeking by the grace of God to observe it still.

In our former discussion I distinguished two kinds of being--the

unchanging or invisible, and the visible or changing. But now a

third kind is required, which I shall call the receptacle or nurse of

generation. There is a difficulty in arriving at an exact notion of this

third kind, because the four elements themselves are of inexact natures

and easily pass into one another, and are too transient to be detained

by any one name; wherefore we are compelled to speak of water or fire,

not as substances, but as qualities. They may be compared to images made

of gold, which are continually assuming new forms. Somebody asks what

they are; if you do not know, the safest answer is to reply that they

are gold. In like manner there is a universal nature out of which all

things are made, and which is like none of them; but they enter into and

pass out of her, and are made after patterns of the true in a wonderful

and inexplicable manner. The containing principle may be likened to a

mother, the source or spring to a father, the intermediate nature to

a child; and we may also remark that the matter which receives every

variety of form must be formless, like the inodorous liquids which are

prepared to receive scents, or the smooth and soft materials on which

figures are impressed. In the same way space or matter is neither earth

nor fire nor air nor water, but an invisible and formless being which

receives all things, and in an incomprehensible manner partakes of the

intelligible. But we may say, speaking generally, that fire is that part

of this nature which is inflamed, water that which is moistened, and the

like.

Let me ask a question in which a great principle is involved: Is there

an essence of fire and the other elements, or are there only fires

visible to sense? I answer in a word: If mind is one thing and true

opinion another, then there are self-existent essences; but if mind is

the same with opinion, then the visible and corporeal is most real. But

they are not the same, and they have a different origin and nature.

The one comes to us by instruction, the other by persuasion, the one is

rational, the other is irrational; the one is movable by persuasion,

the other immovable; the one is possessed by every man, the other by the

gods and by very few men. And we must acknowledge that as there are two

kinds of knowledge, so there are two kinds of being corresponding to

them; the one uncreated, indestructible, immovable, which is seen by

intelligence only; the other created, which is always becoming in place

and vanishing out of place, and is apprehended by opinion and sense.

There is also a third nature--that of space, which is indestructible,

and is perceived by a kind of spurious reason without the help of

sense. This is presented to us in a dreamy manner, and yet is said to

be necessary, for we say that all things must be somewhere in space. For

they are the images of other things and must therefore have a separate

existence and exist in something (i.e. in space). But true reason

assures us that while two things (i.e. the idea and the image) are

different they cannot inhere in one another, so as to be one and two at

the same time.

To sum up: Being and generation and space, these three, existed before

the heavens, and the nurse or vessel of generation, moistened by water

and inflamed by fire, and taking the forms of air and earth, assumed

various shapes. By the motion of the vessel, the elements were divided,

and like grain winnowed by fans, the close and heavy particles settled

in one place, the light and airy ones in another. At first they were

without reason and measure, and had only certain faint traces of

themselves, until God fashioned them by figure and number. In this, as

in every other part of creation, I suppose God to have made things, as

far as was possible, fair and good, out of things not fair and good.

And now I will explain to you the generation of the world by a method

with which your scientific training will have made you familiar. Fire,

air, earth, and water are bodies and therefore solids, and solids

are contained in planes, and plane rectilinear figures are made up of

triangles. Of triangles there are two kinds; one having the opposite

sides equal (isosceles), the other with unequal sides (scalene). These

we may fairly assume to be the original elements of fire and the other

bodies; what principles are prior to these God only knows, and he of men

whom God loves. Next, we must determine what are the four most beautiful

figures which are unlike one another and yet sometimes capable of

resolution into one another...Of the two kinds of triangles the

equal-sided has but one form, the unequal-sided has an infinite variety

of forms; and there is none more beautiful than that which forms the

half of an equilateral triangle. Let us then choose two triangles; one,

the isosceles, the other, that form of scalene which has the square of

the longer side three times as great as the square of the lesser side;

and affirm that, out of these, fire and the other elements have been

constructed.

I was wrong in imagining that all the four elements could be generated

into and out of one another. For as they are formed, three of them from

the triangle which has the sides unequal, the fourth from the triangle

which has equal sides, three can be resolved into one another, but the

fourth cannot be resolved into them nor they into it. So much for their

passage into one another: I must now speak of their construction. From

the triangle of which the hypotenuse is twice the lesser side the three

first regular solids are formed--first, the equilateral pyramid or

tetrahedron; secondly, the octahedron; thirdly, the icosahedron; and

from the isosceles triangle is formed the cube. And there is a fifth

figure (which is made out of twelve pentagons), the dodecahedron--this

God used as a model for the twelvefold division of the Zodiac.

Let us now assign the geometrical forms to their respective elements.

The cube is the most stable of them because resting on a quadrangular

plane surface, and composed of isosceles triangles. To the earth then,

which is the most stable of bodies and the most easily modelled of them,

may be assigned the form of a cube; and the remaining forms to the other

elements,--to fire the pyramid, to air the octahedron, and to water the

icosahedron,--according to their degrees of lightness or heaviness or

power, or want of power, of penetration. The single particles of any of

the elements are not seen by reason of their smallness; they only become

visible when collected. The ratios of their motions, numbers, and

other properties, are ordered by the God, who harmonized them as far as

necessity permitted.

The probable conclusion is as follows:--Earth, when dissolved by the

more penetrating element of fire, whether acting immediately or through

the medium of air or water, is decomposed but not transformed. Water,

when divided by fire or air, becomes one part fire, and two parts air.

A volume of air divided becomes two of fire. On the other hand, when

condensed, two volumes of fire make a volume of air; and two and a half

parts of air condense into one of water. Any element which is fastened

upon by fire is cut by the sharpness of the triangles, until at length,

coalescing with the fire, it is at rest; for similars are not affected

by similars. When two kinds of bodies quarrel with one another, then the

tendency to decomposition continues until the smaller either escapes to

its kindred element or becomes one with its conqueror. And this tendency

in bodies to condense or escape is a source of motion...Where there is

motion there must be a mover, and where there is a mover there must be

something to move. These cannot exist in what is uniform, and therefore

motion is due to want of uniformity. But then why, when things are

divided after their kinds, do they not cease from motion? The answer is,

that the circular motion of all things compresses them, and as 'nature

abhors a vacuum,' the finer and more subtle particles of the lighter

elements, such as fire and air, are thrust into the interstices of the

larger, each of them penetrating according to their rarity, and thus

all the elements are on their way up and down everywhere and always

into their own places. Hence there is a principle of inequality, and

therefore of motion, in all time.

In the next place, we may observe that there are different kinds of

fire--(1) flame, (2) light that burns not, (3) the red heat of the

embers of fire. And there are varieties of air, as for example, the pure

aether, the opaque mist, and other nameless forms. Water, again, is

of two kinds, liquid and fusile. The liquid is composed of small and

unequal particles, the fusile of large and uniform particles and is more

solid, but nevertheless melts at the approach of fire, and then spreads

upon the earth. When the substance cools, the fire passes into the air,

which is displaced, and forces together and condenses the liquid mass.

This process is called cooling and congealment. Of the fusile kinds the

fairest and heaviest is gold; this is hardened by filtration through

rock, and is of a bright yellow colour. A shoot of gold which is darker

and denser than the rest is called adamant. Another kind is called

copper, which is harder and yet lighter because the interstices are

larger than in gold. There is mingled with it a fine and small portion

of earth which comes out in the form of rust. These are a few of the

conjectures which philosophy forms, when, leaving the eternal nature,

she turns for innocent recreation to consider the truths of generation.

Water which is mingled with fire is called liquid because it rolls

upon the earth, and soft because its bases give way. This becomes more

equable when separated from fire and air, and then congeals into hail or

ice, or the looser forms of hoar frost or snow. There are other waters

which are called juices and are distilled through plants. Of these we

may mention, first, wine, which warms the soul as well as the body;

secondly, oily substances, as for example, oil or pitch; thirdly,

honey, which relaxes the contracted parts of the mouth and so produces

sweetness; fourthly, vegetable acid, which is frothy and has a burning

quality and dissolves the flesh. Of the kinds of earth, that which is

filtered through water passes into stone; the water is broken up by the

earth and escapes in the form of air--this in turn presses upon the mass

of earth, and the earth, compressed into an indissoluble union with

the remaining water, becomes rock. Rock, when it is made up of equal

particles, is fair and transparent, but the reverse when of unequal.

Earth is converted into pottery when the watery part is suddenly drawn

away; or if moisture remains, the earth, when fused by fire, becomes,

on cooling, a stone of a black colour. When the earth is finer and of

a briny nature then two half-solid bodies are formed by separating the

water,--soda and salt. The strong compounds of earth and water are not

soluble by water, but only by fire. Earth itself, when not consolidated,

is dissolved by water; when consolidated, by fire only. The cohesion of

water, when strong, is dissolved by fire only; when weak, either by air

or fire, the former entering the interstices, the latter penetrating

even the triangles. Air when strongly condensed is indissoluble by any

power which does not reach the triangles, and even when not strongly

condensed is only resolved by fire. Compounds of earth and water are

unaffected by water while the water occupies the interstices in them,

but begin to liquefy when fire enters into the interstices of the water.

They are of two kinds, some of them, like glass, having more earth,

others, like wax, having more water in them.

Having considered objects of sense, we now pass on to sensation. But we

cannot explain sensation without explaining the nature of flesh and of

the mortal soul; and as we cannot treat of both together, in order that

we may proceed at once to the sensations we must assume the existence of

body and soul.

What makes fire burn? The fineness of the sides, the sharpness of the

angles, the smallness of the particles, the quickness of the motion.

Moreover, the pyramid, which is the figure of fire, is more cutting than

any other. The feeling of cold is produced by the larger particles of

moisture outside the body trying to eject the smaller ones in the body

which they compress. The struggle which arises between elements thus

unnaturally brought together causes shivering. That is hard to which the

flesh yields, and soft which yields to the flesh, and these two terms

are also relative to one another. The yielding matter is that which

has the slenderest base, whereas that which has a rectangular base

is compact and repellent. Light and heavy are wrongly explained with

reference to a lower and higher in place. For in the universe, which is

a sphere, there is no opposition of above or below, and that which is to

us above would be below to a man standing at the antipodes. The greater

or less difficulty in detaching any element from its like is the real

cause of heaviness or of lightness. If you draw the earth into the

dissimilar air, the particles of earth cling to their native element,

and you more easily detach a small portion than a large. There would

be the same difficulty in moving any of the upper elements towards the

lower. The smooth and the rough are severally produced by the union of

evenness with compactness, and of hardness with inequality.

Pleasure and pain are the most important of the affections common to the

whole body. According to our general doctrine of sensation, parts of the

body which are easily moved readily transmit the motion to the mind; but

parts which are not easily moved have no effect upon the patient. The

bones and hair are of the latter kind, sight and hearing of the former.

Ordinary affections are neither pleasant nor painful. The impressions

of sight afford an example of these, and are neither violent nor

sudden. But sudden replenishments of the body cause pleasure, and sudden

disturbances, as for example cuttings and burnings, have the opposite

effect.

>From sensations common to the whole body, we proceed to those of

particular parts. The affections of the tongue appear to be caused by

contraction and dilation, but they have more of roughness or smoothness

than is found in other affections. Earthy particles, entering into the

small veins of the tongue which reach to the heart, when they melt into

and dry up the little veins are astringent if they are rough; or if

not so rough, they are only harsh, and if excessively abstergent, like

potash and soda, bitter. Purgatives of a weaker sort are called salt

and, having no bitterness, are rather agreeable. Inflammatory bodies,

which by their lightness are carried up into the head, cutting all that

comes in their way, are termed pungent. But when these are refined by

putrefaction, and enter the narrow veins of the tongue, and meet there

particles of earth and air, two kinds of globules are formed--one of

earthy and impure liquid, which boils and ferments, the other of pure

and transparent water, which are called bubbles; of all these affections

the cause is termed acid. When, on the other hand, the composition of

the deliquescent particles is congenial to the tongue, and disposes the

parts according to their nature, this remedial power in them is called

sweet.

Smells are not divided into kinds; all of them are transitional, and

arise out of the decomposition of one element into another, for the

simple air or water is without smell. They are vapours or mists, thinner

than water and thicker than air: and hence in drawing in the breath,

when there is an obstruction, the air passes, but there is no smell.

They have no names, but are distinguished as pleasant and unpleasant,

and their influence extends over the whole region from the head to the

navel.

Hearing is the effect of a stroke which is transmitted through the ears

by means of the air, brain, and blood to the soul, beginning at the head

and extending to the liver. The sound which moves swiftly is acute; that

which moves slowly is grave; that which is uniform is smooth, and the

opposite is harsh. Loudness depends on the quantity of the sound. Of the

harmony of sounds I will hereafter speak.

Colours are flames which emanate from all bodies, having particles

corresponding to the sense of sight. Some of the particles are less and

some larger, and some are equal to the parts of the sight. The equal

particles appear transparent; the larger contract, and the lesser dilate

the sight. White is produced by the dilation, black by the contraction,

of the particles of sight. There is also a swifter motion of another

sort of fire which forces a way through the passages of the eyes, and

elicits from them a union of fire and water which we call tears.

The inner fire flashes forth, and the outer finds a way in and is

extinguished in the moisture, and all sorts of colours are generated

by the mixture. This affection is termed by us dazzling, and the object

which produces it is called bright. There is yet another sort of

fire which mingles with the moisture of the eye without flashing, and

produces a colour like blood--to this we give the name of red. A bright

element mingling with red and white produces a colour which we call

auburn. The law of proportion, however, according to which compound

colours are formed, cannot be determined scientifically or even

probably. Red, when mingled with black and white, gives a purple hue,

which becomes umber when the colours are burnt and there is a larger

admixture of black. Flame-colour is a mixture of auburn and dun; dun of

white and black; yellow of white and auburn. White and bright meeting,

and falling upon a full black, become dark blue; dark blue mingling with

white becomes a light blue; the union of flame-colour and black makes

leek-green. There is no difficulty in seeing how other colours are

probably composed. But he who should attempt to test the truth of this

by experiment, would forget the difference of the human and divine

nature. God only is able to compound and resolve substances; such

experiments are impossible to man.

These are the elements of necessity which the Creator received in

the world of generation when he made the all-sufficient and perfect

creature, using the secondary causes as his ministers, but himself

fashioning the good in all things. For there are two sorts of causes,

the one divine, the other necessary; and we should seek to discover the

divine above all, and, for their sake, the necessary, because without

them the higher cannot be attained by us.

Having now before us the causes out of which the rest of our discourse

is to be framed, let us go back to the point at which we began, and

add a fair ending to our tale. As I said at first, all things were

originally a chaos in which there was no order or proportion. The

elements of this chaos were arranged by the Creator, and out of them

he made the world. Of the divine he himself was the author, but he

committed to his offspring the creation of the mortal. From him they

received the immortal soul, but themselves made the body to be its

vehicle, and constructed within another soul which was mortal, and

subject to terrible affections--pleasure, the inciter of evil; pain,

which deters from good; rashness and fear, foolish counsellors; anger

hard to be appeased; hope easily led astray. These they mingled with

irrational sense and all-daring love according to necessary laws and so

framed man. And, fearing to pollute the divine element, they gave the

mortal soul a separate habitation in the breast, parted off from the

head by a narrow isthmus. And as in a house the women's apartments are

divided from the men's, the cavity of the thorax was divided into two

parts, a higher and a lower. The higher of the two, which is the seat of

courage and anger, lies nearer to the head, between the midriff and the

neck, and assists reason in restraining the desires. The heart is the

house of guard in which all the veins meet, and through them reason

sends her commands to the extremity of her kingdom. When the passions

are in revolt, or danger approaches from without, then the heart beats

and swells; and the creating powers, knowing this, implanted in the

body the soft and bloodless substance of the lung, having a porous and

springy nature like a sponge, and being kept cool by drink and air which

enters through the trachea.

The part of the soul which desires meat and drink was placed between the

midriff and navel, where they made a sort of manger; and here they bound

it down, like a wild animal, away from the council-chamber, and leaving

the better principle undisturbed to advise quietly for the good of the

whole. For the Creator knew that the belly would not listen to reason,

and was under the power of idols and fancies. Wherefore he framed the

liver to connect with the lower nature, contriving that it should be

compact, and bright, and sweet, and also bitter and smooth, in order

that the power of thought which originates in the mind might there be

reflected, terrifying the belly with the elements of bitterness and

gall, and a suffusion of bilious colours when the liver is contracted,

and causing pain and misery by twisting out of its place the lobe and

closing up the vessels and gates. And the converse happens when some

gentle inspiration coming from intelligence mirrors the opposite

fancies, giving rest and sweetness and freedom, and at night, moderation

and peace accompanied with prophetic insight, when reason and sense are

asleep. For the authors of our being, in obedience to their Father's

will and in order to make men as good as they could, gave to the liver

the power of divination, which is never active when men are awake or

in health; but when they are under the influence of some disorder or

enthusiasm then they receive intimations, which have to be interpreted

by others who are called prophets, but should rather be called

interpreters of prophecy; after death these intimations become

unintelligible. The spleen which is situated in the neighbourhood, on

the left side, keeps the liver bright and clean, as a napkin does a

mirror, and the evacuations of the liver are received into it; and being

a hollow tissue it is for a time swollen with these impurities, but when

the body is purged it returns to its natural size.

The truth concerning the soul can only be established by the word of

God. Still, we may venture to assert what is probable both concerning

soul and body.

The creative powers were aware of our tendency to excess. And so when

they made the belly to be a receptacle for food, in order that men might

not perish by insatiable gluttony, they formed the convolutions of the

intestines, in this way retarding the passage of food through the body,

lest mankind should be absorbed in eating and drinking, and the whole

race become impervious to divine philosophy.

The creation of bones and flesh was on this wise. The foundation of

these is the marrow which binds together body and soul, and the marrow

is made out of such of the primary triangles as are adapted by their

perfection to produce all the four elements. These God took and mingled

them in due proportion, making as many kinds of marrow as there were

hereafter to be kinds of souls. The receptacle of the divine soul he

made round, and called that portion of the marrow brain, intending that

the vessel containing this substance should be the head. The remaining

part he divided into long and round figures, and to these as to anchors,

fastening the mortal soul, he proceeded to make the rest of the body,

first forming for both parts a covering of bone. The bone was formed by

sifting pure smooth earth and wetting it with marrow. It was then thrust

alternately into fire and water, and thus rendered insoluble by either.

Of bone he made a globe which he placed around the brain, leaving a

narrow opening, and around the marrow of the neck and spine he formed

the vertebrae, like hinges, which extended from the head through the

whole of the trunk. And as the bone was brittle and liable to mortify

and destroy the marrow by too great rigidity and susceptibility to heat

and cold, he contrived sinews and flesh--the first to give flexibility,

the second to guard against heat and cold, and to be a protection

against falls, containing a warm moisture, which in summer exudes and

cools the body, and in winter is a defence against cold. Having this in

view, the Creator mingled earth with fire and water and mixed with them

a ferment of acid and salt, so as to form pulpy flesh. But the sinews

he made of a mixture of bone and unfermented flesh, giving them a

mean nature between the two, and a yellow colour. Hence they were more

glutinous than flesh, but softer than bone. The bones which have most of

the living soul within them he covered with the thinnest film of

flesh, those which have least of it, he lodged deeper. At the joints he

diminished the flesh in order not to impede the flexure of the limbs,

and also to avoid clogging the perceptions of the mind. About the

thighs and arms, which have no sense because there is little soul in the

marrow, and about the inner bones, he laid the flesh thicker. For where

the flesh is thicker there is less feeling, except in certain parts

which the Creator has made solely of flesh, as for example, the tongue.

Had the combination of solid bone and thick flesh been consistent with

acute perceptions, the Creator would have given man a sinewy and fleshy

head, and then he would have lived twice as long. But our creators were

of opinion that a shorter life which was better was preferable to a

longer which was worse, and therefore they covered the head with thin

bone, and placed the sinews at the extremity of the head round the neck,

and fastened the jawbones to them below the face. And they framed the

mouth, having teeth and tongue and lips, with a view to the necessary

and the good; for food is a necessity, and the river of speech is the

best of rivers. Still, the head could not be left a bare globe of bone

on account of the extremes of heat and cold, nor be allowed to become

dull and senseless by an overgrowth of flesh. Wherefore it was covered

by a peel or skin which met and grew by the help of the cerebral humour.

The diversity of the sutures was caused by the struggle of the food

against the courses of the soul. The skin of the head was pierced by

fire, and out of the punctures came forth a moisture, part liquid,

and part of a skinny nature, which was hardened by the pressure of the

external cold and became hair. And God gave hair to the head of man

to be a light covering, so that it might not interfere with his

perceptions. Nails were formed by combining sinew, skin, and bone, and

were made by the creators with a view to the future when, as they knew,

women and other animals who would require them would be framed out of

man.

The gods also mingled natures akin to that of man with other forms and

perceptions. Thus trees and plants were created, which were originally

wild and have been adapted by cultivation to our use. They partake of

that third kind of life which is seated between the midriff and the

navel, and is altogether passive and incapable of reflection.

When the creators had furnished all these natures for our sustenance,

they cut channels through our bodies as in a garden, watering them with

a perennial stream. Two were cut down the back, along the back bone,

where the skin and flesh meet, one on the right and the other on the

left, having the marrow of generation between them. In the next place,

they divided the veins about the head and interlaced them with each

other in order that they might form an additional link between the head

and the body, and that the sensations from both sides might be diffused

throughout the body. In the third place, they contrived the passage

of liquids, which may be explained in this way:--Finer bodies retain

coarser, but not the coarser the finer, and the belly is capable of

retaining food, but not fire and air. God therefore formed a network of

fire and air to irrigate the veins, having within it two lesser nets,

and stretched cords reaching from both the lesser nets to the extremity

of the outer net. The inner parts of the net were made by him of fire,

the lesser nets and their cavities of air. The two latter he made to

pass into the mouth; the one ascending by the air-pipes from the lungs,

the other by the side of the air-pipes from the belly. The entrance to

the first he divided into two parts, both of which he made to meet at

the channels of the nose, that when the mouth was closed the passage

connected with it might still be fed with air. The cavity of the network

he spread around the hollows of the body, making the entire receptacle

to flow into and out of the lesser nets and the lesser nets into and out

of it, while the outer net found a way into and out of the pores of the

body, and the internal heat followed the air to and fro. These, as we

affirm, are the phenomena of respiration. And all this process takes

place in order that the body may be watered and cooled and nourished,

and the meat and drink digested and liquefied and carried into the

veins.

The causes of respiration have now to be considered. The exhalation of

the breath through the mouth and nostrils displaces the external air,

and at the same time leaves a vacuum into which through the pores the

air which is displaced enters. Also the vacuum which is made when the

air is exhaled through the pores is filled up by the inhalation of

breath through the mouth and nostrils. The explanation of this double

phenomenon is as follows:--Elements move towards their natural places.

Now as every animal has within him a fountain of fire, the air which

is inhaled through the mouth and nostrils, on coming into contact

with this, is heated; and when heated, in accordance with the law of

attraction, it escapes by the way it entered toward the place of fire.

On leaving the body it is cooled and drives round the air which it

displaces through the pores into the empty lungs. This again is in turn

heated by the internal fire and escapes, as it entered, through the

pores.

The phenomena of medical cupping-glasses, of swallowing, and of the

hurling of bodies, are to be explained on a similar principle; as also

sounds, which are sometimes discordant on account of the inequality

of them, and again harmonious by reason of equality. The slower sounds

reaching the swifter, when they begin to pause, by degrees assimilate

with them: whence arises a pleasure which even the unwise feel, and

which to the wise becomes a higher sense of delight, being an imitation

of divine harmony in mortal motions. Streams flow, lightnings play,

amber and the magnet attract, not by reason of attraction, but because

'nature abhors a vacuum,' and because things, when compounded or

dissolved, move different ways, each to its own place.

I will now return to the phenomena of respiration. The fire, entering

the belly, minces the food, and as it escapes, fills the veins by

drawing after it the divided portions, and thus the streams of nutriment

are diffused through the body. The fruits or herbs which are our daily

sustenance take all sorts of colours when intermixed, but the colour of

red or fire predominates, and hence the liquid which we call blood is

red, being the nurturing principle of the body, whence all parts are

watered and empty places filled.

The process of repletion and depletion is produced by the attraction

of like to like, after the manner of the universal motion. The external

elements by their attraction are always diminishing the substance of

the body: the particles of blood, too, formed out of the newly digested

food, are attracted towards kindred elements within the body and so fill

up the void. When more is taken away than flows in, then we decay; and

when less, we grow and increase.

The young of every animal has the triangles new and closely locked

together, and yet the entire frame is soft and delicate, being newly

made of marrow and nurtured on milk. These triangles are sharper than

those which enter the body from without in the shape of food, and

therefore they cut them up. But as life advances, the triangles wear out

and are no longer able to assimilate food; and at length, when the bonds

which unite the triangles of the marrow become undone, they in turn

unloose the bonds of the soul; and if the release be according to

nature, she then flies away with joy. For the death which is natural is

pleasant, but that which is caused by violence is painful.

Every one may understand the origin of diseases. They may be occasioned

by the disarrangement or disproportion of the elements out of which the

body is framed. This is the origin of many of them, but the worst of all

owe their severity to the following causes: There is a natural order

in the human frame according to which the flesh and sinews are made of

blood, the sinews out of the fibres, and the flesh out of the congealed

substance which is formed by separation from the fibres. The glutinous

matter which comes away from the sinews and the flesh, not only binds

the flesh to the bones, but nourishes the bones and waters the marrow.

When these processes take place in regular order the body is in health.

But when the flesh wastes and returns into the veins there is

discoloured blood as well as air in the veins, having acid and salt

qualities, from which is generated every sort of phlegm and bile. All

things go the wrong way and cease to give nourishment to the body, no

longer preserving their natural courses, but at war with themselves

and destructive to the constitution of the body. The oldest part of the

flesh which is hard to decompose blackens from long burning, and from

being corroded grows bitter, and as the bitter element refines away,

becomes acid. When tinged with blood the bitter substance has a red

colour, and this when mixed with black takes the hue of grass; or again,

the bitter substance has an auburn colour, when new flesh is decomposed

by the internal flame. To all which phenomena some physician or

philosopher who was able to see the one in many has given the name of

bile. The various kinds of bile have names answering to their colours.

Lymph or serum is of two kinds: first, the whey of blood, which is

gentle; secondly, the secretion of dark and bitter bile, which, when

mingled under the influence of heat with salt, is malignant and

is called acid phlegm. There is also white phlegm, formed by the

decomposition of young and tender flesh, and covered with little

bubbles, separately invisible, but becoming visible when collected.

The water of tears and perspiration and similar substances is also the

watery part of fresh phlegm. All these humours become sources of disease

when the blood is replenished in irregular ways and not by food or

drink. The danger, however, is not so great when the foundation remains,

for then there is a possibility of recovery. But when the substance

which unites the flesh and bones is diseased, and is no longer renewed

from the muscles and sinews, and instead of being oily and smooth and

glutinous becomes rough and salt and dry, then the fleshy parts fall

away and leave the sinews bare and full of brine, and the flesh gets

back again into the circulation of the blood, and makes the previously

mentioned disorders still greater. There are other and worse diseases

which are prior to these; as when the bone through the density of

the flesh does not receive sufficient air, and becomes stagnant and

gangrened, and crumbling away passes into the food, and the food into

the flesh, and the flesh returns again into the blood. Worst of all and

most fatal is the disease of the marrow, by which the whole course

of the body is reversed. There is a third class of diseases which are

produced, some by wind and some by phlegm and some by bile. When the

lung, which is the steward of the air, is obstructed, by rheums, and

in one part no air, and in another too much, enters in, then the parts

which are unrefreshed by air corrode, and other parts are distorted by

the excess of air; and in this manner painful diseases are produced. The

most painful are caused by wind generated within the body, which gets

about the great sinews of the shoulders--these are termed tetanus. The

cure of them is difficult, and in most cases they are relieved only by

fever. White phlegm, which is dangerous if kept in, by reason of the air

bubbles, is not equally dangerous if able to escape through the pores,

although it variegates the body, generating diverse kinds of leprosies.

If, when mingled with black bile, it disturbs the courses of the head

in sleep, there is not so much danger; but if it assails those who are

awake, then the attack is far more dangerous, and is called epilepsy or

the sacred disease. Acid and salt phlegm is the source of catarrh.

Inflammations originate in bile, which is sometimes relieved by boils

and swellings, but when detained, and above all when mingled with pure

blood, generates many inflammatory disorders, disturbing the position of

the fibres which are scattered about in the blood in order to maintain

the balance of rare and dense which is necessary to its regular

circulation. If the bile, which is only stale blood, or liquefied flesh,

comes in little by little, it is congealed by the fibres and produces

internal cold and shuddering. But when it enters with more of a flood

it overcomes the fibres by its heat and reaches the spinal marrow, and

burning up the cables of the soul sets her free from the body. When on

the other hand the body, though wasted, still holds out, then the bile

is expelled, like an exile from a factious state, causing associating

diarrhoeas and dysenteries and similar disorders. The body which is

diseased from the effects of fire is in a continual fever; when air is

the agent, the fever is quotidian; when water, the fever intermits a

day; when earth, which is the most sluggish element, the fever intermits

three days and is with difficulty shaken off.

Of mental disorders there are two sorts, one madness, the other

ignorance, and they may be justly attributed to disease. Excessive

pleasures or pains are among the greatest diseases, and deprive men of

their senses. When the seed about the spinal marrow is too abundant, the

body has too great pleasures and pains; and during a great part of his

life he who is the subject of them is more or less mad. He is

often thought bad, but this is a mistake; for the truth is that the

intemperance of lust is due to the fluidity of the marrow produced by

the loose consistency of the bones. And this is true of vice in

general, which is commonly regarded as disgraceful, whereas it is really

involuntary and arises from a bad habit of the body and evil education.

In like manner the soul is often made vicious by the influence of bodily

pain; the briny phlegm and other bitter and bilious humours wander over

the body and find no exit, but are compressed within, and mingle their

own vapours with the motions of the soul, and are carried to the

three places of the soul, creating infinite varieties of trouble and

melancholy, of rashness and cowardice, of forgetfulness and stupidity.

When men are in this evil plight of body, and evil forms of government

and evil discourses are superadded, and there is no education to save

them, they are corrupted through two causes; but of neither of them are

they really the authors. For the planters are to blame rather than the

plants, the educators and not the educated. Still, we should endeavour

to attain virtue and avoid vice; but this is part of another subject.

Enough of disease--I have now to speak of the means by which the mind

and body are to be preserved, a higher theme than the other. The good

is the beautiful, and the beautiful is the symmetrical, and there is no

greater or fairer symmetry than that of body and soul, as the contrary

is the greatest of deformities. A leg or an arm too long or too short

is at once ugly and unserviceable, and the same is true if body and soul

are disproportionate. For a strong and impassioned soul may 'fret the

pigmy body to decay,' and so produce convulsions and other evils. The

violence of controversy, or the earnestness of enquiry, will often

generate inflammations and rheums which are not understood, or assigned

to their true cause by the professors of medicine. And in like manner

the body may be too much for the soul, darkening the reason, and

quickening the animal desires. The only security is to preserve the

balance of the two, and to this end the mathematician or philosopher

must practise gymnastics, and the gymnast must cultivate music. The

parts of the body too must be treated in the same way--they should

receive their appropriate exercise. For the body is set in motion when

it is heated and cooled by the elements which enter in, or is dried up

and moistened by external things; and, if given up to these processes

when at rest, it is liable to destruction. But the natural motion, as

in the world, so also in the human frame, produces harmony and divides

hostile powers. The best exercise is the spontaneous motion of the body,

as in gymnastics, because most akin to the motion of mind; not so

good is the motion of which the source is in another, as in sailing or

riding; least good when the body is at rest and the motion is in parts

only, which is a species of motion imparted by physic. This should only

be resorted to by men of sense in extreme cases; lesser diseases are

not to be irritated by medicine. For every disease is akin to the living

being and has an appointed term, just as life has, which depends on the

form of the triangles, and cannot be protracted when they are worn out.

And he who, instead of accepting his destiny, endeavours to prolong

his life by medicine, is likely to multiply and magnify his diseases.

Regimen and not medicine is the true cure, when a man has time at his

disposal.

Enough of the nature of man and of the body, and of training and

education. The subject is a great one and cannot be adequately treated

as an appendage to another. To sum up all in a word: there are three

kinds of soul located within us, and any one of them, if remaining

inactive, becomes very weak; if exercised, very strong. Wherefore we

should duly train and exercise all three kinds.

The divine soul God lodged in the head, to raise us, like plants which

are not of earthly origin, to our kindred; for the head is nearest

to heaven. He who is intent upon the gratification of his desires and

cherishes the mortal soul, has all his ideas mortal, and is himself

mortal in the truest sense. But he who seeks after knowledge and

exercises the divine part of himself in godly and immortal thoughts,

attains to truth and immortality, as far as is possible to man, and also

to happiness, while he is training up within him the divine principle

and indwelling power of order. There is only one way in which one person

can benefit another; and that is by assigning to him his proper nurture

and motion. To the motions of the soul answer the motions of the

universe, and by the study of these the individual is restored to his

original nature.

Thus we have finished the discussion of the universe, which, according

to our original intention, has now been brought down to the creation of

man. Completeness seems to require that something should be briefly said

about other animals: first of women, who are probably degenerate and

cowardly men. And when they degenerated, the gods implanted in men the

desire of union with them, creating in man one animate substance and

in woman another in the following manner:--The outlet for liquids they

connected with the living principle of the spinal marrow, which the man

has the desire to emit into the fruitful womb of the woman; this is like

a fertile field in which the seed is quickened and matured, and at

last brought to light. When this desire is unsatisfied the man is

over-mastered by the power of the generative organs, and the woman

is subjected to disorders from the obstruction of the passages of the

breath, until the two meet and pluck the fruit of the tree.

The race of birds was created out of innocent, light-minded men,

who thought to pursue the study of the heavens by sight; these were

transformed into birds, and grew feathers instead of hair. The race

of wild animals were men who had no philosophy, and never looked up to

heaven or used the courses of the head, but followed only the influences

of passion. Naturally they turned to their kindred earth, and put their

forelegs to the ground, and their heads were crushed into strange

oblong forms. Some of them have four feet, and some of them more than

four,--the latter, who are the more senseless, drawing closer to their

native element; the most senseless of all have no limbs and trail their

whole body on the ground. The fourth kind are the inhabitants of the

waters; these are made out of the most senseless and ignorant and impure

of men, whom God placed in the uttermost parts of the world in return

for their utter ignorance, and caused them to respire water instead of

the pure element of air. Such are the laws by which animals pass into

one another.

And so the world received animals, mortal and immortal, and was

fulfilled with them, and became a visible God, comprehending the

visible, made in the image of the Intellectual, being the one perfect

only-begotten heaven.

Section 2.

Nature in the aspect which she presented to a Greek philosopher of the

fourth century before Christ is not easily reproduced to modern eyes.

The associations of mythology and poetry have to be added, and the

unconscious influence of science has to be subtracted, before we can

behold the heavens or the earth as they appeared to the Greek. The

philosopher himself was a child and also a man--a child in the range of

his attainments, but also a great intelligence having an insight into

nature, and often anticipations of the truth. He was full of original

thoughts, and yet liable to be imposed upon by the most obvious

fallacies. He occasionally confused numbers with ideas, and atoms

with numbers; his a priori notions were out of all proportion to his

experience. He was ready to explain the phenomena of the heavens by the

most trivial analogies of earth. The experiments which nature worked for

him he sometimes accepted, but he never tried experiments for himself

which would either prove or disprove his theories. His knowledge was

unequal; while in some branches, such as medicine and astronomy, he had

made considerable proficiency, there were others, such as chemistry,

electricity, mechanics, of which the very names were unknown to him.

He was the natural enemy of mythology, and yet mythological ideas still

retained their hold over him. He was endeavouring to form a conception

of principles, but these principles or ideas were regarded by him as

real powers or entities, to which the world had been subjected. He was

always tending to argue from what was near to what was remote, from what

was known to what was unknown, from man to the universe, and back again

from the universe to man. While he was arranging the world, he was

arranging the forms of thought in his own mind; and the light from

within and the light from without often crossed and helped to confuse

one another. He might be compared to a builder engaged in some great

design, who could only dig with his hands because he was unprovided with

common tools; or to some poet or musician, like Tynnichus (Ion), obliged

to accommodate his lyric raptures to the limits of the tetrachord or of

the flute.

The Hesiodic and Orphic cosmogonies were a phase of thought intermediate

between mythology and philosophy and had a great influence on the

beginnings of knowledge. There was nothing behind them; they were to

physical science what the poems of Homer were to early Greek history.

They made men think of the world as a whole; they carried the mind back

into the infinity of past time; they suggested the first observation

of the effects of fire and water on the earth's surface. To the ancient

physics they stood much in the same relation which geology does to

modern science. But the Greek was not, like the enquirer of the last

generation, confined to a period of six thousand years; he was able to

speculate freely on the effects of infinite ages in the production of

physical phenomena. He could imagine cities which had existed time

out of mind (States.; Laws), laws or forms of art and music which had

lasted, 'not in word only, but in very truth, for ten thousand years'

(Laws); he was aware that natural phenomena like the Delta of the Nile

might have slowly accumulated in long periods of time (Hdt.). But he

seems to have supposed that the course of events was recurring rather

than progressive. To this he was probably led by the fixedness of

Egyptian customs and the general observation that there were other

civilisations in the world more ancient than that of Hellas.

The ancient philosophers found in mythology many ideas which, if not

originally derived from nature, were easily transferred to her--such,

for example, as love or hate, corresponding to attraction or repulsion;

or the conception of necessity allied both to the regularity and

irregularity of nature; or of chance, the nameless or unknown cause; or

of justice, symbolizing the law of compensation; are of the Fates and

Furies, typifying the fixed order or the extraordinary convulsions of

nature. Their own interpretations of Homer and the poets were supposed

by them to be the original meaning. Musing in themselves on the

phenomena of nature, they were relieved at being able to utter the

thoughts of their hearts in figures of speech which to them were not

figures, and were already consecrated by tradition. Hesiod and the

Orphic poets moved in a region of half-personification in which the

meaning or principle appeared through the person. In their vaster

conceptions of Chaos, Erebus, Aether, Night, and the like, the first

rude attempts at generalization are dimly seen. The Gods themselves,

especially the greater Gods, such as Zeus, Poseidon, Apollo, Athene, are

universals as well as individuals. They were gradually becoming lost

in a common conception of mind or God. They continued to exist for the

purposes of ritual or of art; but from the sixth century onwards or even

earlier there arose and gained strength in the minds of men the notion

of 'one God, greatest among Gods and men, who was all sight, all

hearing, all knowing' (Xenophanes).

Under the influence of such ideas, perhaps also deriving from the

traditions of their own or of other nations scraps of medicine and

astronomy, men came to the observation of nature. The Greek philosopher

looked at the blue circle of the heavens and it flashed upon him that

all things were one; the tumult of sense abated, and the mind found

repose in the thought which former generations had been striving to

realize. The first expression of this was some element, rarefied by

degrees into a pure abstraction, and purged from any tincture of sense.

Soon an inner world of ideas began to be unfolded, more absorbing, more

overpowering, more abiding than the brightest of visible objects, which

to the eye of the philosopher looking inward, seemed to pale before

them, retaining only a faint and precarious existence. At the same time,

the minds of men parted into the two great divisions of those who saw

only a principle of motion, and of those who saw only a principle of

rest, in nature and in themselves; there were born Heracliteans or

Eleatics, as there have been in later ages born Aristotelians or

Platonists. Like some philosophers in modern times, who are accused of

making a theory first and finding their facts afterwards, the advocates

of either opinion never thought of applying either to themselves or to

their adversaries the criterion of fact. They were mastered by their

ideas and not masters of them. Like the Heraclitean fanatics whom Plato

has ridiculed in the Theaetetus, they were incapable of giving a

reason of the faith that was in them, and had all the animosities of a

religious sect. Yet, doubtless, there was some first impression derived

from external nature, which, as in mythology, so also in philosophy,

worked upon the minds of the first thinkers. Though incapable of

induction or generalization in the modern sense, they caught an

inspiration from the external world. The most general facts or

appearances of nature, the circle of the universe, the nutritive power

of water, the air which is the breath of life, the destructive force

of fire, the seeming regularity of the greater part of nature and the

irregularity of a remnant, the recurrence of day and night and of the

seasons, the solid earth and the impalpable aether, were always present

to them.

The great source of error and also the beginning of truth to them

was reasoning from analogy; they could see resemblances, but not

differences; and they were incapable of distinguishing illustration

from argument. Analogy in modern times only points the way, and is

immediately verified by experiment. The dreams and visions, which

pass through the philosopher's mind, of resemblances between different

classes of substances, or between the animal and vegetable world, are

put into the refiner's fire, and the dross and other elements which

adhere to them are purged away. But the contemporary of Plato and

Socrates was incapable of resisting the power of any analogy which

occurred to him, and was drawn into any consequences which seemed to

follow. He had no methods of difference or of concomitant variations, by

the use of which he could distinguish the accidental from the essential.

He could not isolate phenomena, and he was helpless against the

influence of any word which had an equivocal or double sense.

Yet without this crude use of analogy the ancient physical philosopher

would have stood still; he could not have made even 'one guess among

many' without comparison. The course of natural phenomena would have

passed unheeded before his eyes, like fair sights or musical sounds

before the eyes and ears of an animal. Even the fetichism of the savage

is the beginning of reasoning; the assumption of the most fanciful of

causes indicates a higher mental state than the absence of all enquiry

about them. The tendency to argue from the higher to the lower, from

man to the world, has led to many errors, but has also had an elevating

influence on philosophy. The conception of the world as a whole, a

person, an animal, has been the source of hasty generalizations; yet

this general grasp of nature led also to a spirit of comprehensiveness

in early philosophy, which has not increased, but rather diminished, as

the fields of knowledge have become more divided. The modern physicist

confines himself to one or perhaps two branches of science. But he

comparatively seldom rises above his own department, and often falls

under the narrowing influence which any single branch, when pursued

to the exclusion of every other, has over the mind. Language, two,

exercised a spell over the beginnings of physical philosophy, leading

to error and sometimes to truth; for many thoughts were suggested by

the double meanings of words (Greek), and the accidental distinctions

of words sometimes led the ancient philosopher to make corresponding

differences in things (Greek). 'If they are the same, why have they

different names; or if they are different, why have they the same

name?'--is an argument not easily answered in the infancy of knowledge.

The modern philosopher has always been taught the lesson which he still

imperfectly learns, that he must disengage himself from the influence

of words. Nor are there wanting in Plato, who was himself too often the

victim of them, impressive admonitions that we should regard not words

but things (States.). But upon the whole, the ancients, though not

entirely dominated by them, were much more subject to the influence

of words than the moderns. They had no clear divisions of colours

or substances; even the four elements were undefined; the fields of

knowledge were not parted off. They were bringing order out of disorder,

having a small grain of experience mingled in a confused heap of

a priori notions. And yet, probably, their first impressions, the

illusions and mirages of their fancy, created a greater intellectual

activity and made a nearer approach to the truth than any patient

investigation of isolated facts, for which the time had not yet come,

could have accomplished.

There was one more illusion to which the ancient philosophers were

subject, and against which Plato in his later dialogues seems to be

struggling--the tendency to mere abstractions; not perceiving that

pure abstraction is only negation, they thought that the greater the

abstraction the greater the truth. Behind any pair of ideas a new

idea which comprehended them--the (Greek), as it was technically

termed--began at once to appear. Two are truer than three, one than two.

The words 'being,' or 'unity,' or essence,' or 'good,' became sacred to

them. They did not see that they had a word only, and in one sense the

most unmeaning of words. They did not understand that the content of

notions is in inverse proportion to their universality--the element

which is the most widely diffused is also the thinnest; or, in the

language of the common logic, the greater the extension the less the

comprehension. But this vacant idea of a whole without parts, of a

subject without predicates, a rest without motion, has been also the

most fruitful of all ideas. It is the beginning of a priori thought, and

indeed of thinking at all. Men were led to conceive it, not by a love

of hasty generalization, but by a divine instinct, a dialectical

enthusiasm, in which the human faculties seemed to yearn for

enlargement. We know that 'being' is only the verb of existence, the

copula, the most general symbol of relation, the first and most meagre

of abstractions; but to some of the ancient philosophers this little

word appeared to attain divine proportions, and to comprehend all truth.

Being or essence, and similar words, represented to them a supreme or

divine being, in which they thought that they found the containing and

continuing principle of the universe. In a few years the human mind was

peopled with abstractions; a new world was called into existence to give

law and order to the old. But between them there was still a gulf, and

no one could pass from the one to the other.

Number and figure were the greatest instruments of thought which were

possessed by the Greek philosopher; having the same power over the mind

which was exerted by abstract ideas, they were also capable of practical

application. Many curious and, to the early thinker, mysterious

properties of them came to light when they were compared with one

another. They admitted of infinite multiplication and construction;

in Pythagorean triangles or in proportions of 1:2:4:8 and 1:3:9:27, or

compounds of them, the laws of the world seemed to be more than half

revealed. They were also capable of infinite subdivision--a wonder and

also a puzzle to the ancient thinker (Rep.). They were not, like being

or essence, mere vacant abstractions, but admitted of progress and

growth, while at the same time they confirmed a higher sentiment of the

mind, that there was order in the universe. And so there began to be

a real sympathy between the world within and the world without. The

numbers and figures which were present to the mind's eye became visible

to the eye of sense; the truth of nature was mathematics; the other

properties of objects seemed to reappear only in the light of number.

Law and morality also found a natural expression in number and figure.

Instruments of such power and elasticity could not fail to be 'a most

gracious assistance' to the first efforts of human intelligence.

There was another reason why numbers had so great an influence over the

minds of early thinkers--they were verified by experience. Every use

of them, even the most trivial, assured men of their truth; they were

everywhere to be found, in the least things and the greatest alike.

One, two, three, counted on the fingers was a 'trivial matter (Rep.), a

little instrument out of which to create a world; but from these and by

the help of these all our knowledge of nature has been developed. They

were the measure of all things, and seemed to give law to all things;

nature was rescued from chaos and confusion by their power; the notes of

music, the motions of the stars, the forms of atoms, the evolution and

recurrence of days, months, years, the military divisions of an army,

the civil divisions of a state, seemed to afford a 'present witness'

of them--what would have become of man or of the world if deprived of

number (Rep.)? The mystery of number and the mystery of music were akin.

There was a music of rhythm and of harmonious motion everywhere; and to

the real connexion which existed between music and number, a fanciful or

imaginary relation was superadded. There was a music of the spheres as

well as of the notes of the lyre. If in all things seen there was number

and figure, why should they not also pervade the unseen world, with

which by their wonderful and unchangeable nature they seemed to hold

communion?

Two other points strike us in the use which the ancient philosophers

made of numbers. First, they applied to external nature the relations of

them which they found in their own minds; and where nature seemed to be

at variance with number, as for example in the case of fractions, they

protested against her (Rep.; Arist. Metaph.). Having long meditated on

the properties of 1:2:4:8, or 1:3:9:27, or of 3, 4, 5, they discovered

in them many curious correspondences and were disposed to find in them

the secret of the universe. Secondly, they applied number and figure

equally to those parts of physics, such as astronomy or mechanics, in

which the modern philosopher expects to find them, and to those in

which he would never think of looking for them, such as physiology and

psychology. For the sciences were not yet divided, and there was nothing

really irrational in arguing that the same laws which regulated the

heavenly bodies were partially applied to the erring limbs or brain of

man. Astrology was the form which the lively fancy of ancient thinkers

almost necessarily gave to astronomy. The observation that the lower

principle, e.g. mechanics, is always seen in the higher, e.g. in the

phenomena of life, further tended to perplex them. Plato's doctrine

of the same and the other ruling the courses of the heavens and of the

human body is not a mere vagary, but is a natural result of the state of

knowledge and thought at which he had arrived.

When in modern times we contemplate the heavens, a certain amount of

scientific truth imperceptibly blends, even with the cursory glance of

an unscientific person. He knows that the earth is revolving round the

sun, and not the sun around the earth. He does not imagine the earth to

be the centre of the universe, and he has some conception of chemistry

and the cognate sciences. A very different aspect of nature would have

been present to the mind of the early Greek philosopher. He would have

beheld the earth a surface only, not mirrored, however faintly, in the

glass of science, but indissolubly connected with some theory of one,

two, or more elements. He would have seen the world pervaded by number

and figure, animated by a principle of motion, immanent in a principle

of rest. He would have tried to construct the universe on a quantitative

principle, seeming to find in endless combinations of geometrical

figures or in the infinite variety of their sizes a sufficient account

of the multiplicity of phenomena. To these a priori speculations he

would add a rude conception of matter and his own immediate experience

of health and disease. His cosmos would necessarily be imperfect and

unequal, being the first attempt to impress form and order on the

primaeval chaos of human knowledge. He would see all things as in a

dream.

The ancient physical philosophers have been charged by Dr. Whewell

and others with wasting their fine intelligences in wrong methods of

enquiry; and their progress in moral and political philosophy has

been sometimes contrasted with their supposed failure in physical

investigations. 'They had plenty of ideas,' says Dr. Whewell, 'and

plenty of facts; but their ideas did not accurately represent the facts

with which they were acquainted.' This is a very crude and misleading

way of describing ancient science. It is the mistake of an uneducated

person--uneducated, that is, in the higher sense of the word--who

imagines every one else to be like himself and explains every other age

by his own. No doubt the ancients often fell into strange and fanciful

errors: the time had not yet arrived for the slower and surer path of

the modern inductive philosophy. But it remains to be shown that they

could have done more in their age and country; or that the contributions

which they made to the sciences with which they were acquainted are not

as great upon the whole as those made by their successors. There is no

single step in astronomy as great as that of the nameless Pythagorean

who first conceived the world to be a body moving round the sun in

space: there is no truer or more comprehensive principle than the

application of mathematics alike to the heavenly bodies, and to the

particles of matter. The ancients had not the instruments which would

have enabled them to correct or verify their anticipations, and their

opportunities of observation were limited. Plato probably did more

for physical science by asserting the supremacy of mathematics than

Aristotle or his disciples by their collections of facts. When the

thinkers of modern times, following Bacon, undervalue or disparage the

speculations of ancient philosophers, they seem wholly to forget the

conditions of the world and of the human mind, under which they

carried on their investigations. When we accuse them of being under the

influence of words, do we suppose that we are altogether free from this

illusion? When we remark that Greek physics soon became stationary or

extinct, may we not observe also that there have been and may be again

periods in the history of modern philosophy which have been barren and

unproductive? We might as well maintain that Greek art was not real

or great, because it had nihil simile aut secundum, as say that Greek

physics were a failure because they admire no subsequent progress.

The charge of premature generalization which is often urged against

ancient philosophers is really an anachronism. For they can hardly be

said to have generalized at all. They may be said more truly to have

cleared up and defined by the help of experience ideas which they

already possessed. The beginnings of thought about nature must always

have this character. A true method is the result of many ages of

experiment and observation, and is ever going on and enlarging with the

progress of science and knowledge. At first men personify nature, then

they form impressions of nature, at last they conceive 'measure' or laws

of nature. They pass out of mythology into philosophy. Early science is

not a process of discovery in the modern sense; but rather a process

of correcting by observation, and to a certain extent only, the first

impressions of nature, which mankind, when they began to think,

had received from poetry or language or unintelligent sense. Of all

scientific truths the greatest and simplest is the uniformity of nature;

this was expressed by the ancients in many ways, as fate, or necessity,

or measure, or limit. Unexpected events, of which the cause was unknown

to them, they attributed to chance (Thucyd.). But their conception of

nature was never that of law interrupted by exceptions,--a somewhat

unfortunate metaphysical invention of modern times, which is at variance

with facts and has failed to satisfy the requirements of thought.

Section 3.

Plato's account of the soul is partly mythical or figurative, and partly

literal. Not that either he or we can draw a line between them, or say,

'This is poetry, this is philosophy'; for the transition from the one

to the other is imperceptible. Neither must we expect to find in him

absolute consistency. He is apt to pass from one level or stage of

thought to another without always making it apparent that he is changing

his ground. In such passages we have to interpret his meaning by the

general spirit of his writings. To reconcile his inconsistencies would

be contrary to the first principles of criticism and fatal to any true

understanding of him.

There is a further difficulty in explaining this part of the

Timaeus--the natural order of thought is inverted. We begin with the

most abstract, and proceed from the abstract to the concrete. We

are searching into things which are upon the utmost limit of human

intelligence, and then of a sudden we fall rather heavily to the earth.

There are no intermediate steps which lead from one to the other. But

the abstract is a vacant form to us until brought into relation with

man and nature. God and the world are mere names, like the Being of

the Eleatics, unless some human qualities are added on to them. Yet the

negation has a kind of unknown meaning to us. The priority of God and

of the world, which he is imagined to have created, to all other

existences, gives a solemn awe to them. And as in other systems of

theology and philosophy, that of which we know least has the greatest

interest to us.

There is no use in attempting to define or explain the first God in the

Platonic system, who has sometimes been thought to answer to God the

Father; or the world, in whom the Fathers of the Church seemed to

recognize 'the firstborn of every creature.' Nor need we discuss at

length how far Plato agrees in the later Jewish idea of creation,

according to which God made the world out of nothing. For his original

conception of matter as something which has no qualities is really a

negation. Moreover in the Hebrew Scriptures the creation of the world

is described, even more explicitly than in the Timaeus, not as a single

act, but as a work or process which occupied six days. There is a chaos

in both, and it would be untrue to say that the Greek, any more than the

Hebrew, had any definite belief in the eternal existence of matter. The

beginning of things vanished into the distance. The real creation began,

not with matter, but with ideas. According to Plato in the Timaeus, God

took of the same and the other, of the divided and undivided, of the

finite and infinite, and made essence, and out of the three combined

created the soul of the world. To the soul he added a body formed out

of the four elements. The general meaning of these words is that God

imparted determinations of thought, or, as we might say, gave law

and variety to the material universe. The elements are moving in a

disorderly manner before the work of creation begins; and there is an

eternal pattern of the world, which, like the 'idea of good,' is not

the Creator himself, but not separable from him. The pattern too, though

eternal, is a creation, a world of thought prior to the world of

sense, which may be compared to the wisdom of God in the book of

Ecclesiasticus, or to the 'God in the form of a globe' of the old

Eleatic philosophers. The visible, which already exists, is fashioned

in the likeness of this eternal pattern. On the other hand, there is no

truth of which Plato is more firmly convinced than of the priority of

the soul to the body, both in the universe and in man. So inconsistent

are the forms in which he describes the works which no tongue

can utter--his language, as he himself says, partaking of his own

uncertainty about the things of which he is speaking.

We may remark in passing, that the Platonic compared with the

Jewish description of the process of creation has less of freedom or

spontaneity. The Creator in Plato is still subject to a remnant of

necessity which he cannot wholly overcome. When his work is accomplished

he remains in his own nature. Plato is more sensible than the Hebrew

prophet of the existence of evil, which he seeks to put as far as

possible out of the way of God. And he can only suppose this to be

accomplished by God retiring into himself and committing the lesser

works of creation to inferior powers. (Compare, however, Laws for

another solution of the difficulty.)

Nor can we attach any intelligible meaning to his words when he speaks

of the visible being in the image of the invisible. For how can that

which is divided be like that which is undivided? Or that which

is changing be the copy of that which is unchanging? All the old

difficulties about the ideas come back upon us in an altered form. We

can imagine two worlds, one of which is the mere double of the other, or

one of which is an imperfect copy of the other, or one of which is the

vanishing ideal of the other; but we cannot imagine an intellectual

world which has no qualities--'a thing in itself'--a point which has no

parts or magnitude, which is nowhere, and nothing. This cannot be the

archetype according to which God made the world, and is in reality,

whether in Plato or in Kant, a mere negative residuum of human thought.

There is another aspect of the same difficulty which appears to have no

satisfactory solution. In what relation does the archetype stand to the

Creator himself? For the idea or pattern of the world is not the thought

of God, but a separate, self-existent nature, of which creation is

the copy. We can only reply, (1) that to the mind of Plato subject and

object were not yet distinguished; (2) that he supposes the process of

creation to take place in accordance with his own theory of ideas; and

as we cannot give a consistent account of the one, neither can we of

the other. He means (3) to say that the creation of the world is not

a material process of working with legs and arms, but ideal and

intellectual; according to his own fine expression, 'the thought of

God made the God that was to be.' He means (4) to draw an absolute

distinction between the invisible or unchangeable which is or is the

place of mind or being, and the world of sense or becoming which is

visible and changing. He means (5) that the idea of the world is prior

to the world, just as the other ideas are prior to sensible objects; and

like them may be regarded as eternal and self-existent, and also, like

the IDEA of good, may be viewed apart from the divine mind.

There are several other questions which we might ask and which can

receive no answer, or at least only an answer of the same kind as the

preceding. How can matter be conceived to exist without form? Or, how

can the essences or forms of things be distinguished from the eternal

ideas, or essence itself from the soul? Or, how could there have been

motion in the chaos when as yet time was not? Or, how did chaos come

into existence, if not by the will of the Creator? Or, how could there

have been a time when the world was not, if time was not? Or, how could

the Creator have taken portions of an indivisible same? Or, how could

space or anything else have been eternal when time is only created? Or,

how could the surfaces of geometrical figures have formed solids? We

must reply again that we cannot follow Plato in all his inconsistencies,

but that the gaps of thought are probably more apparent to us than to

him. He would, perhaps, have said that 'the first things are known only

to God and to him of men whom God loves.' How often have the gaps in

Theology been concealed from the eye of faith! And we may say that only

by an effort of metaphysical imagination can we hope to understand Plato

from his own point of view; we must not ask for consistency. Everywhere

we find traces of the Platonic theory of knowledge expressed in an

objective form, which by us has to be translated into the subjective,

before we can attach any meaning to it. And this theory is exhibited

in so many different points of view, that we cannot with any certainty

interpret one dialogue by another; e.g. the Timaeus by the Parmenides or

Phaedrus or Philebus.

The soul of the world may also be conceived as the personification of

the numbers and figures in which the heavenly bodies move. Imagine

these as in a Pythagorean dream, stripped of qualitative difference and

reduced to mathematical abstractions. They too conform to the principle

of the same, and may be compared with the modern conception of laws of

nature. They are in space, but not in time, and they are the makers

of time. They are represented as constantly thinking of the same; for

thought in the view of Plato is equivalent to truth or law, and need not

imply a human consciousness, a conception which is familiar enough to

us, but has no place, hardly even a name, in ancient Greek philosophy.

To this principle of the same is opposed the principle of the other--the

principle of irregularity and disorder, of necessity and chance, which

is only partially impressed by mathematical laws and figures. (We

may observe by the way, that the principle of the other, which is the

principle of plurality and variation in the Timaeus, has nothing in

common with the 'other' of the Sophist, which is the principle of

determination.) The element of the same dominates to a certain extent

over the other--the fixed stars keep the 'wanderers' of the inner circle

in their courses, and a similar principle of fixedness or order appears

to regulate the bodily constitution of man. But there still remains a

rebellious seed of evil derived from the original chaos, which is the

source of disorder in the world, and of vice and disease in man.

But what did Plato mean by essence, (Greek), which is the intermediate

nature compounded of the Same and the Other, and out of which, together

with these two, the soul of the world is created? It is difficult to

explain a process of thought so strange and unaccustomed to us, in which

modern distinctions run into one another and are lost sight of. First,

let us consider once more the meaning of the Same and the Other. The

Same is the unchanging and indivisible, the heaven of the fixed stars,

partaking of the divine nature, which, having law in itself, gives law

to all besides and is the element of order and permanence in man and

on the earth. It is the rational principle, mind regarded as a work, as

creation--not as the creator. The old tradition of Parmenides and of the

Eleatic Being, the foundation of so much in the philosophy of Greece and

of the world, was lingering in Plato's mind. The Other is the variable

or changing element, the residuum of disorder or chaos, which cannot be

reduced to order, nor altogether banished, the source of evil, seen in

the errors of man and also in the wanderings of the planets, a necessity

which protrudes through nature. Of this too there was a shadow in the

Eleatic philosophy in the realm of opinion, which, like a mist, seemed

to darken the purity of truth in itself.--So far the words of Plato may

perhaps find an intelligible meaning. But when he goes on to speak of

the Essence which is compounded out of both, the track becomes fainter

and we can only follow him with hesitating steps. But still we find a

trace reappearing of the teaching of Anaxagoras: 'All was confusion, and

then mind came and arranged things.' We have already remarked that Plato

was not acquainted with the modern distinction of subject and object,

and therefore he sometimes confuses mind and the things of mind--(Greek)

and (Greek). By (Greek) he clearly means some conception of the

intelligible and the intelligent; it belongs to the class of (Greek).

Matter, being, the Same, the eternal,--for any of these terms, being

almost vacant of meaning, is equally suitable to express indefinite

existence,--are compared or united with the Other or Diverse, and out of

the union or comparison is elicited the idea of intelligence, the 'One

in many,' brighter than any Promethean fire (Phil.), which co-existing

with them and so forming a new existence, is or becomes the intelligible

world...So we may perhaps venture to paraphrase or interpret or put into

other words the parable in which Plato has wrapped up his conception

of the creation of the world. The explanation may help to fill up with

figures of speech the void of knowledge.

The entire compound was divided by the Creator in certain proportions

and reunited; it was then cut into two strips, which were bent into an

inner circle and an outer, both moving with an uniform motion around a

centre, the outer circle containing the fixed, the inner the wandering

stars. The soul of the world was diffused everywhere from the centre to

the circumference. To this God gave a body, consisting at first of

fire and earth, and afterwards receiving an addition of air and water;

because solid bodies, like the world, are always connected by two middle

terms and not by one. The world was made in the form of a globe, and all

the material elements were exhausted in the work of creation.

The proportions in which the soul of the world as well as the human soul

is divided answer to a series of numbers 1, 2, 3, 4, 9, 8, 27, composed

of the two Pythagorean progressions 1, 2, 4, 8 and 1, 3, 9, 27, of which

the number 1 represents a point, 2 and 3 lines, 4 and 8, 9 and 27 the

squares and cubes respectively of 2 and 3. This series, of which the

intervals are afterwards filled up, probably represents (1) the diatonic

scale according to the Pythagoreans and Plato; (2) the order and

distances of the heavenly bodies; and (3) may possibly contain an

allusion to the music of the spheres, which is referred to in the myth

at the end of the Republic. The meaning of the words that 'solid bodies

are always connected by two middle terms' or mean proportionals has

been much disputed. The most received explanation is that of Martin, who

supposes that Plato is only speaking of surfaces and solids compounded

of prime numbers (i.e. of numbers not made up of two factors, or, in

other words, only measurable by unity). The square of any such number

represents a surface, the cube a solid. The squares of any two such

numbers (e.g. 2 squared, 3 squared = 4, 9), have always a single mean

proportional (e.g. 4 and 9 have the single mean 6), whereas the cubes

of primes (e.g. 3 cubed and 5 cubed) have always two mean proportionals

(e.g. 27:45:75:125). But to this explanation of Martin's it may be

objected, (1) that Plato nowhere says that his proportion is to be

limited to prime numbers; (2) that the limitation of surfaces to squares

is also not to be found in his words; nor (3) is there any evidence to

show that the distinction of prime from other numbers was known to

him. What Plato chiefly intends to express is that a solid requires a

stronger bond than a surface; and that the double bond which is given

by two means is stronger than the single bond given by one. Having

reflected on the singular numerical phenomena of the existence of one

mean proportional between two square numbers are rather perhaps only

between the two lowest squares; and of two mean proportionals between

two cubes, perhaps again confining his attention to the two lowest

cubes, he finds in the latter symbol an expression of the relation

of the elements, as in the former an image of the combination of two

surfaces. Between fire and earth, the two extremes, he remarks that

there are introduced, not one, but two elements, air and water, which

are compared to the two mean proportionals between two cube numbers.

The vagueness of his language does not allow us to determine whether

anything more than this was intended by him.

Leaving the further explanation of details, which the reader will find

discussed at length in Boeckh and Martin, we may now return to the main

argument: Why did God make the world? Like man, he must have a purpose;

and his purpose is the diffusion of that goodness or good which he

himself is. The term 'goodness' is not to be understood in this passage

as meaning benevolence or love, in the Christian sense of the term, but

rather law, order, harmony, like the idea of good in the Republic. The

ancient mythologers, and even the Hebrew prophets, had spoken of the

jealousy of God; and the Greek had imagined that there was a Nemesis

always attending the prosperity of mortals. But Plato delights to think

of God as the author of order in his works, who, like a father, lives

over again in his children, and can never have too much of good or

friendship among his creatures. Only, as there is a certain remnant of

evil inherent in matter which he cannot get rid of, he detaches himself

from them and leaves them to themselves, that he may be guiltless of

their faults and sufferings.

Between the ideal and the sensible Plato interposes the two natures of

time and space. Time is conceived by him to be only the shadow or

image of eternity which ever is and never has been or will be, but is

described in a figure only as past or future. This is one of the great

thoughts of early philosophy, which are still as difficult to our minds

as they were to the early thinkers; or perhaps more difficult, because

we more distinctly see the consequences which are involved in such

an hypothesis. All the objections which may be urged against Kant's

doctrine of the ideality of space and time at once press upon us. If

time is unreal, then all which is contained in time is unreal--the

succession of human thoughts as well as the flux of sensations; there is

no connecting link between (Greek) and (Greek). Yet, on the other hand,

we are conscious that knowledge is independent of time, that truth

is not a thing of yesterday or tomorrow, but an 'eternal now.' To the

'spectator of all time and all existence' the universe remains at rest.

The truths of geometry and arithmetic in all their combinations are

always the same. The generations of men, like the leaves of the forest,

come and go, but the mathematical laws by which the world is governed

remain, and seem as if they could never change. The ever-present image

of space is transferred to time--succession is conceived as extension.

(We remark that Plato does away with the above and below in space, as

he has done away with the absolute existence of past and future.) The

course of time, unless regularly marked by divisions of number, partakes

of the indefiniteness of the Heraclitean flux. By such reflections we

may conceive the Greek to have attained the metaphysical conception of

eternity, which to the Hebrew was gained by meditation on the Divine

Being. No one saw that this objective was really a subjective, and

involved the subjectivity of all knowledge. 'Non in tempore sed cum

tempore finxit Deus mundum,' says St. Augustine, repeating a thought

derived from the Timaeus, but apparently unconscious of the results to

which his doctrine would have led.

The contradictions involved in the conception of time or motion, like

the infinitesimal in space, were a source of perplexity to the mind of

the Greek, who was driven to find a point of view above or beyond them.

They had sprung up in the decline of the Eleatic philosophy and

were very familiar to Plato, as we gather from the Parmenides. The

consciousness of them had led the great Eleatic philosopher to

describe the nature of God or Being under negatives. He sings of 'Being

unbegotten and imperishable, unmoved and never-ending, which never was

nor will be, but always is, one and continuous, which cannot spring from

any other; for it cannot be said or imagined not to be.' The idea

of eternity was for a great part a negation. There are regions of

speculation in which the negative is hardly separable from the positive,

and even seems to pass into it. Not only Buddhism, but Greek as well as

Christian philosophy, show that it is quite possible that the human mind

should retain an enthusiasm for mere negations. In different ages and

countries there have been forms of light in which nothing could be

discerned and which have nevertheless exercised a life-giving and

illumining power. For the higher intelligence of man seems to require,

not only something above sense, but above knowledge, which can only

be described as Mind or Being or Truth or God or the unchangeable and

eternal element, in the expression of which all predicates fail and fall

short. Eternity or the eternal is not merely the unlimited in time

but the truest of all Being, the most real of all realities, the most

certain of all knowledge, which we nevertheless only see through a glass

darkly. The passionate earnestness of Parmenides contrasts with the

vacuity of the thought which he is revolving in his mind.

Space is said by Plato to be the 'containing vessel or nurse of

generation.' Reflecting on the simplest kinds of external objects, which

to the ancients were the four elements, he was led to a more general

notion of a substance, more or less like themselves, out of which they

were fashioned. He would not have them too precisely distinguished.

Thus seems to have arisen the first dim perception of (Greek) or matter,

which has played so great a part in the metaphysical philosophy of

Aristotle and his followers. But besides the material out of which the

elements are made, there is also a space in which they are contained.

There arises thus a second nature which the senses are incapable of

discerning and which can hardly be referred to the intelligible class.

For it is and it is not, it is nowhere when filled, it is nothing

when empty. Hence it is said to be discerned by a kind of spurious

or analogous reason, partaking so feebly of existence as to be hardly

perceivable, yet always reappearing as the containing mother or nurse of

all things. It had not that sort of consistency to Plato which has been

given to it in modern times by geometry and metaphysics. Neither of

the Greek words by which it is described are so purely abstract as the

English word 'space' or the Latin 'spatium.' Neither Plato nor any other

Greek would have spoken of (Greek) or (Greek) in the same manner as we

speak of 'time' and 'space.'

Yet space is also of a very permanent or even eternal nature; and

Plato seems more willing to admit of the unreality of time than of the

unreality of space; because, as he says, all things must necessarily

exist in space. We, on the other hand, are disposed to fancy that even

if space were annihilated time might still survive. He admits indeed

that our knowledge of space is of a dreamy kind, and is given by a

spurious reason without the help of sense. (Compare the hypotheses and

images of Rep.) It is true that it does not attain to the clearness

of ideas. But like them it seems to remain, even if all the objects

contained in it are supposed to have vanished away. Hence it was natural

for Plato to conceive of it as eternal. We must remember further that in

his attempt to realize either space or matter the two abstract ideas of

weight and extension, which are familiar to us, had never passed before

his mind.

Thus far God, working according to an eternal pattern, out of his

goodness has created the same, the other, and the essence (compare the

three principles of the Philebus--the finite, the infinite, and the

union of the two), and out of them has formed the outer circle of the

fixed stars and the inner circle of the planets, divided according to

certain musical intervals; he has also created time, the moving image

of eternity, and space, existing by a sort of necessity and hardly

distinguishable from matter. The matter out of which the world is formed

is not absolutely void, but retains in the chaos certain germs or traces

of the elements. These Plato, like Empedocles, supposed to be four in

number--fire, air, earth, and water. They were at first mixed together;

but already in the chaos, before God fashioned them by form and number,

the greater masses of the elements had an appointed place. Into the

confusion (Greek) which preceded Plato does not attempt further to

penetrate. They are called elements, but they are so far from being

elements (Greek) or letters in the higher sense that they are not even

syllables or first compounds. The real elements are two triangles, the

rectangular isosceles which has but one form, and the most beautiful of

the many forms of scalene, which is half of an equilateral triangle. By

the combination of these triangles which exist in an infinite variety of

sizes, the surfaces of the four elements are constructed.

That there were only five regular solids was already known to the

ancients, and out of the surfaces which he has formed Plato proceeds to

generate the four first of the five. He perhaps forgets that he is only

putting together surfaces and has not provided for their transformation

into solids. The first solid is a regular pyramid, of which the base and

sides are formed by four equilateral or twenty-four scalene triangles.

Each of the four solid angles in this figure is a little larger than

the largest of obtuse angles. The second solid is composed of the same

triangles, which unite as eight equilateral triangles, and make one

solid angle out of four plane angles--six of these angles form a regular

octahedron. The third solid is a regular icosahedron, having twenty

triangular equilateral bases, and therefore 120 rectangular scalene

triangles. The fourth regular solid, or cube, is formed by the

combination of four isosceles triangles into one square and of six

squares into a cube. The fifth regular solid, or dodecahedron, cannot

be formed by a combination of either of these triangles, but each of its

faces may be regarded as composed of thirty triangles of another kind.

Probably Plato notices this as the only remaining regular polyhedron,

which from its approximation to a globe, and possibly because, as

Plutarch remarks, it is composed of 12 x 30 = 360 scalene triangles

(Platon. Quaest.), representing thus the signs and degrees of the

Zodiac, as well as the months and days of the year, God may be said to

have 'used in the delineation of the universe.' According to Plato

earth was composed of cubes, fire of regular pyramids, air of regular

octahedrons, water of regular icosahedrons. The stability of the last

three increases with the number of their sides.

The elements are supposed to pass into one another, but we must remember

that these transformations are not the transformations of real solids,

but of imaginary geometrical figures; in other words, we are composing

and decomposing the faces of substances and not the substances

themselves--it is a house of cards which we are pulling to pieces and

putting together again (compare however Laws). Yet perhaps Plato may

regard these sides or faces as only the forms which are impressed on

pre-existent matter. It is remarkable that he should speak of each of

these solids as a possible world in itself, though upon the whole

he inclines to the opinion that they form one world and not five.

To suppose that there is an infinite number of worlds, as Democritus

(Hippolyt. Ref. Haer. I.) had said, would be, as he satirically

observes, 'the characteristic of a very indefinite and ignorant mind.'

The twenty triangular faces of an icosahedron form the faces or sides of

two regular octahedrons and of a regular pyramid (20 = 8 x 2 + 4); and

therefore, according to Plato, a particle of water when decomposed is

supposed to give two particles of air and one of fire. So because an

octahedron gives the sides of two pyramids (8 = 4 x 2), a particle of

air is resolved into two particles of fire.

The transformation is effected by the superior power or number of the

conquering elements. The manner of the change is (1) a separation of

portions of the elements from the masses in which they are collected;

(2) a resolution of them into their original triangles; and (3) a

reunion of them in new forms. Plato himself proposes the question,

Why does motion continue at all when the elements are settled in their

places? He answers that although the force of attraction is continually

drawing similar elements to the same spot, still the revolution of the

universe exercises a condensing power, and thrusts them again out of

their natural places. Thus want of uniformity, the condition of motion,

is produced. In all such disturbances of matter there is an alternative

for the weaker element: it may escape to its kindred, or take the form

of the stronger--becoming denser, if it be denser, or rarer if rarer.

This is true of fire, air, and water, which, being composed of similar

triangles, are interchangeable; earth, however, which has triangles

peculiar to itself, is capable of dissolution, but not of change. Of the

interchangeable elements, fire, the rarest, can only become a denser,

and water, the densest, only a rarer: but air may become a denser or

a rarer. No single particle of the elements is visible, but only the

aggregates of them are seen. The subordinate species depend, not upon

differences of form in the original triangles, but upon differences of

size. The obvious physical phenomena from which Plato has gathered his

views of the relations of the elements seem to be the effect of fire

upon air, water, and earth, and the effect of water upon earth.

The particles are supposed by him to be in a perpetual process of

circulation caused by inequality. This process of circulation does not

admit of a vacuum, as he tells us in his strange account of respiration.

Of the phenomena of light and heavy he speaks afterwards, when treating

of sensation, but they may be more conveniently considered by us in this

place. They are not, he says, to be explained by 'above' and 'below,'

which in the universal globe have no existence, but by the attraction of

similars towards the great masses of similar substances; fire to

fire, air to air, water to water, earth to earth. Plato's doctrine of

attraction implies not only (1) the attraction of similar elements

to one another, but also (2) of smaller bodies to larger ones. Had he

confined himself to the latter he would have arrived, though, perhaps,

without any further result or any sense of the greatness of the

discovery, at the modern doctrine of gravitation. He does not observe

that water has an equal tendency towards both water and earth. So easily

did the most obvious facts which were inconsistent with his theories

escape him.

The general physical doctrines of the Timaeus may be summed up as

follows: (1) Plato supposes the greater masses of the elements to have

been already settled in their places at the creation: (2) they are four

in number, and are formed of rectangular triangles variously combined

into regular solid figures: (3) three of them, fire, air, and water,

admit of transformation into one another; the fourth, earth, cannot be

similarly transformed: (4) different sizes of the same triangles form

the lesser species of each element: (5) there is an attraction of like

to like--smaller masses of the same kind being drawn towards greater:

(6) there is no void, but the particles of matter are ever pushing one

another round and round (Greek). Like the atomists, Plato attributes the

differences between the elements to differences in geometrical figures.

But he does not explain the process by which surfaces become solids;

and he characteristically ridicules Democritus for not seeing that the

worlds are finite and not infinite.

Section 4.

The astronomy of Plato is based on the two principles of the same and

the other, which God combined in the creation of the world. The soul,

which is compounded of the same, the other, and the essence, is diffused

from the centre to the circumference of the heavens. We speak of a soul

of the universe; but more truly regarded, the universe of the Timaeus is

a soul, governed by mind, and holding in solution a residuum of matter

or evil, which the author of the world is unable to expel, and of which

Plato cannot tell us the origin. The creation, in Plato's sense, is

really the creation of order; and the first step in giving order is the

division of the heavens into an inner and outer circle of the other and

the same, of the divisible and the indivisible, answering to the two

spheres, of the planets and of the world beyond them, all together

moving around the earth, which is their centre. To us there is a

difficulty in apprehending how that which is at rest can also be in

motion, or that which is indivisible exist in space. But the whole

description is so ideal and imaginative, that we can hardly venture to

attribute to many of Plato's words in the Timaeus any more meaning

than to his mythical account of the heavens in the Republic and in the

Phaedrus. (Compare his denial of the 'blasphemous opinion' that there

are planets or wandering stars; all alike move in circles--Laws.) The

stars are the habitations of the souls of men, from which they come and

to which they return. In attributing to the fixed stars only the most

perfect motion--that which is on the same spot or circulating around the

same--he might perhaps have said that to 'the spectator of all time and

all existence,' to borrow once more his own grand expression, or viewed,

in the language of Spinoza, 'sub specie aeternitatis,' they were still

at rest, but appeared to move in order to teach men the periods of time.

Although absolutely in motion, they are relatively at rest; or we

may conceive of them as resting, while the space in which they are

contained, or the whole anima mundi, revolves.

The universe revolves around a centre once in twenty-four hours, but the

orbits of the fixed stars take a different direction from those of the

planets. The outer and the inner sphere cross one another and meet again

at a point opposite to that of their first contact; the first moving in

a circle from left to right along the side of a parallelogram which is

supposed to be inscribed in it, the second also moving in a circle along

the diagonal of the same parallelogram from right to left; or, in other

words, the first describing the path of the equator, the second, the

path of the ecliptic. The motion of the second is controlled by the

first, and hence the oblique line in which the planets are supposed to

move becomes a spiral. The motion of the same is said to be undivided,

whereas the inner motion is split into seven unequal orbits--the

intervals between them being in the ratio of two and three, three of

either:--the Sun, moving in the opposite direction to Mercury and

Venus, but with equal swiftness; the remaining four, Moon, Saturn, Mars,

Jupiter, with unequal swiftness to the former three and to one another.

Thus arises the following progression:--Moon 1, Sun 2, Venus 3, Mercury

4, Mars 8, Jupiter 9, Saturn 27. This series of numbers is the compound

of the two Pythagorean ratios, having the same intervals, though not in

the same order, as the mixture which was originally divided in forming

the soul of the world.

Plato was struck by the phenomenon of Mercury, Venus, and the Sun

appearing to overtake and be overtaken by one another. The true reason

of this, namely, that they lie within the circle of the earth's orbit,

was unknown to him, and the reason which he gives--that the two former

move in an opposite direction to the latter--is far from explaining the

appearance of them in the heavens. All the planets, including the sun,

are carried round in the daily motion of the circle of the fixed stars,

and they have a second or oblique motion which gives the explanation

of the different lengths of the sun's course in different parts of the

earth. The fixed stars have also two movements--a forward movement in

their orbit which is common to the whole circle; and a movement on the

same spot around an axis, which Plato calls the movement of thought

about the same. In this latter respect they are more perfect than the

wandering stars, as Plato himself terms them in the Timaeus, although in

the Laws he condemns the appellation as blasphemous.

The revolution of the world around earth, which is accomplished in

a single day and night, is described as being the most perfect or

intelligent. Yet Plato also speaks of an 'annus magnus' or cyclical

year, in which periods wonderful for their complexity are found to

coincide in a perfect number, i.e. a number which equals the sum of its

factors, as 6 = 1 + 2 + 3. This, although not literally contradictory,

is in spirit irreconcilable with the perfect revolution of twenty-four

hours. The same remark may be applied to the complexity of the

appearances and occultations of the stars, which, if the outer heaven is

supposed to be moving around the centre once in twenty-four hours, must

be confined to the effects produced by the seven planets. Plato seems to

confuse the actual observation of the heavens with his desire to find in

them mathematical perfection. The same spirit is carried yet further

by him in the passage already quoted from the Laws, in which he affirms

their wanderings to be an appearance only, which a little knowledge of

mathematics would enable men to correct.

We have now to consider the much discussed question of the rotation or

immobility of the earth. Plato's doctrine on this subject is contained

in the following words:--'The earth, which is our nurse, compacted (OR

revolving) around the pole which is extended through the universe, he

made to be the guardian and artificer of night and day, first and eldest

of gods that are in the interior of heaven'. There is an unfortunate

doubt in this passage (1) about the meaning of the word (Greek), which

is translated either 'compacted' or 'revolving,' and is equally capable

of both explanations. A doubt (2) may also be raised as to whether the

words 'artificer of day and night' are consistent with the mere passive

causation of them, produced by the immobility of the earth in the midst

of the circling universe. We must admit, further, (3) that Aristotle

attributed to Plato the doctrine of the rotation of the earth on its

axis. On the other hand it has been urged that if the earth goes round

with the outer heaven and sun in twenty-four hours, there is no way of

accounting for the alternation of day and night; since the equal motion

of the earth and sun would have the effect of absolute immobility. To

which it may be replied that Plato never says that the earth goes round

with the outer heaven and sun; although the whole question depends on

the relation of earth and sun, their movements are nowhere precisely

described. But if we suppose, with Mr. Grote, that the diurnal rotation

of the earth on its axis and the revolution of the sun and outer heaven

precisely coincide, it would be difficult to imagine that Plato was

unaware of the consequence. For though he was ignorant of many things

which are familiar to us, and often confused in his ideas where we have

become clear, we have no right to attribute to him a childish want of

reasoning about very simple facts, or an inability to understand the

necessary and obvious deductions from geometrical figures or movements.

Of the causes of day and night the pre-Socratic philosophers, and

especially the Pythagoreans, gave various accounts, and therefore the

question can hardly be imagined to have escaped him. On the other hand

it may be urged that the further step, however simple and obvious, is

just what Plato often seems to be ignorant of, and that as there is

no limit to his insight, there is also no limit to the blindness which

sometimes obscures his intelligence (compare the construction of solids

out of surfaces in his account of the creation of the world, or the

attraction of similars to similars). Further, Mr. Grote supposes, not

that (Greek) means 'revolving,' or that this is the sense in which

Aristotle understood the word, but that the rotation of the earth is

necessarily implied in its adherence to the cosmical axis. But (a) if,

as Mr Grote assumes, Plato did not see that the rotation of the earth

on its axis and of the sun and outer heavens around the earth in equal

times was inconsistent with the alternation of day and night, neither

need we suppose that he would have seen the immobility of the earth to

be inconsistent with the rotation of the axis. And (b) what proof is

there that the axis of the world revolves at all? (c) The comparison of

the two passages quoted by Mr Grote (see his pamphlet on 'The Rotation

of the Earth') from Aristotle De Coelo, Book II (Greek) clearly shows,

although this is a matter of minor importance, that Aristotle, as

Proclus and Simplicius supposed, understood (Greek) in the Timaeus to

mean 'revolving.' For the second passage, in which motion on an axis is

expressly mentioned, refers to the first, but this would be unmeaning

unless (Greek) in the first passage meant rotation on an axis. (4)

The immobility of the earth is more in accordance with Plato's other

writings than the opposite hypothesis. For in the Phaedo the earth is

described as the centre of the world, and is not said to be in motion.

In the Republic the pilgrims appear to be looking out from the earth

upon the motions of the heavenly bodies; in the Phaedrus, Hestia,

who remains immovable in the house of Zeus while the other gods go in

procession, is called the first and eldest of the gods, and is probably

the symbol of the earth. The silence of Plato in these and in some other

passages (Laws) in which he might be expected to speak of the rotation

of the earth, is more favourable to the doctrine of its immobility than

to the opposite. If he had meant to say that the earth revolves on its

axis, he would have said so in distinct words, and have explained the

relation of its movements to those of the other heavenly bodies. (5)

The meaning of the words 'artificer of day and night' is literally true

according to Plato's view. For the alternation of day and night is not

produced by the motion of the heavens alone, or by the immobility of the

earth alone, but by both together; and that which has the inherent force

or energy to remain at rest when all other bodies are moving, may be

truly said to act, equally with them. (6) We should not lay too much

stress on Aristotle or the writer De Caelo having adopted the other

interpretation of the words, although Alexander of Aphrodisias thinks

that he could not have been ignorant either of the doctrine of Plato

or of the sense which he intended to give to the word (Greek). For the

citations of Plato in Aristotle are frequently misinterpreted by him;

and he seems hardly ever to have had in his mind the connection in which

they occur. In this instance the allusion is very slight, and there

is no reason to suppose that the diurnal revolution of the heavens was

present to his mind. Hence we need not attribute to him the error from

which we are defending Plato.

After weighing one against the other all these complicated

probabilities, the final conclusion at which we arrive is that there

is nearly as much to be said on the one side of the question as on the

other, and that we are not perfectly certain, whether, as Bockh and the

majority of commentators, ancient as well as modern, are inclined to

believe, Plato thought that the earth was at rest in the centre of the

universe, or, as Aristotle and Mr. Grote suppose, that it revolved on

its axis. Whether we assume the earth to be stationary in the centre of

the universe, or to revolve with the heavens, no explanation is given of

the variation in the length of days and nights at different times of the

year. The relations of the earth and heavens are so indistinct in the

Timaeus and so figurative in the Phaedo, Phaedrus and Republic, that we

must give up the hope of ascertaining how they were imagined by Plato,

if he had any fixed or scientific conception of them at all.

Section 5.

The soul of the world is framed on the analogy of the soul of man, and

many traces of anthropomorphism blend with Plato's highest flights of

idealism. The heavenly bodies are endowed with thought; the principles

of the same and other exist in the universe as well as in the human

mind. The soul of man is made out of the remains of the elements which

had been used in creating the soul of the world; these remains, however,

are diluted to the third degree; by this Plato expresses the measure of

the difference between the soul human and divine. The human soul, like

the cosmical, is framed before the body, as the mind is before the soul

of either--this is the order of the divine work--and the finer parts of

the body, which are more akin to the soul, such as the spinal marrow,

are prior to the bones and flesh. The brain, the containing vessel of

the divine part of the soul, is (nearly) in the form of a globe, which

is the image of the gods, who are the stars, and of the universe.

There is, however, an inconsistency in Plato's manner of conceiving

the soul of man; he cannot get rid of the element of necessity which is

allowed to enter. He does not, like Kant, attempt to vindicate for men a

freedom out of space and time; but he acknowledges him to be subject

to the influence of external causes, and leaves hardly any place

for freedom of the will. The lusts of men are caused by their bodily

constitution, though they may be increased by bad education and bad

laws, which implies that they may be decreased by good education and

good laws. He appears to have an inkling of the truth that to the higher

nature of man evil is involuntary. This is mixed up with the view which,

while apparently agreeing with it, is in reality the opposite of it,

that vice is due to physical causes. In the Timaeus, as well as in the

Laws, he also regards vices and crimes as simply involuntary; they are

diseases analogous to the diseases of the body, and arising out of the

same causes. If we draw together the opposite poles of Plato's system,

we find that, like Spinoza, he combines idealism with fatalism.

The soul of man is divided by him into three parts, answering roughly

to the charioteer and steeds of the Phaedrus, and to the (Greek) of the

Republic and Nicomachean Ethics. First, there is the immortal nature

of which the brain is the seat, and which is akin to the soul of the

universe. This alone thinks and knows and is the ruler of the whole.

Secondly, there is the higher mortal soul which, though liable to

perturbations of her own, takes the side of reason against the lower

appetites. The seat of this is the heart, in which courage, anger, and

all the nobler affections are supposed to reside. There the veins all

meet; it is their centre or house of guard whence they carry the orders

of the thinking being to the extremities of his kingdom. There is also

a third or appetitive soul, which receives the commands of the immortal

part, not immediately but mediately, through the liver, which reflects

on its surface the admonitions and threats of the reason.

The liver is imagined by Plato to be a smooth and bright substance,

having a store of sweetness and also of bitterness, which reason freely

uses in the execution of her mandates. In this region, as ancient

superstition told, were to be found intimations of the future. But

Plato is careful to observe that although such knowledge is given to the

inferior parts of man, it requires to be interpreted by the superior.

Reason, and not enthusiasm, is the true guide of man; he is only

inspired when he is demented by some distemper or possession. The

ancient saying, that 'only a man in his senses can judge of his own

actions,' is approved by modern philosophy too. The same irony which

appears in Plato's remark, that 'the men of old time must surely have

known the gods who were their ancestors, and we should believe them as

custom requires,' is also manifest in his account of divination.

The appetitive soul is seated in the belly, and there imprisoned like

a wild beast, far away from the council chamber, as Plato graphically

calls the head, in order that the animal passions may not interfere with

the deliberations of reason. Though the soul is said by him to be prior

to the body, yet we cannot help seeing that it is constructed on the

model of the body--the threefold division into the rational, passionate,

and appetitive corresponding to the head, heart and belly. The human

soul differs from the soul of the world in this respect, that it is

enveloped and finds its expression in matter, whereas the soul of the

world is not only enveloped or diffused in matter, but is the element

in which matter moves. The breath of man is within him, but the air or

aether of heaven is the element which surrounds him and all things.

Pleasure and pain are attributed in the Timaeus to the suddenness of our

sensations--the first being a sudden restoration, the second a sudden

violation, of nature (Phileb.). The sensations become conscious to us

when they are exceptional. Sight is not attended either by pleasure or

pain, but hunger and the appeasing of hunger are pleasant and painful

because they are extraordinary.

Section 6.

I shall not attempt to connect the physiological speculations of Plato

either with ancient or modern medicine. What light I can throw upon them

will be derived from the comparison of them with his general system.

There is no principle so apparent in the physics of the Timaeus, or in

ancient physics generally, as that of continuity. The world is conceived

of as a whole, and the elements are formed into and out of one another;

the varieties of substances and processes are hardly known or noticed.

And in a similar manner the human body is conceived of as a whole, and

the different substances of which, to a superficial observer, it appears

to be composed--the blood, flesh, sinews--like the elements out of which

they are formed, are supposed to pass into one another in regular order,

while the infinite complexity of the human frame remains unobserved. And

diseases arise from the opposite process--when the natural proportions

of the four elements are disturbed, and the secondary substances which

are formed out of them, namely, blood, flesh, sinews, are generated in

an inverse order.

Plato found heat and air within the human frame, and the blood

circulating in every part. He assumes in language almost unintelligible

to us that a network of fire and air envelopes the greater part of the

body. This outer net contains two lesser nets, one corresponding to

the stomach, the other to the lungs; and the entrance to the latter is

forked or divided into two passages which lead to the nostrils and to

the mouth. In the process of respiration the external net is said to

find a way in and out of the pores of the skin: while the interior of

it and the lesser nets move alternately into each other. The whole

description is figurative, as Plato himself implies when he speaks of a

'fountain of fire which we compare to the network of a creel.' He really

means by this what we should describe as a state of heat or temperature

in the interior of the body. The 'fountain of fire' or heat is also in a

figure the circulation of the blood. The passage is partly imagination,

partly fact.

He has a singular theory of respiration for which he accounts solely by

the movement of the air in and out of the body; he does not attribute

any part of the process to the action of the body itself. The air has

a double ingress and a double exit, through the mouth or nostrils, and

through the skin. When exhaled through the mouth or nostrils, it leaves

a vacuum which is filled up by other air finding a way in through the

pores, this air being thrust out of its place by the exhalation from the

mouth and nostrils. There is also a corresponding process of inhalation

through the mouth or nostrils, and of exhalation through the pores. The

inhalation through the pores appears to take place nearly at the same

time as the exhalation through the mouth; and conversely. The internal

fire is in either case the propelling cause outwards--the inhaled air,

when heated by it, having a natural tendency to move out of the body to

the place of fire; while the impossibility of a vacuum is the propelling

cause inwards.

Thus we see that this singular theory is dependent on two principles

largely employed by Plato in explaining the operations of nature, the

impossibility of a vacuum and the attraction of like to like. To these

there has to be added a third principle, which is the condition of

the action of the other two,--the interpenetration of particles in

proportion to their density or rarity. It is this which enables fire and

air to permeate the flesh.

Plato's account of digestion and the circulation of the blood is closely

connected with his theory of respiration. Digestion is supposed to be

effected by the action of the internal fire, which in the process of

respiration moves into the stomach and minces the food. As the fire

returns to its place, it takes with it the minced food or blood; and in

this way the veins are replenished. Plato does not enquire how the blood

is separated from the faeces.

Of the anatomy and functions of the body he knew very little,--e.g.

of the uses of the nerves in conveying motion and sensation, which he

supposed to be communicated by the bones and veins; he was also ignorant

of the distinction between veins and arteries;--the latter term

he applies to the vessels which conduct air from the mouth to the

lungs;--he supposes the lung to be hollow and bloodless; the spinal

marrow he conceives to be the seed of generation; he confuses the parts

of the body with the states of the body--the network of fire and air is

spoken of as a bodily organ; he has absolutely no idea of the phenomena

of respiration, which he attributes to a law of equalization in nature,

the air which is breathed out displacing other air which finds a way

in; he is wholly unacquainted with the process of digestion. Except the

general divisions into the spleen, the liver, the belly, and the lungs,

and the obvious distinctions of flesh, bones, and the limbs of the body,

we find nothing that reminds us of anatomical facts. But we find much

which is derived from his theory of the universe, and transferred

to man, as there is much also in his theory of the universe which is

suggested by man. The microcosm of the human body is the lesser image of

the macrocosm. The courses of the same and the other affect both; they

are made of the same elements and therefore in the same proportions.

Both are intelligent natures endued with the power of self-motion,

and the same equipoise is maintained in both. The animal is a sort of

'world' to the particles of the blood which circulate in it. All the

four elements entered into the original composition of the human frame;

the bone was formed out of smooth earth; liquids of various kinds pass

to and fro; the network of fire and air irrigates the veins. Infancy

and childhood is the chaos or first turbid flux of sense prior to the

establishment of order; the intervals of time which may be observed in

some intermittent fevers correspond to the density of the elements. The

spinal marrow, including the brain, is formed out of the finest sorts of

triangles, and is the connecting link between body and mind. Health is

only to be preserved by imitating the motions of the world in space,

which is the mother and nurse of generation. The work of digestion

is carried on by the superior sharpness of the triangles forming the

substances of the human body to those which are introduced into it in

the shape of food. The freshest and acutest forms of triangles are those

that are found in children, but they become more obtuse with advancing

years; and when they finally wear out and fall to pieces, old age and

death supervene.

As in the Republic, Plato is still the enemy of the purgative treatment

of physicians, which, except in extreme cases, no man of sense will ever

adopt. For, as he adds, with an insight into the truth, 'every disease

is akin to the nature of the living being and is only irritated by

stimulants.' He is of opinion that nature should be left to herself, and

is inclined to think that physicians are in vain (Laws--where he says

that warm baths would be more beneficial to the limbs of the aged rustic

than the prescriptions of a not over-wise doctor). If he seems to be

extreme in his condemnation of medicine and to rely too much on diet and

exercise, he might appeal to nearly all the best physicians of our own

age in support of his opinions, who often speak to their patients of the

worthlessness of drugs. For we ourselves are sceptical about medicine,

and very unwilling to submit to the purgative treatment of physicians.

May we not claim for Plato an anticipation of modern ideas as about some

questions of astronomy and physics, so also about medicine? As in the

Charmides he tells us that the body cannot be cured without the soul,

so in the Timaeus he strongly asserts the sympathy of soul and body;

any defect of either is the occasion of the greatest discord and

disproportion in the other. Here too may be a presentiment that in the

medicine of the future the interdependence of mind and body will be more

fully recognized, and that the influence of the one over the other may

be exerted in a manner which is not now thought possible.

Section 7.

In Plato's explanation of sensation we are struck by the fact that

he has not the same distinct conception of organs of sense which is

familiar to ourselves. The senses are not instruments, but rather

passages, through which external objects strike upon the mind. The eye

is the aperture through which the stream of vision passes, the ear is

the aperture through which the vibrations of sound pass. But that the

complex structure of the eye or the ear is in any sense the cause of

sight and hearing he seems hardly to be aware.

The process of sight is the most complicated (Rep.), and consists of

three elements--the light which is supposed to reside within the eye,

the light of the sun, and the light emitted from external objects. When

the light of the eye meets the light of the sun, and both together meet

the light issuing from an external object, this is the simple act of

sight. When the particles of light which proceed from the object are

exactly equal to the particles of the visual ray which meet them from

within, then the body is transparent. If they are larger and contract

the visual ray, a black colour is produced; if they are smaller and

dilate it, a white. Other phenomena are produced by the variety and

motion of light. A sudden flash of fire at once elicits light and

moisture from the eye, and causes a bright colour. A more subdued light,

on mingling with the moisture of the eye, produces a red colour. Out

of these elements all other colours are derived. All of them are

combinations of bright and red with white and black. Plato himself tells

us that he does not know in what proportions they combine, and he is of

opinion that such knowledge is granted to the gods only. To have seen

the affinity of them to each other and their connection with light, is

not a bad basis for a theory of colours. We must remember that they were

not distinctly defined to his, as they are to our eyes; he saw them, not

as they are divided in the prism, or artificially manufactured for the

painter's use, but as they exist in nature, blended and confused with

one another.

We can hardly agree with him when he tells us that smells do not admit

of kinds. He seems to think that no definite qualities can attach to

bodies which are in a state of transition or evaporation; he also makes

the subtle observation that smells must be denser than air, though

thinner than water, because when there is an obstruction to the

breathing, air can penetrate, but not smell.

The affections peculiar to the tongue are of various kinds, and, like

many other affections, are caused by contraction and dilation. Some of

them are produced by rough, others by abstergent, others by inflammatory

substances,--these act upon the testing instruments of the tongue, and

produce a more or less disagreeable sensation, while other particles

congenial to the tongue soften and harmonize them. The instruments of

taste reach from the tongue to the heart. Plato has a lively sense of

the manner in which sensation and motion are communicated from one part

of the body to the other, though he confuses the affections with the

organs. Hearing is a blow which passes through the ear and ends in the

region of the liver, being transmitted by means of the air, the brain,

and the blood to the soul. The swifter sound is acute, the sound which

moves slowly is grave. A great body of sound is loud, the opposite

is low. Discord is produced by the swifter and slower motions of two

sounds, and is converted into harmony when the swifter motions begin to

pause and are overtaken by the slower.

The general phenomena of sensation are partly internal, but the more

violent are caused by conflict with external objects. Proceeding by a

method of superficial observation, Plato remarks that the more sensitive

parts of the human frame are those which are least covered by flesh,

as is the case with the head and the elbows. Man, if his head had been

covered with a thicker pulp of flesh, might have been a longer-lived

animal than he is, but could not have had as quick perceptions. On the

other hand, the tongue is one of the most sensitive of organs; but then

this is made, not to be a covering to the bones which contain the marrow

or source of life, but with an express purpose, and in a separate mass.

Section 8.

We have now to consider how far in any of these speculations Plato

approximated to the discoveries of modern science. The modern physical

philosopher is apt to dwell exclusively on the absurdities of ancient

ideas about science, on the haphazard fancies and a priori assumptions

of ancient teachers, on their confusion of facts and ideas, on their

inconsistency and blindness to the most obvious phenomena. He measures

them not by what preceded them, but by what has followed them. He does

not consider that ancient physical philosophy was not a free enquiry,

but a growth, in which the mind was passive rather than active, and

was incapable of resisting the impressions which flowed in upon it.

He hardly allows to the notions of the ancients the merit of being the

stepping-stones by which he has himself risen to a higher knowledge. He

never reflects, how great a thing it was to have formed a conception,

however imperfect, either of the human frame as a whole, or of the world

as a whole. According to the view taken in these volumes the errors of

ancient physicists were not separable from the intellectual conditions

under which they lived. Their genius was their own; and they were not

the rash and hasty generalizers which, since the days of Bacon, we

have been apt to suppose them. The thoughts of men widened to receive

experience; at first they seemed to know all things as in a dream: after

a while they look at them closely and hold them in their hands. They

begin to arrange them in classes and to connect causes with effects.

General notions are necessary to the apprehension of particular facts,

the metaphysical to the physical. Before men can observe the world, they

must be able to conceive it.

To do justice to the subject, we should consider the physical philosophy

of the ancients as a whole; we should remember, (1) that the nebular

theory was the received belief of several of the early physicists; (2)

that the development of animals out of fishes who came to land, and of

man out of the animals, was held by Anaximander in the sixth century

before Christ (Plut. Symp. Quaest; Plac. Phil.); (3) that even by

Philolaus and the early Pythagoreans, the earth was held to be a body

like the other stars revolving in space around the sun or a central

fire; (4) that the beginnings of chemistry are discernible in the

'similar particles' of Anaxagoras. Also they knew or thought (5) that

there was a sex in plants as well as in animals; (6) they were aware

that musical notes depended on the relative length or tension of the

strings from which they were emitted, and were measured by ratios

of number; (7) that mathematical laws pervaded the world; and even

qualitative differences were supposed to have their origin in number and

figure; (8) the annihilation of matter was denied by several of them,

and the seeming disappearance of it held to be a transformation only.

For, although one of these discoveries might have been supposed to be

a happy guess, taken together they seem to imply a great advance and

almost maturity of natural knowledge.

We should also remember, when we attribute to the ancients hasty

generalizations and delusions of language, that physical philosophy and

metaphysical too have been guilty of similar fallacies in quite recent

times. We by no means distinguish clearly between mind and body, between

ideas and facts. Have not many discussions arisen about the Atomic

theory in which a point has been confused with a material atom? Have not

the natures of things been explained by imaginary entities, such as

life or phlogiston, which exist in the mind only? Has not disease been

regarded, like sin, sometimes as a negative and necessary, sometimes as

a positive or malignant principle? The 'idols' of Bacon are nearly as

common now as ever; they are inherent in the human mind, and when they

have the most complete dominion over us, we are least able to perceive

them. We recognize them in the ancients, but we fail to see them in

ourselves.

Such reflections, although this is not the place in which to dwell upon

them at length, lead us to take a favourable view of the speculations

of the Timaeus. We should consider not how much Plato actually knew, but

how far he has contributed to the general ideas of physics, or supplied

the notions which, whether true or false, have stimulated the minds

of later generations in the path of discovery. Some of them may seem

old-fashioned, but may nevertheless have had a great influence in

promoting system and assisting enquiry, while in others we hear the

latest word of physical or metaphysical philosophy. There is also an

intermediate class, in which Plato falls short of the truths of modern

science, though he is not wholly unacquainted with them. (1) To the

first class belongs the teleological theory of creation. Whether all

things in the world can be explained as the result of natural laws, or

whether we must not admit of tendencies and marks of design also, has

been a question much disputed of late years. Even if all phenomena are

the result of natural forces, we must admit that there are many things

in heaven and earth which are as well expressed under the image of mind

or design as under any other. At any rate, the language of Plato has

been the language of natural theology down to our own time, nor can any

description of the world wholly dispense with it. The notion of first

and second or co-operative causes, which originally appears in the

Timaeus, has likewise survived to our own day, and has been a great

peace-maker between theology and science. Plato also approaches very

near to our doctrine of the primary and secondary qualities of matter.

(2) Another popular notion which is found in the Timaeus, is the

feebleness of the human intellect--'God knows the original qualities of

things; man can only hope to attain to probability.' We speak in almost

the same words of human intelligence, but not in the same manner of the

uncertainty of our knowledge of nature. The reason is that the latter is

assured to us by experiment, and is not contrasted with the certainty

of ideal or mathematical knowledge. But the ancient philosopher never

experimented: in the Timaeus Plato seems to have thought that there

would be impiety in making the attempt; he, for example, who tried

experiments in colours would 'forget the difference of the human and

divine natures.' Their indefiniteness is probably the reason why he

singles them out, as especially incapable of being tested by experiment.

(Compare the saying of Anaxagoras--Sext. Pyrrh.--that since snow is made

of water and water is black, snow ought to be black.)

The greatest 'divination' of the ancients was the supremacy which they

assigned to mathematics in all the realms of nature; for in all of them

there is a foundation of mechanics. Even physiology partakes of figure

and number; and Plato is not wrong in attributing them to the human

frame, but in the omission to observe how little could be explained by

them. Thus we may remark in passing that the most fanciful of ancient

philosophies is also the most nearly verified in fact. The fortunate

guess that the world is a sum of numbers and figures has been the most

fruitful of anticipations. The 'diatonic' scale of the Pythagoreans

and Plato suggested to Kepler that the secret of the distances of the

planets from one another was to be found in mathematical proportions.

The doctrine that the heavenly bodies all move in a circle is known by

us to be erroneous; but without such an error how could the human mind

have comprehended the heavens? Astronomy, even in modern times, has

made far greater progress by the high a priori road than could have been

attained by any other. Yet, strictly speaking--and the remark applies

to ancient physics generally--this high a priori road was based upon a

posteriori grounds. For there were no facts of which the ancients were

so well assured by experience as facts of number. Having observed that

they held good in a few instances, they applied them everywhere; and in

the complexity, of which they were capable, found the explanation of the

equally complex phenomena of the universe. They seemed to see them in

the least things as well as in the greatest; in atoms, as well as in

suns and stars; in the human body as well as in external nature. And

now a favourite speculation of modern chemistry is the explanation of

qualitative difference by quantitative, which is at present verified to

a certain extent and may hereafter be of far more universal application.

What is this but the atoms of Democritus and the triangles of Plato? The

ancients should not be wholly deprived of the credit of their guesses

because they were unable to prove them. May they not have had, like the

animals, an instinct of something more than they knew?

Besides general notions we seem to find in the Timaeus some more precise

approximations to the discoveries of modern physical science. First,

the doctrine of equipoise. Plato affirms, almost in so many words, that

nature abhors a vacuum. Whenever a particle is displaced, the rest push

and thrust one another until equality is restored. We must remember that

these ideas were not derived from any definite experiment, but were the

original reflections of man, fresh from the first observation of nature.

The latest word of modern philosophy is continuity and development,

but to Plato this is the beginning and foundation of science; there is

nothing that he is so strongly persuaded of as that the world is one,

and that all the various existences which are contained in it are only

the transformations of the same soul of the world acting on the same

matter. He would have readily admitted that out of the protoplasm all

things were formed by the gradual process of creation; but he would have

insisted that mind and intelligence--not meaning by this, however,

a conscious mind or person--were prior to them, and could alone have

created them. Into the workings of this eternal mind or intelligence he

does not enter further; nor would there have been any use in attempting

to investigate the things which no eye has seen nor any human language

can express.

Lastly, there remain two points in which he seems to touch great

discoveries of modern times--the law of gravitation, and the circulation

of the blood.

(1) The law of gravitation, according to Plato, is a law, not only of

the attraction of lesser bodies to larger ones, but of similar bodies to

similar, having a magnetic power as well as a principle of gravitation.

He observed that earth, water, and air had settled down to their places,

and he imagined fire or the exterior aether to have a place beyond air.

When air seemed to go upwards and fire to pierce through air--when water

and earth fell downward, they were seeking their native elements. He did

not remark that his own explanation did not suit all phenomena; and the

simpler explanation, which assigns to bodies degrees of heaviness and

lightness proportioned to the mass and distance of the bodies which

attract them, never occurred to him. Yet the affinities of similar

substances have some effect upon the composition of the world, and

of this Plato may be thought to have had an anticipation. He may be

described as confusing the attraction of gravitation with the attraction

of cohesion. The influence of such affinities and the chemical action of

one body upon another in long periods of time have become a recognized

principle of geology.

(2) Plato is perfectly aware--and he could hardly be ignorant--that

blood is a fluid in constant motion. He also knew that blood is partly a

solid substance consisting of several elements, which, as he might have

observed in the use of 'cupping-glasses', decompose and die, when no

longer in motion. But the specific discovery that the blood flows out on

one side of the heart through the arteries and returns through the veins

on the other, which is commonly called the circulation of the blood, was

absolutely unknown to him.

A further study of the Timaeus suggests some after-thoughts which may be

conveniently brought together in this place. The topics which I propose

briefly to reconsider are (a) the relation of the Timaeus to the other

dialogues of Plato and to the previous philosophy; (b) the nature of God

and of creation (c) the morality of the Timaeus:--

(a) The Timaeus is more imaginative and less scientific than any other

of the Platonic dialogues. It is conjectural astronomy, conjectural

natural philosophy, conjectural medicine. The writer himself is

constantly repeating that he is speaking what is probable only. The

dialogue is put into the mouth of Timaeus, a Pythagorean philosopher,

and therefore here, as in the Parmenides, we are in doubt how far Plato

is expressing his own sentiments. Hence the connexion with the other

dialogues is comparatively slight. We may fill up the lacunae of the

Timaeus by the help of the Republic or Phaedrus: we may identify the

same and other with the (Greek) of the Philebus. We may find in the Laws

or in the Statesman parallels with the account of creation and of the

first origin of man. It would be possible to frame a scheme in which all

these various elements might have a place. But such a mode of proceeding

would be unsatisfactory, because we have no reason to suppose that Plato

intended his scattered thoughts to be collected in a system. There is a

common spirit in his writings, and there are certain general principles,

such as the opposition of the sensible and intellectual, and the

priority of mind, which run through all of them; but he has no definite

forms of words in which he consistently expresses himself. While

the determinations of human thought are in process of creation he is

necessarily tentative and uncertain. And there is least of definiteness,

whenever either in describing the beginning or the end of the world, he

has recourse to myths. These are not the fixed modes in which spiritual

truths are revealed to him, but the efforts of imagination, by which

at different times and in various manners he seeks to embody his

conceptions. The clouds of mythology are still resting upon him, and he

has not yet pierced 'to the heaven of the fixed stars' which is beyond

them. It is safer then to admit the inconsistencies of the Timaeus,

or to endeavour to fill up what is wanting from our own imagination,

inspired by a study of the dialogue, than to refer to other Platonic

writings,--and still less should we refer to the successors of

Plato,--for the elucidation of it.

More light is thrown upon the Timaeus by a comparison of the previous

philosophies. For the physical science of the ancients was traditional,

descending through many generations of Ionian and Pythagorean

philosophers. Plato does not look out upon the heavens and describe what

he sees in them, but he builds upon the foundations of others, adding

something out of the 'depths of his own self-consciousness.' Socrates

had already spoken of God the creator, who made all things for the best.

While he ridiculed the superficial explanations of phenomena which were

current in his age, he recognised the marks both of benevolence and of

design in the frame of man and in the world. The apparatus of winds and

waters is contemptuously rejected by him in the Phaedo, but he thinks

that there is a power greater than that of any Atlas in the 'Best'

(Phaedo; Arist. Met.). Plato, following his master, affirms this

principle of the best, but he acknowledges that the best is limited by

the conditions of matter. In the generation before Socrates, Anaxagoras

had brought together 'Chaos' and 'Mind'; and these are connected by

Plato in the Timaeus, but in accordance with his own mode of thinking he

has interposed between them the idea or pattern according to which mind

worked. The circular impulse (Greek) of the one philosopher answers to

the circular movement (Greek) of the other. But unlike Anaxagoras, Plato

made the sun and stars living beings and not masses of earth or metal.

The Pythagoreans again had framed a world out of numbers, which they

constructed into figures. Plato adopted their speculations and improved

upon them by a more exact knowledge of geometry. The Atomists too made

the world, if not out of geometrical figures, at least out of different

forms of atoms, and these atoms resembled the triangles of Plato in

being too small to be visible. But though the physiology of the Timaeus

is partly borrowed from them, they are either ignored by Plato or

referred to with a secret contempt and dislike. He looks with more

favour on the Pythagoreans, whose intervals of number applied to the

distances of the planets reappear in the Timaeus. It is probable that

among the Pythagoreans living in the fourth century B.C., there were

already some who, like Plato, made the earth their centre. Whether he

obtained his circles of the Same and Other from any previous thinker is

uncertain. The four elements are taken from Empedocles; the interstices

of the Timaeus may also be compared with his (Greek). The passage of one

element into another is common to Heracleitus and several of the Ionian

philosophers. So much of a syncretist is Plato, though not after the

manner of the Neoplatonists. For the elements which he borrows from

others are fused and transformed by his own genius. On the other hand

we find fewer traces in Plato of early Ionic or Eleatic speculation. He

does not imagine the world of sense to be made up of opposites or to

be in a perpetual flux, but to vary within certain limits which are

controlled by what he calls the principle of the same. Unlike the

Eleatics, who relegated the world to the sphere of not-being, he admits

creation to have an existence which is real and even eternal, although

dependent on the will of the creator. Instead of maintaining the

doctrine that the void has a necessary place in the existence of the

world, he rather affirms the modern thesis that nature abhors a vacuum,

as in the Sophist he also denies the reality of not-being (Aristot.

Metaph.). But though in these respects he differs from them, he is

deeply penetrated by the spirit of their philosophy; he differs from

them with reluctance, and gladly recognizes the 'generous depth' of

Parmenides (Theaet.).

There is a similarity between the Timaeus and the fragments of

Philolaus, which by some has been thought to be so great as to create a

suspicion that they are derived from it. Philolaus is known to us from

the Phaedo of Plato as a Pythagorean philosopher residing at Thebes in

the latter half of the fifth century B.C., after the dispersion of the

original Pythagorean society. He was the teacher of Simmias and Cebes,

who became disciples of Socrates. We have hardly any other information

about him. The story that Plato had purchased three books of his

writings from a relation is not worth repeating; it is only a fanciful

way in which an ancient biographer dresses up the fact that there was

supposed to be a resemblance between the two writers. Similar gossiping

stories are told about the sources of the Republic and the Phaedo.

That there really existed in antiquity a work passing under the name of

Philolaus there can be no doubt. Fragments of this work are preserved

to us, chiefly in Stobaeus, a few in Boethius and other writers. They

remind us of the Timaeus, as well as of the Phaedrus and Philebus.

When the writer says (Stob. Eclog.) that all things are either finite

(definite) or infinite (indefinite), or a union of the two, and that

this antithesis and synthesis pervades all art and nature, we are

reminded of the Philebus. When he calls the centre of the world (Greek),

we have a parallel to the Phaedrus. His distinction between the world of

order, to which the sun and moon and the stars belong, and the world

of disorder, which lies in the region between the moon and the earth,

approximates to Plato's sphere of the Same and of the Other. Like Plato

(Tim.), he denied the above and below in space, and said that all things

were the same in relation to a centre. He speaks also of the world as

one and indestructible: 'for neither from within nor from without

does it admit of destruction' (Tim). He mentions ten heavenly bodies,

including the sun and moon, the earth and the counter-earth (Greek), and

in the midst of them all he places the central fire, around which they

are moving--this is hidden from the earth by the counter-earth. Of

neither is there any trace in Plato, who makes the earth the centre

of his system. Philolaus magnifies the virtues of particular numbers,

especially of the number 10 (Stob. Eclog.), and descants upon odd and

even numbers, after the manner of the later Pythagoreans. It is worthy

of remark that these mystical fancies are nowhere to be found in the

writings of Plato, although the importance of number as a form and also

an instrument of thought is ever present to his mind. Both Philolaus

and Plato agree in making the world move in certain numerical ratios

according to a musical scale: though Bockh is of opinion that the two

scales, of Philolaus and of the Timaeus, do not correspond...We appear

not to be sufficiently acquainted with the early Pythagoreans to know

how far the statements contained in these fragments corresponded with

their doctrines; and we therefore cannot pronounce, either in favour

of the genuineness of the fragments, with Bockh and Zeller, or, with

Valentine Rose and Schaarschmidt, against them. But it is clear that

they throw but little light upon the Timaeus, and that their resemblance

to it has been exaggerated.

That there is a degree of confusion and indistinctness in Plato's

account both of man and of the universe has been already acknowledged.

We cannot tell (nor could Plato himself have told) where the figure or

myth ends and the philosophical truth begins; we cannot explain (nor

could Plato himself have explained to us) the relation of the ideas to

appearance, of which one is the copy of the other, and yet of all things

in the world they are the most opposed and unlike. This opposition is

presented to us in many forms, as the antithesis of the one and many,

of the finite and infinite, of the intelligible and sensible, of the

unchangeable and the changing, of the indivisible and the divisible, of

the fixed stars and the planets, of the creative mind and the primeval

chaos. These pairs of opposites are so many aspects of the great

opposition between ideas and phenomena--they easily pass into one

another; and sometimes the two members of the relation differ in

kind, sometimes only in degree. As in Aristotle's matter and form the

connexion between them is really inseparable; for if we attempt

to separate them they become devoid of content and therefore

indistinguishable; there is no difference between the idea of which

nothing can be predicated, and the chaos or matter which has no

perceptible qualities--between Being in the abstract and Nothing. Yet

we are frequently told that the one class of them is the reality and the

other appearance; and one is often spoken of as the double or reflection

of the other. For Plato never clearly saw that both elements had an

equal place in mind and in nature; and hence, especially when we argue

from isolated passages in his writings, or attempt to draw what appear

to us to be the natural inferences from them, we are full of perplexity.

There is a similar confusion about necessity and free-will, and about

the state of the soul after death. Also he sometimes supposes that God

is immanent in the world, sometimes that he is transcendent. And having

no distinction of objective and subjective, he passes imperceptibly

from one to the other; from intelligence to soul, from eternity to time.

These contradictions may be softened or concealed by a judicious use

of language, but they cannot be wholly got rid of. That an age of

intellectual transition must also be one of inconsistency; that the

creative is opposed to the critical or defining habit of mind or time,

has been often repeated by us. But, as Plato would say, 'there is no

harm in repeating twice or thrice' (Laws) what is important for the

understanding of a great author.

It has not, however, been observed, that the confusion partly arises out

of the elements of opposing philosophies which are preserved in him. He

holds these in solution, he brings them into relation with one another,

but he does not perfectly harmonize them. They are part of his own mind,

and he is incapable of placing himself outside of them and criticizing

them. They grow as he grows; they are a kind of composition with which

his own philosophy is overlaid. In early life he fancies that he

has mastered them: but he is also mastered by them; and in language

(Sophist) which may be compared with the hesitating tone of the Timaeus,

he confesses in his later years that they are full of obscurity to him.

He attributes new meanings to the words of Parmenides and Heracleitus;

but at times the old Eleatic philosophy appears to go beyond him; then

the world of phenomena disappears, but the doctrine of ideas is also

reduced to nothingness. All of them are nearer to one another than they

themselves supposed, and nearer to him than he supposed. All of them are

antagonistic to sense and have an affinity to number and measure and a

presentiment of ideas. Even in Plato they still retain their contentious

or controversial character, which was developed by the growth of

dialectic. He is never able to reconcile the first causes of the

pre-Socratic philosophers with the final causes of Socrates himself.

There is no intelligible account of the relation of numbers to the

universal ideas, or of universals to the idea of good. He found them all

three, in the Pythagorean philosophy and in the teaching of Socrates and

of the Megarians respectively; and, because they all furnished modes of

explaining and arranging phenomena, he is unwilling to give up any of

them, though he is unable to unite them in a consistent whole.

Lastly, Plato, though an idealist philosopher, is Greek and not Oriental

in spirit and feeling. He is no mystic or ascetic; he is not seeking in

vain to get rid of matter or to find absorption in the divine nature, or

in the Soul of the universe. And therefore we are not surprised to find

that his philosophy in the Timaeus returns at last to a worship of the

heavens, and that to him, as to other Greeks, nature, though containing

a remnant of evil, is still glorious and divine. He takes away or drops

the veil of mythology, and presents her to us in what appears to him to

be the form-fairer and truer far--of mathematical figures. It is this

element in the Timaeus, no less than its affinity to certain Pythagorean

speculations, which gives it a character not wholly in accordance with

the other dialogues of Plato.

(b) The Timaeus contains an assertion perhaps more distinct than is

found in any of the other dialogues (Rep.; Laws) of the goodness of God.

'He was good himself, and he fashioned the good everywhere.' He was not

'a jealous God,' and therefore he desired that all other things should

be equally good. He is the IDEA of good who has now become a person, and

speaks and is spoken of as God. Yet his personality seems to appear only

in the act of creation. In so far as he works with his eye fixed upon an

eternal pattern he is like the human artificer in the Republic. Here the

theory of Platonic ideas intrudes upon us. God, like man, is supposed to

have an ideal of which Plato is unable to tell us the origin. He may be

said, in the language of modern philosophy, to resolve the divine mind

into subject and object.

The first work of creation is perfected, the second begins under the

direction of inferior ministers. The supreme God is withdrawn from

the world and returns to his own accustomed nature (Tim.). As in the

Statesman, he retires to his place of view. So early did the Epicurean

doctrine take possession of the Greek mind, and so natural is it to the

heart of man, when he has once passed out of the stage of mythology into

that of rational religion. For he sees the marks of design in the world;

but he no longer sees or fancies that he sees God walking in the garden

or haunting stream or mountain. He feels also that he must put God as

far as possible out of the way of evil, and therefore he banishes him

from an evil world. Plato is sensible of the difficulty; and he often

shows that he is desirous of justifying the ways of God to man. Yet on

the other hand, in the Tenth Book of the Laws he passes a censure on

those who say that the Gods have no care of human things.

The creation of the world is the impression of order on a previously

existing chaos. The formula of Anaxagoras--'all things were in chaos or

confusion, and then mind came and disposed them'--is a summary of

the first part of the Timaeus. It is true that of a chaos without

differences no idea could be formed. All was not mixed but one;

and therefore it was not difficult for the later Platonists to draw

inferences by which they were enabled to reconcile the narrative of the

Timaeus with the Mosaic account of the creation. Neither when we

speak of mind or intelligence, do we seem to get much further in

our conception than circular motion, which was deemed to be the most

perfect. Plato, like Anaxagoras, while commencing his theory of the

universe with ideas of mind and of the best, is compelled in the

execution of his design to condescend to the crudest physics.

(c) The morality of the Timaeus is singular, and it is difficult to

adjust the balance between the two elements of it. The difficulty which

Plato feels, is that which all of us feel, and which is increased in our

own day by the progress of physical science, how the responsibility

of man is to be reconciled with his dependence on natural causes. And

sometimes, like other men, he is more impressed by one aspect of human

life, sometimes by the other. In the Republic he represents man as

freely choosing his own lot in a state prior to birth--a conception

which, if taken literally, would still leave him subject to the dominion

of necessity in his after life; in the Statesman he supposes the human

race to be preserved in the world only by a divine interposition; while

in the Timaeus the supreme God commissions the inferior deities to avert

from him all but self-inflicted evils--words which imply that all

the evils of men are really self-inflicted. And here, like Plato (the

insertion of a note in the text of an ancient writer is a literary

curiosity worthy of remark), we may take occasion to correct an error.

For we too hastily said that Plato in the Timaeus regarded all 'vices

and crimes as involuntary.' But the fact is that he is inconsistent

with himself; in one and the same passage vice is attributed to the

relaxation of the bodily frame, and yet we are exhorted to avoid it and

pursue virtue. It is also admitted that good and evil conduct are to be

attributed respectively to good and evil laws and institutions. These

cannot be given by individuals to themselves; and therefore human

actions, in so far as they are dependent upon them, are regarded by

Plato as involuntary rather than voluntary. Like other writers on this

subject, he is unable to escape from some degree of self-contradiction.

He had learned from Socrates that vice is ignorance, and suddenly the

doctrine seems to him to be confirmed by observing how much of the good

and bad in human character depends on the bodily constitution. So

in modern times the speculative doctrine of necessity has often been

supported by physical facts.

The Timaeus also contains an anticipation of the stoical life according

to nature. Man contemplating the heavens is to regulate his erring life

according to them. He is to partake of the repose of nature and of the

order of nature, to bring the variable principle in himself into harmony

with the principle of the same. The ethics of the Timaeus may be summed

up in the single idea of 'law.' To feel habitually that he is part of

the order of the universe, is one of the highest ethical motives of

which man is capable. Something like this is what Plato means when he

speaks of the soul 'moving about the same in unchanging thought of

the same.' He does not explain how man is acted upon by the lesser

influences of custom or of opinion; or how the commands of the soul

watching in the citadel are conveyed to the bodily organs. But this

perhaps, to use once more expressions of his own, 'is part of another

subject' or 'may be more suitably discussed on some other occasion.'

There is no difficulty, by the help of Aristotle and later writers, in

criticizing the Timaeus of Plato, in pointing out the inconsistencies

of the work, in dwelling on the ignorance of anatomy displayed by the

author, in showing the fancifulness or unmeaningness of some of his

reasons. But the Timaeus still remains the greatest effort of the human

mind to conceive the world as a whole which the genius of antiquity has

bequeathed to us.

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One more aspect of the Timaeus remains to be considered--the

mythological or geographical. Is it not a wonderful thing that a few

pages of one of Plato's dialogues have grown into a great legend, not

confined to Greece only, but spreading far and wide over the nations of

Europe and reaching even to Egypt and Asia? Like the tale of Troy,

or the legend of the Ten Tribes (Ewald, Hist. of Isr.), which perhaps

originated in a few verses of II Esdras, it has become famous, because

it has coincided with a great historical fact. Like the romance of King

Arthur, which has had so great a charm, it has found a way over the seas

from one country and language to another. It inspired the navigators of

the fifteenth and sixteenth centuries; it foreshadowed the discovery of

America. It realized the fiction so natural to the human mind, because

it answered the enquiry about the origin of the arts, that there had

somewhere existed an ancient primitive civilization. It might find a

place wherever men chose to look for it; in North, South, East, or

West; in the Islands of the Blest; before the entrance of the Straits

of Gibraltar, in Sweden or in Palestine. It mattered little whether the

description in Plato agreed with the locality assigned to it or not. It

was a legend so adapted to the human mind that it made a habitation for

itself in any country. It was an island in the clouds, which might be

seen anywhere by the eye of faith. It was a subject especially congenial

to the ponderous industry of certain French and Swedish writers, who

delighted in heaping up learning of all sorts but were incapable of

using it.

M. Martin has written a valuable dissertation on the opinions

entertained respecting the Island of Atlantis in ancient and modern

times. It is a curious chapter in the history of the human mind. The

tale of Atlantis is the fabric of a vision, but it has never ceased to

interest mankind. It was variously regarded by the ancients themselves.

The stronger heads among them, like Strabo and Longinus, were as little

disposed to believe in the truth of it as the modern reader in Gulliver

or Robinson Crusoe. On the other hand there is no kind or degree of

absurdity or fancy in which the more foolish writers, both of

antiquity and of modern times, have not indulged respecting it. The

Neo-Platonists, loyal to their master, like some commentators on the

Christian Scriptures, sought to give an allegorical meaning to what they

also believed to be an historical fact. It was as if some one in our own

day were to convert the poems of Homer into an allegory of the Christian

religion, at the same time maintaining them to be an exact and veritable

history. In the Middle Ages the legend seems to have been half-forgotten

until revived by the discovery of America. It helped to form the Utopia

of Sir Thomas More and the New Atlantis of Bacon, although probably

neither of those great men were at all imposed upon by the fiction.

It was most prolific in the seventeenth or in the early part of

the eighteenth century, when the human mind, seeking for Utopias or

inventing them, was glad to escape out of the dulness of the present

into the romance of the past or some ideal of the future. The later

forms of such narratives contained features taken from the Edda, as well

as from the Old and New Testament; also from the tales of missionaries

and the experiences of travellers and of colonists.

The various opinions respecting the Island of Atlantis have no interest

for us except in so far as they illustrate the extravagances of which

men are capable. But this is a real interest and a serious lesson, if

we remember that now as formerly the human mind is liable to be imposed

upon by the illusions of the past, which are ever assuming some new

form.

When we have shaken off the rubbish of ages, there remain one or two

questions of which the investigation has a permanent value:--

1. Did Plato derive the legend of Atlantis from an Egyptian source? It

may be replied that there is no such legend in any writer previous to

Plato; neither in Homer, nor in Pindar, nor in Herodotus is there any

mention of an Island of Atlantis, nor any reference to it in Aristotle,

nor any citation of an earlier writer by a later one in which it is

to be found. Nor have any traces been discovered hitherto in Egyptian

monuments of a connexion between Greece and Egypt older than the eighth

or ninth century B.C. It is true that Proclus, writing in the fifth

century after Christ, tells us of stones and columns in Egypt on which

the history of the Island of Atlantis was engraved. The statement may be

false--there are similar tales about columns set up 'by the Canaanites

whom Joshua drove out' (Procop.); but even if true, it would only show

that the legend, 800 years after the time of Plato, had been transferred

to Egypt, and inscribed, not, like other forgeries, in books, but on

stone. Probably in the Alexandrian age, when Egypt had ceased to have a

history and began to appropriate the legends of other nations, many such

monuments were to be found of events which had become famous in that or

other countries. The oldest witness to the story is said to be Crantor,

a Stoic philosopher who lived a generation later than Plato, and

therefore may have borrowed it from him. The statement is found in

Proclus; but we require better assurance than Proclus can give us before

we accept this or any other statement which he makes.

Secondly, passing from the external to the internal evidence, we may

remark that the story is far more likely to have been invented by Plato

than to have been brought by Solon from Egypt. That is another part of

his legend which Plato also seeks to impose upon us. The verisimilitude

which he has given to the tale is a further reason for suspecting it;

for he could easily 'invent Egyptian or any other tales' (Phaedrus). Are

not the words, 'The truth of the story is a great advantage,' if we read

between the lines, an indication of the fiction? It is only a legend

that Solon went to Egypt, and if he did he could not have conversed with

Egyptian priests or have read records in their temples. The truth is

that the introduction is a mosaic work of small touches which, partly

by their minuteness, and also by their seeming probability, win the

confidence of the reader. Who would desire better evidence than that

of Critias, who had heard the narrative in youth when the memory is

strongest at the age of ten from his grandfather Critias, an old man of

ninety, who in turn had heard it from Solon himself? Is not the famous

expression--'You Hellenes are ever children and there is no knowledge

among you hoary with age,' really a compliment to the Athenians who are

described in these words as 'ever young'? And is the thought expressed

in them to be attributed to the learning of the Egyptian priest, and not

rather to the genius of Plato? Or when the Egyptian says--'Hereafter at

our leisure we will take up the written documents and examine in detail

the exact truth about these things'--what is this but a literary trick

by which Plato sets off his narrative? Could any war between Athens and

the Island of Atlantis have really coincided with the struggle between

the Greeks and Persians, as is sufficiently hinted though not expressly

stated in the narrative of Plato? And whence came the tradition to

Egypt? or in what does the story consist except in the war between the

two rival powers and the submersion of both of them? And how was the

tale transferred to the poem of Solon? 'It is not improbable,' says Mr.

Grote, 'that Solon did leave an unfinished Egyptian poem' (Plato). But

are probabilities for which there is not a tittle of evidence, and

which are without any parallel, to be deemed worthy of attention by the

critic? How came the poem of Solon to disappear in antiquity? or why did

Plato, if the whole narrative was known to him, break off almost at the

beginning of it?

While therefore admiring the diligence and erudition of M. Martin,

we cannot for a moment suppose that the tale was told to Solon by an

Egyptian priest, nor can we believe that Solon wrote a poem upon the

theme which was thus suggested to him--a poem which disappeared in

antiquity; or that the Island of Atlantis or the antediluvian Athens

ever had any existence except in the imagination of Plato. Martin is of

opinion that Plato would have been terrified if he could have foreseen

the endless fancies to which his Island of Atlantis has given occasion.

Rather he would have been infinitely amused if he could have known that

his gift of invention would have deceived M. Martin himself into the

belief that the tradition was brought from Egypt by Solon and made the

subject of a poem by him. M. Martin may also be gently censured for

citing without sufficient discrimination ancient authors having very

different degrees of authority and value.

2. It is an interesting and not unimportant question which is touched

upon by Martin, whether the Atlantis of Plato in any degree held out

a guiding light to the early navigators. He is inclined to think that

there is no real connexion between them. But surely the discovery of the

New World was preceded by a prophetic anticipation of it, which, like

the hope of a Messiah, was entering into the hearts of men? And this

hope was nursed by ancient tradition, which had found expression from

time to time in the celebrated lines of Seneca and in many other places.

This tradition was sustained by the great authority of Plato, and

therefore the legend of the Island of Atlantis, though not closely

connected with the voyages of the early navigators, may be truly said to

have contributed indirectly to the great discovery.

The Timaeus of Plato, like the Protagoras and several portions of the

Phaedrus and Republic, was translated by Cicero into Latin. About a

fourth, comprehending with lacunae the first portion of the dialogue,

is preserved in several MSS. These generally agree, and therefore may

be supposed to be derived from a single original. The version is very

faithful, and is a remarkable monument of Cicero's skill in managing the

difficult and intractable Greek. In his treatise De Natura Deorum, he

also refers to the Timaeus, which, speaking in the person of Velleius

the Epicurean, he severely criticises.

The commentary of Proclus on the Timaeus is a wonderful monument of

the silliness and prolixity of the Alexandrian Age. It extends to

about thirty pages of the book, and is thirty times the length of the

original. It is surprising that this voluminous work should have found

a translator (Thomas Taylor, a kindred spirit, who was himself a

Neo-Platonist, after the fashion, not of the fifth or sixteenth, but of

the nineteenth century A.D.). The commentary is of little or no value,

either in a philosophical or philological point of view. The writer is

unable to explain particular passages in any precise manner, and he is

equally incapable of grasping the whole. He does not take words in their

simple meaning or sentences in their natural connexion. He is thinking,

not of the context in Plato, but of the contemporary Pythagorean

philosophers and their wordy strife. He finds nothing in the text

which he does not bring to it. He is full of Porphyry, Iamblichus and

Plotinus, of misapplied logic, of misunderstood grammar, and of the

Orphic theology.

Although such a work can contribute little or nothing to the

understanding of Plato, it throws an interesting light on the

Alexandrian times; it realizes how a philosophy made up of words only

may create a deep and widespread enthusiasm, how the forms of logic and

rhetoric may usurp the place of reason and truth, how all philosophies

grow faded and discoloured, and are patched and made up again like

worn-out garments, and retain only a second-hand existence. He who

would study this degeneracy of philosophy and of the Greek mind in the

original cannot do better than devote a few of his days and nights to

the commentary of Proclus on the Timaeus.

A very different account must be given of the short work entitled

'Timaeus Locrus,' which is a brief but clear analysis of the Timaeus

of Plato, omitting the introduction or dialogue and making a few small

additions. It does not allude to the original from which it is taken;

it is quite free from mysticism and Neo-Platonism. In length it does not

exceed a fifth part of the Timaeus. It is written in the Doric dialect,

and contains several words which do not occur in classical Greek. No

other indication of its date, except this uncertain one of language,

appears in it. In several places the writer has simplified the language

of Plato, in a few others he has embellished and exaggerated it. He

generally preserves the thought of the original, but does not copy the

words. On the whole this little tract faithfully reflects the meaning

and spirit of the Timaeus.

From the garden of the Timaeus, as from the other dialogues of Plato,

we may still gather a few flowers and present them at parting to

the reader. There is nothing in Plato grander and simpler than the

conversation between Solon and the Egyptian priest, in which the

youthfulness of Hellas is contrasted with the antiquity of Egypt. Here

are to be found the famous words, 'O Solon, Solon, you Hellenes are ever

young, and there is not an old man among you'--which may be compared

to the lively saying of Hegel, that 'Greek history began with the youth

Achilles and left off with the youth Alexander.' The numerous arts of

verisimilitude by which Plato insinuates into the mind of the reader

the truth of his narrative have been already referred to. Here occur

a sentence or two not wanting in Platonic irony (Greek--a word to the

wise). 'To know or tell the origin of the other divinities is beyond

us, and we must accept the traditions of the men of old time who affirm

themselves to be the offspring of the Gods--that is what they say--and

they must surely have known their own ancestors. How can we doubt the

word of the children of the Gods? Although they give no probable or

certain proofs, still, as they declare that they are speaking of what

took place in their own family, we must conform to custom and believe

them.' 'Our creators well knew that women and other animals would some

day be framed out of men, and they further knew that many animals would

require the use of nails for many purposes; wherefore they fashioned in

men at their first creation the rudiments of nails.' Or once more, let

us reflect on two serious passages in which the order of the world is

supposed to find a place in the human soul and to infuse harmony

into it. 'The soul, when touching anything that has essence, whether

dispersed in parts or undivided, is stirred through all her powers to

declare the sameness or difference of that thing and some other; and to

what individuals are related, and by what affected, and in what way

and how and when, both in the world of generation and in the world of

immutable being. And when reason, which works with equal truth, whether

she be in the circle of the diverse or of the same,--in voiceless

silence holding her onward course in the sphere of the self-moved,--when

reason, I say, is hovering around the sensible world, and when the

circle of the diverse also moving truly imparts the intimations of sense

to the whole soul, then arise opinions and beliefs sure and certain. But

when reason is concerned with the rational, and the circle of the

same moving smoothly declares it, then intelligence and knowledge

are necessarily perfected;' where, proceeding in a similar path of

contemplation, he supposes the inward and the outer world mutually to

imply each other. 'God invented and gave us sight to the end that we

might behold the courses of intelligence in the heaven, and apply them

to the courses of our own intelligence which are akin to them, the

unperturbed to the perturbed; and that we, learning them and partaking

of the natural truth of reason, might imitate the absolutely unerring

courses of God and regulate our own vagaries.' Or let us weigh carefully

some other profound thoughts, such as the following. 'He who neglects

education walks lame to the end of his life, and returns imperfect and

good for nothing to the world below.' 'The father and maker of all this

universe is past finding out; and even if we found him, to tell of him

to all men would be impossible.' 'Let me tell you then why the Creator

made this world of generation. He was good, and the good can never have

jealousy of anything. And being free from jealousy, he desired that all

things should be as like himself as they could be. This is in the truest

sense the origin of creation and of the world, as we shall do well in

believing on the testimony of wise men: God desired that all things

should be good and nothing bad, so far as this was attainable.' This

is the leading thought in the Timaeus, just as the IDEA of Good is

the leading thought of the Republic, the one expression describing the

personal, the other the impersonal Good or God, differing in form rather

than in substance, and both equally implying to the mind of Plato a

divine reality. The slight touch, perhaps ironical, contained in the

words, 'as we shall do well in believing on the testimony of wise men,'

is very characteristic of Plato.

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TIMAEUS.

PERSONS OF THE DIALOGUE: Socrates, Critias, Timaeus, Hermocrates.

SOCRATES: One, two, three; but where, my dear Timaeus, is the fourth of

those who were yesterday my guests and are to be my entertainers to-day?

TIMAEUS: He has been taken ill, Socrates; for he would not willingly

have been absent from this gathering.

SOCRATES: Then, if he is not coming, you and the two others must supply

his place.

TIMAEUS: Certainly, and we will do all that we can; having been

handsomely entertained by you yesterday, those of us who remain should

be only too glad to return your hospitality.

SOCRATES: Do you remember what were the points of which I required you

to speak?

TIMAEUS: We remember some of them, and you will be here to remind us

of anything which we have forgotten: or rather, if we are not troubling

you, will you briefly recapitulate the whole, and then the particulars

will be more firmly fixed in our memories?

SOCRATES: To be sure I will: the chief theme of my yesterday's discourse

was the State--how constituted and of what citizens composed it would

seem likely to be most perfect.

TIMAEUS: Yes, Socrates; and what you said of it was very much to our

mind.

SOCRATES: Did we not begin by separating the husbandmen and the artisans

from the class of defenders of the State?

TIMAEUS: Yes.

SOCRATES: And when we had given to each one that single employment and

particular art which was suited to his nature, we spoke of those

who were intended to be our warriors, and said that they were to be

guardians of the city against attacks from within as well as from

without, and to have no other employment; they were to be merciful in

judging their subjects, of whom they were by nature friends, but fierce

to their enemies, when they came across them in battle.

TIMAEUS: Exactly.

SOCRATES: We said, if I am not mistaken, that the guardians should

be gifted with a temperament in a high degree both passionate and

philosophical; and that then they would be as they ought to be, gentle

to their friends and fierce with their enemies.

TIMAEUS: Certainly.

SOCRATES: And what did we say of their education? Were they not to be

trained in gymnastic, and music, and all other sorts of knowledge which

were proper for them?

TIMAEUS: Very true.

SOCRATES: And being thus trained they were not to consider gold or

silver or anything else to be their own private property; they were to

be like hired troops, receiving pay for keeping guard from those who

were protected by them--the pay was to be no more than would suffice

for men of simple life; and they were to spend in common, and to live

together in the continual practice of virtue, which was to be their sole

pursuit.

TIMAEUS: That was also said.

SOCRATES: Neither did we forget the women; of whom we declared, that

their natures should be assimilated and brought into harmony with those

of the men, and that common pursuits should be assigned to them both in

time of war and in their ordinary life.

TIMAEUS: That, again, was as you say.

SOCRATES: And what about the procreation of children? Or rather was not

the proposal too singular to be forgotten? for all wives and children

were to be in common, to the intent that no one should ever know his own

child, but they were to imagine that they were all one family; those

who were within a suitable limit of age were to be brothers and sisters,

those who were of an elder generation parents and grandparents, and

those of a younger, children and grandchildren.

TIMAEUS: Yes, and the proposal is easy to remember, as you say.

SOCRATES: And do you also remember how, with a view of securing as far

as we could the best breed, we said that the chief magistrates, male

and female, should contrive secretly, by the use of certain lots, so to

arrange the nuptial meeting, that the bad of either sex and the good

of either sex might pair with their like; and there was to be no

quarrelling on this account, for they would imagine that the union was a

mere accident, and was to be attributed to the lot?

TIMAEUS: I remember.

SOCRATES: And you remember how we said that the children of the good

parents were to be educated, and the children of the bad secretly

dispersed among the inferior citizens; and while they were all growing

up the rulers were to be on the look-out, and to bring up from below in

their turn those who were worthy, and those among themselves who were

unworthy were to take the places of those who came up?

TIMAEUS: True.

SOCRATES: Then have I now given you all the heads of our yesterday's

discussion? Or is there anything more, my dear Timaeus, which has been

omitted?

TIMAEUS: Nothing, Socrates; it was just as you have said.

SOCRATES: I should like, before proceeding further, to tell you how I

feel about the State which we have described. I might compare myself

to a person who, on beholding beautiful animals either created by the

painter's art, or, better still, alive but at rest, is seized with a

desire of seeing them in motion or engaged in some struggle or conflict

to which their forms appear suited; this is my feeling about the State

which we have been describing. There are conflicts which all cities

undergo, and I should like to hear some one tell of our own city

carrying on a struggle against her neighbours, and how she went out to

war in a becoming manner, and when at war showed by the greatness of her

actions and the magnanimity of her words in dealing with other cities

a result worthy of her training and education. Now I, Critias and

Hermocrates, am conscious that I myself should never be able to

celebrate the city and her citizens in a befitting manner, and I am

not surprised at my own incapacity; to me the wonder is rather that

the poets present as well as past are no better--not that I mean

to depreciate them; but every one can see that they are a tribe of

imitators, and will imitate best and most easily the life in which they

have been brought up; while that which is beyond the range of a man's

education he finds hard to carry out in action, and still harder

adequately to represent in language. I am aware that the Sophists have

plenty of brave words and fair conceits, but I am afraid that being only

wanderers from one city to another, and having never had habitations

of their own, they may fail in their conception of philosophers and

statesmen, and may not know what they do and say in time of war, when

they are fighting or holding parley with their enemies. And thus people

of your class are the only ones remaining who are fitted by nature and

education to take part at once both in politics and philosophy. Here is

Timaeus, of Locris in Italy, a city which has admirable laws, and who is

himself in wealth and rank the equal of any of his fellow-citizens; he

has held the most important and honourable offices in his own state,

and, as I believe, has scaled the heights of all philosophy; and here

is Critias, whom every Athenian knows to be no novice in the matters

of which we are speaking; and as to Hermocrates, I am assured by many

witnesses that his genius and education qualify him to take part in any

speculation of the kind. And therefore yesterday when I saw that you

wanted me to describe the formation of the State, I readily assented,

being very well aware, that, if you only would, none were better

qualified to carry the discussion further, and that when you had engaged

our city in a suitable war, you of all men living could best exhibit

her playing a fitting part. When I had completed my task, I in return

imposed this other task upon you. You conferred together and agreed

to entertain me to-day, as I had entertained you, with a feast of

discourse. Here am I in festive array, and no man can be more ready for

the promised banquet.

HERMOCRATES: And we too, Socrates, as Timaeus says, will not be wanting

in enthusiasm; and there is no excuse for not complying with your

request. As soon as we arrived yesterday at the guest-chamber of

Critias, with whom we are staying, or rather on our way thither, we

talked the matter over, and he told us an ancient tradition, which I

wish, Critias, that you would repeat to Socrates, so that he may help us

to judge whether it will satisfy his requirements or not.

CRITIAS: I will, if Timaeus, who is our other partner, approves.

TIMAEUS: I quite approve.

CRITIAS: Then listen, Socrates, to a tale which, though strange, is

certainly true, having been attested by Solon, who was the wisest of

the seven sages. He was a relative and a dear friend of my

great-grandfather, Dropides, as he himself says in many passages of his

poems; and he told the story to Critias, my grandfather, who remembered

and repeated it to us. There were of old, he said, great and marvellous

actions of the Athenian city, which have passed into oblivion through

lapse of time and the destruction of mankind, and one in particular,

greater than all the rest. This we will now rehearse. It will be a

fitting monument of our gratitude to you, and a hymn of praise true and

worthy of the goddess, on this her day of festival.

SOCRATES: Very good. And what is this ancient famous action of the

Athenians, which Critias declared, on the authority of Solon, to be not

a mere legend, but an actual fact?

CRITIAS: I will tell an old-world story which I heard from an aged man;

for Critias, at the time of telling it, was, as he said, nearly ninety

years of age, and I was about ten. Now the day was that day of the

Apaturia which is called the Registration of Youth, at which, according

to custom, our parents gave prizes for recitations, and the poems of

several poets were recited by us boys, and many of us sang the poems of

Solon, which at that time had not gone out of fashion. One of our tribe,

either because he thought so or to please Critias, said that in his

judgment Solon was not only the wisest of men, but also the noblest of

poets. The old man, as I very well remember, brightened up at hearing

this and said, smiling: Yes, Amynander, if Solon had only, like other

poets, made poetry the business of his life, and had completed the tale

which he brought with him from Egypt, and had not been compelled, by

reason of the factions and troubles which he found stirring in his own

country when he came home, to attend to other matters, in my opinion he

would have been as famous as Homer or Hesiod, or any poet.

And what was the tale about, Critias? said Amynander.

About the greatest action which the Athenians ever did, and which ought

to have been the most famous, but, through the lapse of time and the

destruction of the actors, it has not come down to us.

Tell us, said the other, the whole story, and how and from whom Solon

heard this veritable tradition.

He replied:--In the Egyptian Delta, at the head of which the river Nile

divides, there is a certain district which is called the district of

Sais, and the great city of the district is also called Sais, and is the

city from which King Amasis came. The citizens have a deity for their

foundress; she is called in the Egyptian tongue Neith, and is asserted

by them to be the same whom the Hellenes call Athene; they are great

lovers of the Athenians, and say that they are in some way related to

them. To this city came Solon, and was received there with great honour;

he asked the priests who were most skilful in such matters, about

antiquity, and made the discovery that neither he nor any other Hellene

knew anything worth mentioning about the times of old. On one occasion,

wishing to draw them on to speak of antiquity, he began to tell about

the most ancient things in our part of the world--about Phoroneus, who

is called 'the first man,' and about Niobe; and after the Deluge, of the

survival of Deucalion and Pyrrha; and he traced the genealogy of their

descendants, and reckoning up the dates, tried to compute how many years

ago the events of which he was speaking happened. Thereupon one of the

priests, who was of a very great age, said: O Solon, Solon, you Hellenes

are never anything but children, and there is not an old man among you.

Solon in return asked him what he meant. I mean to say, he replied, that

in mind you are all young; there is no old opinion handed down among

you by ancient tradition, nor any science which is hoary with age. And I

will tell you why. There have been, and will be again, many destructions

of mankind arising out of many causes; the greatest have been brought

about by the agencies of fire and water, and other lesser ones by

innumerable other causes. There is a story, which even you have

preserved, that once upon a time Paethon, the son of Helios, having

yoked the steeds in his father's chariot, because he was not able to

drive them in the path of his father, burnt up all that was upon the

earth, and was himself destroyed by a thunderbolt. Now this has the form

of a myth, but really signifies a declination of the bodies moving in

the heavens around the earth, and a great conflagration of things upon

the earth, which recurs after long intervals; at such times those who

live upon the mountains and in dry and lofty places are more liable to

destruction than those who dwell by rivers or on the seashore. And from

this calamity the Nile, who is our never-failing saviour, delivers and

preserves us. When, on the other hand, the gods purge the earth with

a deluge of water, the survivors in your country are herdsmen and

shepherds who dwell on the mountains, but those who, like you, live in

cities are carried by the rivers into the sea. Whereas in this land,

neither then nor at any other time, does the water come down from above

on the fields, having always a tendency to come up from below; for which

reason the traditions preserved here are the most ancient. The fact is,

that wherever the extremity of winter frost or of summer sun does

not prevent, mankind exist, sometimes in greater, sometimes in lesser

numbers. And whatever happened either in your country or in ours, or

in any other region of which we are informed--if there were any actions

noble or great or in any other way remarkable, they have all been

written down by us of old, and are preserved in our temples. Whereas

just when you and other nations are beginning to be provided with

letters and the other requisites of civilized life, after the usual

interval, the stream from heaven, like a pestilence, comes pouring down,

and leaves only those of you who are destitute of letters and education;

and so you have to begin all over again like children, and know nothing

of what happened in ancient times, either among us or among yourselves.

As for those genealogies of yours which you just now recounted to us,

Solon, they are no better than the tales of children. In the first place

you remember a single deluge only, but there were many previous ones; in

the next place, you do not know that there formerly dwelt in your land

the fairest and noblest race of men which ever lived, and that you and

your whole city are descended from a small seed or remnant of them which

survived. And this was unknown to you, because, for many generations,

the survivors of that destruction died, leaving no written word. For

there was a time, Solon, before the great deluge of all, when the city

which now is Athens was first in war and in every way the best governed

of all cities, is said to have performed the noblest deeds and to have

had the fairest constitution of any of which tradition tells, under the

face of heaven. Solon marvelled at his words, and earnestly requested

the priests to inform him exactly and in order about these former

citizens. You are welcome to hear about them, Solon, said the priest,

both for your own sake and for that of your city, and above all, for the

sake of the goddess who is the common patron and parent and educator

of both our cities. She founded your city a thousand years before

ours (Observe that Plato gives the same date (9000 years ago) for the

foundation of Athens and for the repulse of the invasion from Atlantis

(Crit.).), receiving from the Earth and Hephaestus the seed of your

race, and afterwards she founded ours, of which the constitution is

recorded in our sacred registers to be 8000 years old. As touching your

citizens of 9000 years ago, I will briefly inform you of their laws and

of their most famous action; the exact particulars of the whole we will

hereafter go through at our leisure in the sacred registers themselves.

If you compare these very laws with ours you will find that many of

ours are the counterpart of yours as they were in the olden time. In the

first place, there is the caste of priests, which is separated from all

the others; next, there are the artificers, who ply their several

crafts by themselves and do not intermix; and also there is the class

of shepherds and of hunters, as well as that of husbandmen; and you will

observe, too, that the warriors in Egypt are distinct from all the other

classes, and are commanded by the law to devote themselves solely to

military pursuits; moreover, the weapons which they carry are shields

and spears, a style of equipment which the goddess taught of Asiatics

first to us, as in your part of the world first to you. Then as to

wisdom, do you observe how our law from the very first made a study of

the whole order of things, extending even to prophecy and medicine which

gives health, out of these divine elements deriving what was needful for

human life, and adding every sort of knowledge which was akin to them.

All this order and arrangement the goddess first imparted to you when

establishing your city; and she chose the spot of earth in which you

were born, because she saw that the happy temperament of the seasons in

that land would produce the wisest of men. Wherefore the goddess, who

was a lover both of war and of wisdom, selected and first of all settled

that spot which was the most likely to produce men likest herself. And

there you dwelt, having such laws as these and still better ones, and

excelled all mankind in all virtue, as became the children and disciples

of the gods.

Many great and wonderful deeds are recorded of your state in our

histories. But one of them exceeds all the rest in greatness and valour.

For these histories tell of a mighty power which unprovoked made an

expedition against the whole of Europe and Asia, and to which your city

put an end. This power came forth out of the Atlantic Ocean, for in

those days the Atlantic was navigable; and there was an island situated

in front of the straits which are by you called the Pillars of Heracles;

the island was larger than Libya and Asia put together, and was the

way to other islands, and from these you might pass to the whole of the

opposite continent which surrounded the true ocean; for this sea which

is within the Straits of Heracles is only a harbour, having a narrow

entrance, but that other is a real sea, and the surrounding land may be

most truly called a boundless continent. Now in this island of Atlantis

there was a great and wonderful empire which had rule over the whole

island and several others, and over parts of the continent, and,

furthermore, the men of Atlantis had subjected the parts of Libya

within the columns of Heracles as far as Egypt, and of Europe as far as

Tyrrhenia. This vast power, gathered into one, endeavoured to subdue

at a blow our country and yours and the whole of the region within the

straits; and then, Solon, your country shone forth, in the excellence

of her virtue and strength, among all mankind. She was pre-eminent in

courage and military skill, and was the leader of the Hellenes. And when

the rest fell off from her, being compelled to stand alone, after having

undergone the very extremity of danger, she defeated and triumphed

over the invaders, and preserved from slavery those who were not yet

subjugated, and generously liberated all the rest of us who dwell within

the pillars. But afterwards there occurred violent earthquakes and

floods; and in a single day and night of misfortune all your warlike men

in a body sank into the earth, and the island of Atlantis in like manner

disappeared in the depths of the sea. For which reason the sea in those

parts is impassable and impenetrable, because there is a shoal of mud in

the way; and this was caused by the subsidence of the island.

I have told you briefly, Socrates, what the aged Critias heard from

Solon and related to us. And when you were speaking yesterday about your

city and citizens, the tale which I have just been repeating to you came

into my mind, and I remarked with astonishment how, by some mysterious

coincidence, you agreed in almost every particular with the narrative

of Solon; but I did not like to speak at the moment. For a long time had

elapsed, and I had forgotten too much; I thought that I must first of

all run over the narrative in my own mind, and then I would speak. And

so I readily assented to your request yesterday, considering that in

all such cases the chief difficulty is to find a tale suitable to our

purpose, and that with such a tale we should be fairly well provided.

And therefore, as Hermocrates has told you, on my way home yesterday I

at once communicated the tale to my companions as I remembered it; and

after I left them, during the night by thinking I recovered nearly the

whole of it. Truly, as is often said, the lessons of our childhood make

a wonderful impression on our memories; for I am not sure that I could

remember all the discourse of yesterday, but I should be much surprised

if I forgot any of these things which I have heard very long ago. I

listened at the time with childlike interest to the old man's narrative;

he was very ready to teach me, and I asked him again and again to repeat

his words, so that like an indelible picture they were branded into my

mind. As soon as the day broke, I rehearsed them as he spoke them to my

companions, that they, as well as myself, might have something to say.

And now, Socrates, to make an end of my preface, I am ready to tell

you the whole tale. I will give you not only the general heads, but the

particulars, as they were told to me. The city and citizens, which you

yesterday described to us in fiction, we will now transfer to the world

of reality. It shall be the ancient city of Athens, and we will suppose

that the citizens whom you imagined, were our veritable ancestors, of

whom the priest spoke; they will perfectly harmonize, and there will be

no inconsistency in saying that the citizens of your republic are these

ancient Athenians. Let us divide the subject among us, and all endeavour

according to our ability gracefully to execute the task which you have

imposed upon us. Consider then, Socrates, if this narrative is suited to

the purpose, or whether we should seek for some other instead.

SOCRATES: And what other, Critias, can we find that will be better than

this, which is natural and suitable to the festival of the goddess, and

has the very great advantage of being a fact and not a fiction? How or

where shall we find another if we abandon this? We cannot, and therefore

you must tell the tale, and good luck to you; and I in return for my

yesterday's discourse will now rest and be a listener.

CRITIAS: Let me proceed to explain to you, Socrates, the order in which

we have arranged our entertainment. Our intention is, that Timaeus, who

is the most of an astronomer amongst us, and has made the nature of

the universe his special study, should speak first, beginning with the

generation of the world and going down to the creation of man; next, I

am to receive the men whom he has created, and of whom some will have

profited by the excellent education which you have given them; and then,

in accordance with the tale of Solon, and equally with his law, we will

bring them into court and make them citizens, as if they were those very

Athenians whom the sacred Egyptian record has recovered from

oblivion, and thenceforward we will speak of them as Athenians and

fellow-citizens.

SOCRATES: I see that I shall receive in my turn a perfect and splendid

feast of reason. And now, Timaeus, you, I suppose, should speak next,

after duly calling upon the Gods.

TIMAEUS: All men, Socrates, who have any degree of right feeling, at the

beginning of every enterprise, whether small or great, always call

upon God. And we, too, who are going to discourse of the nature of the

universe, how created or how existing without creation, if we be not

altogether out of our wits, must invoke the aid of Gods and Goddesses

and pray that our words may be acceptable to them and consistent with

themselves. Let this, then, be our invocation of the Gods, to which I

add an exhortation of myself to speak in such manner as will be most

intelligible to you, and will most accord with my own intent.

First then, in my judgment, we must make a distinction and ask, What

is that which always is and has no becoming; and what is that which is

always becoming and never is? That which is apprehended by intelligence

and reason is always in the same state; but that which is conceived by

opinion with the help of sensation and without reason, is always in a

process of becoming and perishing and never really is. Now everything

that becomes or is created must of necessity be created by some cause,

for without a cause nothing can be created. The work of the creator,

whenever he looks to the unchangeable and fashions the form and nature

of his work after an unchangeable pattern, must necessarily be made fair

and perfect; but when he looks to the created only, and uses a created

pattern, it is not fair or perfect. Was the heaven then or the world,

whether called by this or by any other more appropriate name--assuming

the name, I am asking a question which has to be asked at the beginning

of an enquiry about anything--was the world, I say, always in existence

and without beginning? or created, and had it a beginning? Created,

I reply, being visible and tangible and having a body, and therefore

sensible; and all sensible things are apprehended by opinion and sense

and are in a process of creation and created. Now that which is created

must, as we affirm, of necessity be created by a cause. But the father

and maker of all this universe is past finding out; and even if we found

him, to tell of him to all men would be impossible. And there is still a

question to be asked about him: Which of the patterns had the artificer

in view when he made the world--the pattern of the unchangeable, or of

that which is created? If the world be indeed fair and the artificer

good, it is manifest that he must have looked to that which is eternal;

but if what cannot be said without blasphemy is true, then to the

created pattern. Every one will see that he must have looked to the

eternal; for the world is the fairest of creations and he is the best of

causes. And having been created in this way, the world has been framed

in the likeness of that which is apprehended by reason and mind and is

unchangeable, and must therefore of necessity, if this is admitted, be

a copy of something. Now it is all-important that the beginning of

everything should be according to nature. And in speaking of the copy

and the original we may assume that words are akin to the matter

which they describe; when they relate to the lasting and permanent and

intelligible, they ought to be lasting and unalterable, and, as far as

their nature allows, irrefutable and immovable--nothing less. But

when they express only the copy or likeness and not the eternal things

themselves, they need only be likely and analogous to the real words. As

being is to becoming, so is truth to belief. If then, Socrates, amid the

many opinions about the gods and the generation of the universe, we are

not able to give notions which are altogether and in every respect exact

and consistent with one another, do not be surprised. Enough, if we

adduce probabilities as likely as any others; for we must remember that

I who am the speaker, and you who are the judges, are only mortal

men, and we ought to accept the tale which is probable and enquire no

further.

SOCRATES: Excellent, Timaeus; and we will do precisely as you bid us.

The prelude is charming, and is already accepted by us--may we beg of

you to proceed to the strain?

TIMAEUS: Let me tell you then why the creator made this world of

generation. He was good, and the good can never have any jealousy of

anything. And being free from jealousy, he desired that all things

should be as like himself as they could be. This is in the truest

sense the origin of creation and of the world, as we shall do well in

believing on the testimony of wise men: God desired that all things

should be good and nothing bad, so far as this was attainable. Wherefore

also finding the whole visible sphere not at rest, but moving in an

irregular and disorderly fashion, out of disorder he brought order,

considering that this was in every way better than the other. Now the

deeds of the best could never be or have been other than the fairest;

and the creator, reflecting on the things which are by nature visible,

found that no unintelligent creature taken as a whole was fairer than

the intelligent taken as a whole; and that intelligence could not be

present in anything which was devoid of soul. For which reason, when he

was framing the universe, he put intelligence in soul, and soul in body,

that he might be the creator of a work which was by nature fairest and

best. Wherefore, using the language of probability, we may say that the

world became a living creature truly endowed with soul and intelligence

by the providence of God.

This being supposed, let us proceed to the next stage: In the likeness

of what animal did the Creator make the world? It would be an unworthy

thing to liken it to any nature which exists as a part only; for nothing

can be beautiful which is like any imperfect thing; but let us suppose

the world to be the very image of that whole of which all other animals

both individually and in their tribes are portions. For the original of

the universe contains in itself all intelligible beings, just as this

world comprehends us and all other visible creatures. For the Deity,

intending to make this world like the fairest and most perfect of

intelligible beings, framed one visible animal comprehending within

itself all other animals of a kindred nature. Are we right in saying

that there is one world, or that they are many and infinite? There must

be one only, if the created copy is to accord with the original. For

that which includes all other intelligible creatures cannot have a

second or companion; in that case there would be need of another living

being which would include both, and of which they would be parts, and

the likeness would be more truly said to resemble not them, but that

other which included them. In order then that the world might be

solitary, like the perfect animal, the creator made not two worlds or an

infinite number of them; but there is and ever will be one only-begotten

and created heaven.

Now that which is created is of necessity corporeal, and also visible

and tangible. And nothing is visible where there is no fire, or tangible

which has no solidity, and nothing is solid without earth. Wherefore

also God in the beginning of creation made the body of the universe to

consist of fire and earth. But two things cannot be rightly put together

without a third; there must be some bond of union between them. And the

fairest bond is that which makes the most complete fusion of itself and

the things which it combines; and proportion is best adapted to effect

such a union. For whenever in any three numbers, whether cube or square,

there is a mean, which is to the last term what the first term is to it;

and again, when the mean is to the first term as the last term is to the

mean--then the mean becoming first and last, and the first and last both

becoming means, they will all of them of necessity come to be the same,

and having become the same with one another will be all one. If the

universal frame had been created a surface only and having no depth, a

single mean would have sufficed to bind together itself and the other

terms; but now, as the world must be solid, and solid bodies are always

compacted not by one mean but by two, God placed water and air in the

mean between fire and earth, and made them to have the same proportion

so far as was possible (as fire is to air so is air to water, and as air

is to water so is water to earth); and thus he bound and put together

a visible and tangible heaven. And for these reasons, and out of such

elements which are in number four, the body of the world was created,

and it was harmonized by proportion, and therefore has the spirit of

friendship; and having been reconciled to itself, it was indissoluble by

the hand of any other than the framer.

Now the creation took up the whole of each of the four elements; for the

Creator compounded the world out of all the fire and all the water and

all the air and all the earth, leaving no part of any of them nor any

power of them outside. His intention was, in the first place, that

the animal should be as far as possible a perfect whole and of perfect

parts: secondly, that it should be one, leaving no remnants out of which

another such world might be created: and also that it should be free

from old age and unaffected by disease. Considering that if heat and

cold and other powerful forces which unite bodies surround and attack

them from without when they are unprepared, they decompose them, and by

bringing diseases and old age upon them, make them waste away--for this

cause and on these grounds he made the world one whole, having every

part entire, and being therefore perfect and not liable to old age and

disease. And he gave to the world the figure which was suitable and also

natural. Now to the animal which was to comprehend all animals, that

figure was suitable which comprehends within itself all other figures.

Wherefore he made the world in the form of a globe, round as from a

lathe, having its extremes in every direction equidistant from the

centre, the most perfect and the most like itself of all figures; for he

considered that the like is infinitely fairer than the unlike. This he

finished off, making the surface smooth all round for many reasons; in

the first place, because the living being had no need of eyes when there

was nothing remaining outside him to be seen; nor of ears when there

was nothing to be heard; and there was no surrounding atmosphere to be

breathed; nor would there have been any use of organs by the help

of which he might receive his food or get rid of what he had already

digested, since there was nothing which went from him or came into him:

for there was nothing beside him. Of design he was created thus, his

own waste providing his own food, and all that he did or suffered taking

place in and by himself. For the Creator conceived that a being which

was self-sufficient would be far more excellent than one which lacked

anything; and, as he had no need to take anything or defend himself

against any one, the Creator did not think it necessary to bestow upon

him hands: nor had he any need of feet, nor of the whole apparatus of

walking; but the movement suited to his spherical form was assigned to

him, being of all the seven that which is most appropriate to mind and

intelligence; and he was made to move in the same manner and on the same

spot, within his own limits revolving in a circle. All the other six

motions were taken away from him, and he was made not to partake of

their deviations. And as this circular movement required no feet, the

universe was created without legs and without feet.

Such was the whole plan of the eternal God about the god that was to

be, to whom for this reason he gave a body, smooth and even, having a

surface in every direction equidistant from the centre, a body entire

and perfect, and formed out of perfect bodies. And in the centre he put

the soul, which he diffused throughout the body, making it also to be

the exterior environment of it; and he made the universe a circle moving

in a circle, one and solitary, yet by reason of its excellence able to

converse with itself, and needing no other friendship or acquaintance.

Having these purposes in view he created the world a blessed god.

Now God did not make the soul after the body, although we are speaking

of them in this order; for having brought them together he would never

have allowed that the elder should be ruled by the younger; but this is

a random manner of speaking which we have, because somehow we ourselves

too are very much under the dominion of chance. Whereas he made the soul

in origin and excellence prior to and older than the body, to be the

ruler and mistress, of whom the body was to be the subject. And he

made her out of the following elements and on this wise: Out of the

indivisible and unchangeable, and also out of that which is divisible

and has to do with material bodies, he compounded a third and

intermediate kind of essence, partaking of the nature of the same and of

the other, and this compound he placed accordingly in a mean between the

indivisible, and the divisible and material. He took the three elements

of the same, the other, and the essence, and mingled them into one form,

compressing by force the reluctant and unsociable nature of the other

into the same. When he had mingled them with the essence and out of

three made one, he again divided this whole into as many portions as was

fitting, each portion being a compound of the same, the other, and the

essence. And he proceeded to divide after this manner:--First of all, he

took away one part of the whole (1), and then he separated a second part

which was double the first (2), and then he took away a third part which

was half as much again as the second and three times as much as the

first (3), and then he took a fourth part which was twice as much as the

second (4), and a fifth part which was three times the third (9), and a

sixth part which was eight times the first (8), and a seventh part

which was twenty-seven times the first (27). After this he filled up the

double intervals (i.e. between 1, 2, 4, 8) and the triple (i.e. between

1, 3, 9, 27) cutting off yet other portions from the mixture and placing

them in the intervals, so that in each interval there were two kinds of

means, the one exceeding and exceeded by equal parts of its extremes (as

for example 1, 4/3, 2, in which the mean 4/3 is one-third of 1 more than

1, and one-third of 2 less than 2), the other being that kind of mean

which exceeds and is exceeded by an equal number (e.g.

- over 1, 4/3, 3/2, - over 2, 8/3, 3, - over 4, 16/3, 6, - over 8: and

- over 1, 3/2, 2, - over 3, 9/2, 6, - over 9, 27/2, 18, - over 27.

Where there were intervals of 3/2 and of 4/3 and of 9/8, made by the

connecting terms in the former intervals, he filled up all the intervals

of 4/3 with the interval of 9/8, leaving a fraction over; and the

interval which this fraction expressed was in the ratio of 256 to 243

(e.g.

243:256::81/64:4/3::243/128:2::81/32:8/3::243/64:4::81/16:16/3::242/32:8.

And thus the whole mixture out of which he cut these portions was all

exhausted by him. This entire compound he divided lengthways into two

parts, which he joined to one another at the centre like the letter X,

and bent them into a circular form, connecting them with themselves and

each other at the point opposite to their original meeting-point; and,

comprehending them in a uniform revolution upon the same axis, he made

the one the outer and the other the inner circle. Now the motion of the

outer circle he called the motion of the same, and the motion of the

inner circle the motion of the other or diverse. The motion of the same

he carried round by the side (i.e. of the rectangular figure supposed to

be inscribed in the circle of the Same) to the right, and the motion of

the diverse diagonally (i.e. across the rectangular figure from corner

to corner) to the left. And he gave dominion to the motion of the same

and like, for that he left single and undivided; but the inner motion

he divided in six places and made seven unequal circles having their

intervals in ratios of two and three, three of each, and bade the orbits

proceed in a direction opposite to one another; and three (Sun, Mercury,

Venus) he made to move with equal swiftness, and the remaining four

(Moon, Saturn, Mars, Jupiter) to move with unequal swiftness to the

three and to one another, but in due proportion.

Now when the Creator had framed the soul according to his will, he

formed within her the corporeal universe, and brought the two together,

and united them centre to centre. The soul, interfused everywhere from

the centre to the circumference of heaven, of which also she is the

external envelopment, herself turning in herself, began a divine

beginning of never-ceasing and rational life enduring throughout all

time. The body of heaven is visible, but the soul is invisible,

and partakes of reason and harmony, and being made by the best of

intellectual and everlasting natures, is the best of things created. And

because she is composed of the same and of the other and of the essence,

these three, and is divided and united in due proportion, and in her

revolutions returns upon herself, the soul, when touching anything which

has essence, whether dispersed in parts or undivided, is stirred through

all her powers, to declare the sameness or difference of that thing and

some other; and to what individuals are related, and by what affected,

and in what way and how and when, both in the world of generation and

in the world of immutable being. And when reason, which works with equal

truth, whether she be in the circle of the diverse or of the same--in

voiceless silence holding her onward course in the sphere of the

self-moved--when reason, I say, is hovering around the sensible world

and when the circle of the diverse also moving truly imparts the

intimations of sense to the whole soul, then arise opinions and beliefs

sure and certain. But when reason is concerned with the rational, and

the circle of the same moving smoothly declares it, then intelligence

and knowledge are necessarily perfected. And if any one affirms that

in which these two are found to be other than the soul, he will say the

very opposite of the truth.

When the father and creator saw the creature which he had made moving

and living, the created image of the eternal gods, he rejoiced, and in

his joy determined to make the copy still more like the original; and

as this was eternal, he sought to make the universe eternal, so far

as might be. Now the nature of the ideal being was everlasting, but to

bestow this attribute in its fulness upon a creature was impossible.

Wherefore he resolved to have a moving image of eternity, and when he

set in order the heaven, he made this image eternal but moving according

to number, while eternity itself rests in unity; and this image we call

time. For there were no days and nights and months and years before the

heaven was created, but when he constructed the heaven he created them

also. They are all parts of time, and the past and future are created

species of time, which we unconsciously but wrongly transfer to the

eternal essence; for we say that he 'was,' he 'is,' he 'will be,' but

the truth is that 'is' alone is properly attributed to him, and that

'was' and 'will be' are only to be spoken of becoming in time, for they

are motions, but that which is immovably the same cannot become older or

younger by time, nor ever did or has become, or hereafter will be, older

or younger, nor is subject at all to any of those states which affect

moving and sensible things and of which generation is the cause. These

are the forms of time, which imitates eternity and revolves according

to a law of number. Moreover, when we say that what has become IS become

and what becomes IS becoming, and that what will become IS about

to become and that the non-existent IS non-existent--all these are

inaccurate modes of expression (compare Parmen.). But perhaps this whole

subject will be more suitably discussed on some other occasion.

Time, then, and the heaven came into being at the same instant in

order that, having been created together, if ever there was to be a

dissolution of them, they might be dissolved together. It was framed

after the pattern of the eternal nature, that it might resemble this

as far as was possible; for the pattern exists from eternity, and the

created heaven has been, and is, and will be, in all time. Such was the

mind and thought of God in the creation of time. The sun and moon and

five other stars, which are called the planets, were created by him in

order to distinguish and preserve the numbers of time; and when he had

made their several bodies, he placed them in the orbits in which the

circle of the other was revolving,--in seven orbits seven stars. First,

there was the moon in the orbit nearest the earth, and next the sun,

in the second orbit above the earth; then came the morning star and the

star sacred to Hermes, moving in orbits which have an equal swiftness

with the sun, but in an opposite direction; and this is the reason why

the sun and Hermes and Lucifer overtake and are overtaken by each other.

To enumerate the places which he assigned to the other stars, and to

give all the reasons why he assigned them, although a secondary matter,

would give more trouble than the primary. These things at some future

time, when we are at leisure, may have the consideration which they

deserve, but not at present.

Now, when all the stars which were necessary to the creation of time

had attained a motion suitable to them, and had become living creatures

having bodies fastened by vital chains, and learnt their appointed

task, moving in the motion of the diverse, which is diagonal, and passes

through and is governed by the motion of the same, they revolved, some

in a larger and some in a lesser orbit--those which had the lesser orbit

revolving faster, and those which had the larger more slowly. Now by

reason of the motion of the same, those which revolved fastest appeared

to be overtaken by those which moved slower although they really

overtook them; for the motion of the same made them all turn in a

spiral, and, because some went one way and some another, that which

receded most slowly from the sphere of the same, which was the swiftest,

appeared to follow it most nearly. That there might be some visible

measure of their relative swiftness and slowness as they proceeded in

their eight courses, God lighted a fire, which we now call the sun, in

the second from the earth of these orbits, that it might give light to

the whole of heaven, and that the animals, as many as nature intended,

might participate in number, learning arithmetic from the revolution of

the same and the like. Thus then, and for this reason the night and

the day were created, being the period of the one most intelligent

revolution. And the month is accomplished when the moon has completed

her orbit and overtaken the sun, and the year when the sun has completed

his own orbit. Mankind, with hardly an exception, have not remarked the

periods of the other stars, and they have no name for them, and do not

measure them against one another by the help of number, and hence they

can scarcely be said to know that their wanderings, being infinite in

number and admirable for their variety, make up time. And yet there

is no difficulty in seeing that the perfect number of time fulfils

the perfect year when all the eight revolutions, having their relative

degrees of swiftness, are accomplished together and attain their

completion at the same time, measured by the rotation of the same and

equally moving. After this manner, and for these reasons, came into

being such of the stars as in their heavenly progress received reversals

of motion, to the end that the created heaven might imitate the eternal

nature, and be as like as possible to the perfect and intelligible

animal.

Thus far and until the birth of time the created universe was made in

the likeness of the original, but inasmuch as all animals were not yet

comprehended therein, it was still unlike. What remained, the creator

then proceeded to fashion after the nature of the pattern. Now as in the

ideal animal the mind perceives ideas or species of a certain nature and

number, he thought that this created animal ought to have species of a

like nature and number. There are four such; one of them is the heavenly

race of the gods; another, the race of birds whose way is in the air;

the third, the watery species; and the fourth, the pedestrian and land

creatures. Of the heavenly and divine, he created the greater part out

of fire, that they might be the brightest of all things and fairest to

behold, and he fashioned them after the likeness of the universe in the

figure of a circle, and made them follow the intelligent motion of the

supreme, distributing them over the whole circumference of heaven, which

was to be a true cosmos or glorious world spangled with them all over.

And he gave to each of them two movements: the first, a movement on the

same spot after the same manner, whereby they ever continue to think

consistently the same thoughts about the same things; the second, a

forward movement, in which they are controlled by the revolution of the

same and the like; but by the other five motions they were unaffected,

in order that each of them might attain the highest perfection. And

for this reason the fixed stars were created, to be divine and eternal

animals, ever-abiding and revolving after the same manner and on the

same spot; and the other stars which reverse their motion and are

subject to deviations of this kind, were created in the manner already

described. The earth, which is our nurse, clinging (or 'circling')

around the pole which is extended through the universe, he framed to be

the guardian and artificer of night and day, first and eldest of gods

that are in the interior of heaven. Vain would be the attempt to tell

all the figures of them circling as in dance, and their juxtapositions,

and the return of them in their revolutions upon themselves, and their

approximations, and to say which of these deities in their conjunctions

meet, and which of them are in opposition, and in what order they get

behind and before one another, and when they are severally eclipsed to

our sight and again reappear, sending terrors and intimations of the

future to those who cannot calculate their movements--to attempt to

tell of all this without a visible representation of the heavenly system

would be labour in vain. Enough on this head; and now let what we have

said about the nature of the created and visible gods have an end.

To know or tell the origin of the other divinities is beyond us, and we

must accept the traditions of the men of old time who affirm themselves

to be the offspring of the gods--that is what they say--and they must

surely have known their own ancestors. How can we doubt the word of the

children of the gods? Although they give no probable or certain proofs,

still, as they declare that they are speaking of what took place in

their own family, we must conform to custom and believe them. In this

manner, then, according to them, the genealogy of these gods is to be

received and set forth.

Oceanus and Tethys were the children of Earth and Heaven, and from these

sprang Phorcys and Cronos and Rhea, and all that generation; and from

Cronos and Rhea sprang Zeus and Here, and all those who are said to be

their brethren, and others who were the children of these.

Now, when all of them, both those who visibly appear in their

revolutions as well as those other gods who are of a more retiring

nature, had come into being, the creator of the universe addressed them

in these words: 'Gods, children of gods, who are my works, and of whom

I am the artificer and father, my creations are indissoluble, if so I

will. All that is bound may be undone, but only an evil being would wish

to undo that which is harmonious and happy. Wherefore, since ye are but

creatures, ye are not altogether immortal and indissoluble, but ye shall

certainly not be dissolved, nor be liable to the fate of death, having

in my will a greater and mightier bond than those with which ye

were bound at the time of your birth. And now listen to my

instructions:--Three tribes of mortal beings remain to be

created--without them the universe will be incomplete, for it will not

contain every kind of animal which it ought to contain, if it is to be

perfect. On the other hand, if they were created by me and received life

at my hands, they would be on an equality with the gods. In order then

that they may be mortal, and that this universe may be truly universal,

do ye, according to your natures, betake yourselves to the formation of

animals, imitating the power which was shown by me in creating you. The

part of them worthy of the name immortal, which is called divine and

is the guiding principle of those who are willing to follow justice and

you--of that divine part I will myself sow the seed, and having made a

beginning, I will hand the work over to you. And do ye then interweave

the mortal with the immortal, and make and beget living creatures, and

give them food, and make them to grow, and receive them again in death.'

Thus he spake, and once more into the cup in which he had previously

mingled the soul of the universe he poured the remains of the elements,

and mingled them in much the same manner; they were not, however, pure

as before, but diluted to the second and third degree. And having made

it he divided the whole mixture into souls equal in number to the stars,

and assigned each soul to a star; and having there placed them as in a

chariot, he showed them the nature of the universe, and declared to them

the laws of destiny, according to which their first birth would be one

and the same for all,--no one should suffer a disadvantage at his hands;

they were to be sown in the instruments of time severally adapted to

them, and to come forth the most religious of animals; and as human

nature was of two kinds, the superior race would hereafter be called

man. Now, when they should be implanted in bodies by necessity, and be

always gaining or losing some part of their bodily substance, then in

the first place it would be necessary that they should all have in

them one and the same faculty of sensation, arising out of irresistible

impressions; in the second place, they must have love, in which pleasure

and pain mingle; also fear and anger, and the feelings which are akin or

opposite to them; if they conquered these they would live righteously,

and if they were conquered by them, unrighteously. He who lived well

during his appointed time was to return and dwell in his native star,

and there he would have a blessed and congenial existence. But if he

failed in attaining this, at the second birth he would pass into a

woman, and if, when in that state of being, he did not desist from evil,

he would continually be changed into some brute who resembled him in the

evil nature which he had acquired, and would not cease from his toils

and transformations until he followed the revolution of the same and the

like within him, and overcame by the help of reason the turbulent and

irrational mob of later accretions, made up of fire and air and water

and earth, and returned to the form of his first and better state.

Having given all these laws to his creatures, that he might be guiltless

of future evil in any of them, the creator sowed some of them in the

earth, and some in the moon, and some in the other instruments of

time; and when he had sown them he committed to the younger gods the

fashioning of their mortal bodies, and desired them to furnish what

was still lacking to the human soul, and having made all the suitable

additions, to rule over them, and to pilot the mortal animal in the

best and wisest manner which they could, and avert from him all but

self-inflicted evils.

When the creator had made all these ordinances he remained in his own

accustomed nature, and his children heard and were obedient to their

father's word, and receiving from him the immortal principle of a mortal

creature, in imitation of their own creator they borrowed portions of

fire, and earth, and water, and air from the world, which were hereafter

to be restored--these they took and welded them together, not with the

indissoluble chains by which they were themselves bound, but with little

pegs too small to be visible, making up out of all the four elements

each separate body, and fastening the courses of the immortal soul in

a body which was in a state of perpetual influx and efflux. Now

these courses, detained as in a vast river, neither overcame nor were

overcome; but were hurrying and hurried to and fro, so that the whole

animal was moved and progressed, irregularly however and irrationally

and anyhow, in all the six directions of motion, wandering backwards

and forwards, and right and left, and up and down, and in all the six

directions. For great as was the advancing and retiring flood which

provided nourishment, the affections produced by external contact

caused still greater tumult--when the body of any one met and came

into collision with some external fire, or with the solid earth or the

gliding waters, or was caught in the tempest borne on the air, and the

motions produced by any of these impulses were carried through the body

to the soul. All such motions have consequently received the general

name of 'sensations,' which they still retain. And they did in fact

at that time create a very great and mighty movement; uniting with the

ever-flowing stream in stirring up and violently shaking the courses of

the soul, they completely stopped the revolution of the same by their

opposing current, and hindered it from predominating and advancing; and

they so disturbed the nature of the other or diverse, that the three

double intervals (i.e. between 1, 2, 4, 8), and the three triple

intervals (i.e. between 1, 3, 9, 27), together with the mean terms and

connecting links which are expressed by the ratios of 3:2, and 4:3, and

of 9:8--these, although they cannot be wholly undone except by him who

united them, were twisted by them in all sorts of ways, and the circles

were broken and disordered in every possible manner, so that when they

moved they were tumbling to pieces, and moved irrationally, at one time

in a reverse direction, and then again obliquely, and then upside

down, as you might imagine a person who is upside down and has his head

leaning upon the ground and his feet up against something in the air;

and when he is in such a position, both he and the spectator fancy that

the right of either is his left, and the left right. If, when powerfully

experiencing these and similar effects, the revolutions of the soul come

in contact with some external thing, either of the class of the same

or of the other, they speak of the same or of the other in a manner the

very opposite of the truth; and they become false and foolish, and there

is no course or revolution in them which has a guiding or directing

power; and if again any sensations enter in violently from without and

drag after them the whole vessel of the soul, then the courses of the

soul, though they seem to conquer, are really conquered.

And by reason of all these affections, the soul, when encased in a

mortal body, now, as in the beginning, is at first without intelligence;

but when the flood of growth and nutriment abates, and the courses of

the soul, calming down, go their own way and become steadier as time

goes on, then the several circles return to their natural form, and

their revolutions are corrected, and they call the same and the other by

their right names, and make the possessor of them to become a rational

being. And if these combine in him with any true nurture or education,

he attains the fulness and health of the perfect man, and escapes the

worst disease of all; but if he neglects education he walks lame to the

end of his life, and returns imperfect and good for nothing to the world

below. This, however, is a later stage; at present we must treat more

exactly the subject before us, which involves a preliminary enquiry into

the generation of the body and its members, and as to how the soul was

created--for what reason and by what providence of the gods; and holding

fast to probability, we must pursue our way.

First, then, the gods, imitating the spherical shape of the universe,

enclosed the two divine courses in a spherical body, that, namely, which

we now term the head, being the most divine part of us and the lord of

all that is in us: to this the gods, when they put together the body,

gave all the other members to be servants, considering that it partook

of every sort of motion. In order then that it might not tumble about

among the high and deep places of the earth, but might be able to get

over the one and out of the other, they provided the body to be its

vehicle and means of locomotion; which consequently had length and was

furnished with four limbs extended and flexible; these God contrived

to be instruments of locomotion with which it might take hold and find

support, and so be able to pass through all places, carrying on high the

dwelling-place of the most sacred and divine part of us. Such was the

origin of legs and hands, which for this reason were attached to every

man; and the gods, deeming the front part of man to be more honourable

and more fit to command than the hinder part, made us to move mostly in

a forward direction. Wherefore man must needs have his front part unlike

and distinguished from the rest of his body.

And so in the vessel of the head, they first of all put a face in which

they inserted organs to minister in all things to the providence of the

soul, and they appointed this part, which has authority, to be by nature

the part which is in front. And of the organs they first contrived

the eyes to give light, and the principle according to which they were

inserted was as follows: So much of fire as would not burn, but gave

a gentle light, they formed into a substance akin to the light of

every-day life; and the pure fire which is within us and related

thereto they made to flow through the eyes in a stream smooth and dense,

compressing the whole eye, and especially the centre part, so that it

kept out everything of a coarser nature, and allowed to pass only this

pure element. When the light of day surrounds the stream of vision,

then like falls upon like, and they coalesce, and one body is formed by

natural affinity in the line of vision, wherever the light that falls

from within meets with an external object. And the whole stream of

vision, being similarly affected in virtue of similarity, diffuses the

motions of what it touches or what touches it over the whole body, until

they reach the soul, causing that perception which we call sight. But

when night comes on and the external and kindred fire departs, then the

stream of vision is cut off; for going forth to an unlike element it

is changed and extinguished, being no longer of one nature with the

surrounding atmosphere which is now deprived of fire: and so the eye no

longer sees, and we feel disposed to sleep. For when the eyelids, which

the gods invented for the preservation of sight, are closed, they keep

in the internal fire; and the power of the fire diffuses and equalizes

the inward motions; when they are equalized, there is rest, and when the

rest is profound, sleep comes over us scarce disturbed by dreams;

but where the greater motions still remain, of whatever nature and in

whatever locality, they engender corresponding visions in dreams, which

are remembered by us when we are awake and in the external world. And

now there is no longer any difficulty in understanding the creation

of images in mirrors and all smooth and bright surfaces. For from the

communion of the internal and external fires, and again from the union

of them and their numerous transformations when they meet in the mirror,

all these appearances of necessity arise, when the fire from the face

coalesces with the fire from the eye on the bright and smooth surface.

And right appears left and left right, because the visual rays come into

contact with the rays emitted by the object in a manner contrary to the

usual mode of meeting; but the right appears right, and the left left,

when the position of one of the two concurring lights is reversed; and

this happens when the mirror is concave and its smooth surface repels

the right stream of vision to the left side, and the left to the right

(He is speaking of two kinds of mirrors, first the plane, secondly the

concave; and the latter is supposed to be placed, first horizontally,

and then vertically.). Or if the mirror be turned vertically, then the

concavity makes the countenance appear to be all upside down, and the

lower rays are driven upwards and the upper downwards.

All these are to be reckoned among the second and co-operative causes

which God, carrying into execution the idea of the best as far as

possible, uses as his ministers. They are thought by most men not to be

the second, but the prime causes of all things, because they freeze and

heat, and contract and dilate, and the like. But they are not so, for

they are incapable of reason or intellect; the only being which can

properly have mind is the invisible soul, whereas fire and water, and

earth and air, are all of them visible bodies. The lover of intellect

and knowledge ought to explore causes of intelligent nature first of

all, and, secondly, of those things which, being moved by others, are

compelled to move others. And this is what we too must do. Both kinds

of causes should be acknowledged by us, but a distinction should be made

between those which are endowed with mind and are the workers of things

fair and good, and those which are deprived of intelligence and always

produce chance effects without order or design. Of the second or

co-operative causes of sight, which help to give to the eyes the power

which they now possess, enough has been said. I will therefore now

proceed to speak of the higher use and purpose for which God has given

them to us. The sight in my opinion is the source of the greatest

benefit to us, for had we never seen the stars, and the sun, and the

heaven, none of the words which we have spoken about the universe would

ever have been uttered. But now the sight of day and night, and the

months and the revolutions of the years, have created number, and have

given us a conception of time, and the power of enquiring about the

nature of the universe; and from this source we have derived philosophy,

than which no greater good ever was or will be given by the gods to

mortal man. This is the greatest boon of sight: and of the lesser

benefits why should I speak? even the ordinary man if he were deprived

of them would bewail his loss, but in vain. Thus much let me say

however: God invented and gave us sight to the end that we might behold

the courses of intelligence in the heaven, and apply them to the courses

of our own intelligence which are akin to them, the unperturbed to the

perturbed; and that we, learning them and partaking of the natural truth

of reason, might imitate the absolutely unerring courses of God and

regulate our own vagaries. The same may be affirmed of speech and

hearing: they have been given by the gods to the same end and for a

like reason. For this is the principal end of speech, whereto it most

contributes. Moreover, so much of music as is adapted to the sound of

the voice and to the sense of hearing is granted to us for the sake of

harmony; and harmony, which has motions akin to the revolutions of our

souls, is not regarded by the intelligent votary of the Muses as given

by them with a view to irrational pleasure, which is deemed to be the

purpose of it in our day, but as meant to correct any discord which may

have arisen in the courses of the soul, and to be our ally in bringing

her into harmony and agreement with herself; and rhythm too was given by

them for the same reason, on account of the irregular and graceless ways

which prevail among mankind generally, and to help us against them.

Thus far in what we have been saying, with small exception, the works of

intelligence have been set forth; and now we must place by the side

of them in our discourse the things which come into being through

necessity--for the creation is mixed, being made up of necessity and

mind. Mind, the ruling power, persuaded necessity to bring the greater

part of created things to perfection, and thus and after this manner in

the beginning, when the influence of reason got the better of necessity,

the universe was created. But if a person will truly tell of the way in

which the work was accomplished, he must include the other influence

of the variable cause as well. Wherefore, we must return again and find

another suitable beginning, as about the former matters, so also about

these. To which end we must consider the nature of fire, and water, and

air, and earth, such as they were prior to the creation of the heaven,

and what was happening to them in this previous state; for no one has as

yet explained the manner of their generation, but we speak of fire and

the rest of them, whatever they mean, as though men knew their natures,

and we maintain them to be the first principles and letters or elements

of the whole, when they cannot reasonably be compared by a man of any

sense even to syllables or first compounds. And let me say thus much: I

will not now speak of the first principle or principles of all things,

or by whatever name they are to be called, for this reason--because

it is difficult to set forth my opinion according to the method of

discussion which we are at present employing. Do not imagine, any

more than I can bring myself to imagine, that I should be right in

undertaking so great and difficult a task. Remembering what I said

at first about probability, I will do my best to give as probable an

explanation as any other--or rather, more probable; and I will first go

back to the beginning and try to speak of each thing and of all. Once

more, then, at the commencement of my discourse, I call upon God, and

beg him to be our saviour out of a strange and unwonted enquiry, and to

bring us to the haven of probability. So now let us begin again.

This new beginning of our discussion of the universe requires a fuller

division than the former; for then we made two classes, now a third must

be revealed. The two sufficed for the former discussion: one, which we

assumed, was a pattern intelligible and always the same; and the second

was only the imitation of the pattern, generated and visible. There is

also a third kind which we did not distinguish at the time, conceiving

that the two would be enough. But now the argument seems to require

that we should set forth in words another kind, which is difficult of

explanation and dimly seen. What nature are we to attribute to this new

kind of being? We reply, that it is the receptacle, and in a manner the

nurse, of all generation. I have spoken the truth; but I must express

myself in clearer language, and this will be an arduous task for

many reasons, and in particular because I must first raise questions

concerning fire and the other elements, and determine what each of them

is; for to say, with any probability or certitude, which of them should

be called water rather than fire, and which should be called any of them

rather than all or some one of them, is a difficult matter. How, then,

shall we settle this point, and what questions about the elements may be

fairly raised?

In the first place, we see that what we just now called water, by

condensation, I suppose, becomes stone and earth; and this same element,

when melted and dispersed, passes into vapour and air. Air, again, when

inflamed, becomes fire; and again fire, when condensed and extinguished,

passes once more into the form of air; and once more, air, when

collected and condensed, produces cloud and mist; and from these, when

still more compressed, comes flowing water, and from water comes earth

and stones once more; and thus generation appears to be transmitted from

one to the other in a circle. Thus, then, as the several elements never

present themselves in the same form, how can any one have the assurance

to assert positively that any of them, whatever it may be, is one thing

rather than another? No one can. But much the safest plan is to speak of

them as follows:--Anything which we see to be continually changing, as,

for example, fire, we must not call 'this' or 'that,' but rather say

that it is 'of such a nature'; nor let us speak of water as 'this'; but

always as 'such'; nor must we imply that there is any stability in any

of those things which we indicate by the use of the words 'this' and

'that,' supposing ourselves to signify something thereby; for they

are too volatile to be detained in any such expressions as 'this,'

or 'that,' or 'relative to this,' or any other mode of speaking which

represents them as permanent. We ought not to apply 'this' to any of

them, but rather the word 'such'; which expresses the similar principle

circulating in each and all of them; for example, that should be called

'fire' which is of such a nature always, and so of everything that has

generation. That in which the elements severally grow up, and appear,

and decay, is alone to be called by the name 'this' or 'that'; but that

which is of a certain nature, hot or white, or anything which admits of

opposite qualities, and all things that are compounded of them, ought

not to be so denominated. Let me make another attempt to explain my

meaning more clearly. Suppose a person to make all kinds of figures of

gold and to be always transmuting one form into all the rest;--somebody

points to one of them and asks what it is. By far the safest and truest

answer is, That is gold; and not to call the triangle or any other

figures which are formed in the gold 'these,' as though they had

existence, since they are in process of change while he is making

the assertion; but if the questioner be willing to take the safe and

indefinite expression, 'such,' we should be satisfied. And the same

argument applies to the universal nature which receives all bodies--that

must be always called the same; for, while receiving all things, she

never departs at all from her own nature, and never in any way, or at

any time, assumes a form like that of any of the things which enter into

her; she is the natural recipient of all impressions, and is stirred and

informed by them, and appears different from time to time by reason

of them. But the forms which enter into and go out of her are the

likenesses of real existences modelled after their patterns in a

wonderful and inexplicable manner, which we will hereafter investigate.

For the present we have only to conceive of three natures: first,

that which is in process of generation; secondly, that in which the

generation takes place; and thirdly, that of which the thing generated

is a resemblance. And we may liken the receiving principle to a mother,

and the source or spring to a father, and the intermediate nature to

a child; and may remark further, that if the model is to take every

variety of form, then the matter in which the model is fashioned will

not be duly prepared, unless it is formless, and free from the impress

of any of those shapes which it is hereafter to receive from without.

For if the matter were like any of the supervening forms, then whenever

any opposite or entirely different nature was stamped upon its surface,

it would take the impression badly, because it would intrude its own

shape. Wherefore, that which is to receive all forms should have

no form; as in making perfumes they first contrive that the liquid

substance which is to receive the scent shall be as inodorous as

possible; or as those who wish to impress figures on soft substances

do not allow any previous impression to remain, but begin by making the

surface as even and smooth as possible. In the same way that which is to

receive perpetually and through its whole extent the resemblances of all

eternal beings ought to be devoid of any particular form. Wherefore, the

mother and receptacle of all created and visible and in any way sensible

things, is not to be termed earth, or air, or fire, or water, or any of

their compounds or any of the elements from which these are derived, but

is an invisible and formless being which receives all things and in

some mysterious way partakes of the intelligible, and is most

incomprehensible. In saying this we shall not be far wrong; as far,

however, as we can attain to a knowledge of her from the previous

considerations, we may truly say that fire is that part of her nature

which from time to time is inflamed, and water that which is moistened,

and that the mother substance becomes earth and air, in so far as she

receives the impressions of them.

Let us consider this question more precisely. Is there any self-existent

fire? and do all those things which we call self-existent exist? or

are only those things which we see, or in some way perceive through the

bodily organs, truly existent, and nothing whatever besides them? And is

all that which we call an intelligible essence nothing at all, and

only a name? Here is a question which we must not leave unexamined or

undetermined, nor must we affirm too confidently that there can be no

decision; neither must we interpolate in our present long discourse

a digression equally long, but if it is possible to set forth a great

principle in a few words, that is just what we want.

Thus I state my view:--If mind and true opinion are two distinct

classes, then I say that there certainly are these self-existent ideas

unperceived by sense, and apprehended only by the mind; if, however, as

some say, true opinion differs in no respect from mind, then everything

that we perceive through the body is to be regarded as most real

and certain. But we must affirm them to be distinct, for they have a

distinct origin and are of a different nature; the one is implanted

in us by instruction, the other by persuasion; the one is always

accompanied by true reason, the other is without reason; the one cannot

be overcome by persuasion, but the other can: and lastly, every man may

be said to share in true opinion, but mind is the attribute of the gods

and of very few men. Wherefore also we must acknowledge that there

is one kind of being which is always the same, uncreated and

indestructible, never receiving anything into itself from without, nor

itself going out to any other, but invisible and imperceptible by any

sense, and of which the contemplation is granted to intelligence only.

And there is another nature of the same name with it, and like to it,

perceived by sense, created, always in motion, becoming in place and

again vanishing out of place, which is apprehended by opinion and sense.

And there is a third nature, which is space, and is eternal, and admits

not of destruction and provides a home for all created things, and is

apprehended without the help of sense, by a kind of spurious reason, and

is hardly real; which we beholding as in a dream, say of all existence

that it must of necessity be in some place and occupy a space, but that

what is neither in heaven nor in earth has no existence. Of these and

other things of the same kind, relating to the true and waking reality

of nature, we have only this dreamlike sense, and we are unable to cast

off sleep and determine the truth about them. For an image, since the

reality, after which it is modelled, does not belong to it, and it

exists ever as the fleeting shadow of some other, must be inferred to be

in another (i.e. in space), grasping existence in some way or other,

or it could not be at all. But true and exact reason, vindicating the

nature of true being, maintains that while two things (i.e. the image

and space) are different they cannot exist one of them in the other and

so be one and also two at the same time.

Thus have I concisely given the result of my thoughts; and my verdict is

that being and space and generation, these three, existed in their three

ways before the heaven; and that the nurse of generation, moistened by

water and inflamed by fire, and receiving the forms of earth and air,

and experiencing all the affections which accompany these, presented

a strange variety of appearances; and being full of powers which were

neither similar nor equally balanced, was never in any part in a state

of equipoise, but swaying unevenly hither and thither, was shaken by

them, and by its motion again shook them; and the elements when moved

were separated and carried continually, some one way, some another; as,

when grain is shaken and winnowed by fans and other instruments used in

the threshing of corn, the close and heavy particles are borne away and

settle in one direction, and the loose and light particles in another.

In this manner, the four kinds or elements were then shaken by the

receiving vessel, which, moving like a winnowing machine, scattered

far away from one another the elements most unlike, and forced the most

similar elements into close contact. Wherefore also the various elements

had different places before they were arranged so as to form the

universe. At first, they were all without reason and measure. But when

the world began to get into order, fire and water and earth and air had

only certain faint traces of themselves, and were altogether such as

everything might be expected to be in the absence of God; this, I

say, was their nature at that time, and God fashioned them by form and

number. Let it be consistently maintained by us in all that we say that

God made them as far as possible the fairest and best, out of things

which were not fair and good. And now I will endeavour to show you the

disposition and generation of them by an unaccustomed argument, which I

am compelled to use; but I believe that you will be able to follow me,

for your education has made you familiar with the methods of science.

In the first place, then, as is evident to all, fire and earth and water

and air are bodies. And every sort of body possesses solidity, and

every solid must necessarily be contained in planes; and every plane

rectilinear figure is composed of triangles; and all triangles are

originally of two kinds, both of which are made up of one right and two

acute angles; one of them has at either end of the base the half of a

divided right angle, having equal sides, while in the other the right

angle is divided into unequal parts, having unequal sides. These, then,

proceeding by a combination of probability with demonstration, we

assume to be the original elements of fire and the other bodies; but the

principles which are prior to these God only knows, and he of men who is

the friend of God. And next we have to determine what are the four most

beautiful bodies which are unlike one another, and of which some are

capable of resolution into one another; for having discovered thus much,

we shall know the true origin of earth and fire and of the proportionate

and intermediate elements. And then we shall not be willing to allow

that there are any distinct kinds of visible bodies fairer than these.

Wherefore we must endeavour to construct the four forms of bodies

which excel in beauty, and then we shall be able to say that we have

sufficiently apprehended their nature. Now of the two triangles,

the isosceles has one form only; the scalene or unequal-sided has

an infinite number. Of the infinite forms we must select the most

beautiful, if we are to proceed in due order, and any one who can

point out a more beautiful form than ours for the construction of these

bodies, shall carry off the palm, not as an enemy, but as a friend.

Now, the one which we maintain to be the most beautiful of all the many

triangles (and we need not speak of the others) is that of which the

double forms a third triangle which is equilateral; the reason of this

would be long to tell; he who disproves what we are saying, and shows

that we are mistaken, may claim a friendly victory. Then let us choose

two triangles, out of which fire and the other elements have been

constructed, one isosceles, the other having the square of the longer

side equal to three times the square of the lesser side.

Now is the time to explain what was before obscurely said: there was an

error in imagining that all the four elements might be generated by and

into one another; this, I say, was an erroneous supposition, for

there are generated from the triangles which we have selected four

kinds--three from the one which has the sides unequal; the fourth

alone is framed out of the isosceles triangle. Hence they cannot all be

resolved into one another, a great number of small bodies being combined

into a few large ones, or the converse. But three of them can be thus

resolved and compounded, for they all spring from one, and when the

greater bodies are broken up, many small bodies will spring up out

of them and take their own proper figures; or, again, when many small

bodies are dissolved into their triangles, if they become one, they will

form one large mass of another kind. So much for their passage into one

another. I have now to speak of their several kinds, and show out of

what combinations of numbers each of them was formed. The first will be

the simplest and smallest construction, and its element is that triangle

which has its hypotenuse twice the lesser side. When two such triangles

are joined at the diagonal, and this is repeated three times, and the

triangles rest their diagonals and shorter sides on the same point as

a centre, a single equilateral triangle is formed out of six triangles;

and four equilateral triangles, if put together, make out of every three

plane angles one solid angle, being that which is nearest to the most

obtuse of plane angles; and out of the combination of these four angles

arises the first solid form which distributes into equal and similar

parts the whole circle in which it is inscribed. The second species

of solid is formed out of the same triangles, which unite as eight

equilateral triangles and form one solid angle out of four plane angles,

and out of six such angles the second body is completed. And the third

body is made up of 120 triangular elements, forming twelve solid angles,

each of them included in five plane equilateral triangles, having

altogether twenty bases, each of which is an equilateral triangle. The

one element (that is, the triangle which has its hypotenuse twice the

lesser side) having generated these figures, generated no more; but

the isosceles triangle produced the fourth elementary figure, which

is compounded of four such triangles, joining their right angles in a

centre, and forming one equilateral quadrangle. Six of these united form

eight solid angles, each of which is made by the combination of three

plane right angles; the figure of the body thus composed is a cube,

having six plane quadrangular equilateral bases. There was yet a fifth

combination which God used in the delineation of the universe.

Now, he who, duly reflecting on all this, enquires whether the worlds

are to be regarded as indefinite or definite in number, will be of

opinion that the notion of their indefiniteness is characteristic of a

sadly indefinite and ignorant mind. He, however, who raises the question

whether they are to be truly regarded as one or five, takes up a more

reasonable position. Arguing from probabilities, I am of opinion that

they are one; another, regarding the question from another point of

view, will be of another mind. But, leaving this enquiry, let us proceed

to distribute the elementary forms, which have now been created in idea,

among the four elements.

To earth, then, let us assign the cubical form; for earth is the most

immoveable of the four and the most plastic of all bodies, and that

which has the most stable bases must of necessity be of such a nature.

Now, of the triangles which we assumed at first, that which has two

equal sides is by nature more firmly based than that which has unequal

sides; and of the compound figures which are formed out of either, the

plane equilateral quadrangle has necessarily a more stable basis than

the equilateral triangle, both in the whole and in the parts. Wherefore,

in assigning this figure to earth, we adhere to probability; and to

water we assign that one of the remaining forms which is the least

moveable; and the most moveable of them to fire; and to air that which

is intermediate. Also we assign the smallest body to fire, and the

greatest to water, and the intermediate in size to air; and, again, the

acutest body to fire, and the next in acuteness to air, and the third

to water. Of all these elements, that which has the fewest bases must

necessarily be the most moveable, for it must be the acutest and most

penetrating in every way, and also the lightest as being composed of the

smallest number of similar particles: and the second body has similar

properties in a second degree, and the third body in the third degree.

Let it be agreed, then, both according to strict reason and according to

probability, that the pyramid is the solid which is the original element

and seed of fire; and let us assign the element which was next in the

order of generation to air, and the third to water. We must imagine all

these to be so small that no single particle of any of the four kinds

is seen by us on account of their smallness: but when many of them are

collected together their aggregates are seen. And the ratios of their

numbers, motions, and other properties, everywhere God, as far as

necessity allowed or gave consent, has exactly perfected, and harmonized

in due proportion.

From all that we have just been saying about the elements or kinds, the

most probable conclusion is as follows:--earth, when meeting with fire

and dissolved by its sharpness, whether the dissolution take place in

the fire itself or perhaps in some mass of air or water, is borne hither

and thither, until its parts, meeting together and mutually harmonising,

again become earth; for they can never take any other form. But water,

when divided by fire or by air, on re-forming, may become one part fire

and two parts air; and a single volume of air divided becomes two of

fire. Again, when a small body of fire is contained in a larger body of

air or water or earth, and both are moving, and the fire struggling is

overcome and broken up, then two volumes of fire form one volume of air;

and when air is overcome and cut up into small pieces, two and a half

parts of air are condensed into one part of water. Let us consider the

matter in another way. When one of the other elements is fastened

upon by fire, and is cut by the sharpness of its angles and sides, it

coalesces with the fire, and then ceases to be cut by them any longer.

For no element which is one and the same with itself can be changed by

or change another of the same kind and in the same state. But so long

as in the process of transition the weaker is fighting against the

stronger, the dissolution continues. Again, when a few small particles,

enclosed in many larger ones, are in process of decomposition and

extinction, they only cease from their tendency to extinction when they

consent to pass into the conquering nature, and fire becomes air and air

water. But if bodies of another kind go and attack them (i.e. the small

particles), the latter continue to be dissolved until, being completely

forced back and dispersed, they make their escape to their own kindred,

or else, being overcome and assimilated to the conquering power, they

remain where they are and dwell with their victors, and from being many

become one. And owing to these affections, all things are changing their

place, for by the motion of the receiving vessel the bulk of each class

is distributed into its proper place; but those things which become

unlike themselves and like other things, are hurried by the shaking into

the place of the things to which they grow like.

Now all unmixed and primary bodies are produced by such causes as these.

As to the subordinate species which are included in the greater kinds,

they are to be attributed to the varieties in the structure of the two

original triangles. For either structure did not originally produce the

triangle of one size only, but some larger and some smaller, and there

are as many sizes as there are species of the four elements. Hence

when they are mingled with themselves and with one another there is an

endless variety of them, which those who would arrive at the probable

truth of nature ought duly to consider.

Unless a person comes to an understanding about the nature and

conditions of rest and motion, he will meet with many difficulties in

the discussion which follows. Something has been said of this matter

already, and something more remains to be said, which is, that motion

never exists in what is uniform. For to conceive that anything can

be moved without a mover is hard or indeed impossible, and equally

impossible to conceive that there can be a mover unless there be

something which can be moved--motion cannot exist where either of these

are wanting, and for these to be uniform is impossible; wherefore we

must assign rest to uniformity and motion to the want of uniformity. Now

inequality is the cause of the nature which is wanting in uniformity;

and of this we have already described the origin. But there still

remains the further point--why things when divided after their kinds do

not cease to pass through one another and to change their place--which

we will now proceed to explain. In the revolution of the universe are

comprehended all the four elements, and this being circular and having a

tendency to come together, compresses everything and will not allow any

place to be left void. Wherefore, also, fire above all things penetrates

everywhere, and air next, as being next in rarity of the elements;

and the two other elements in like manner penetrate according to their

degrees of rarity. For those things which are composed of the largest

particles have the largest void left in their compositions, and those

which are composed of the smallest particles have the least. And the

contraction caused by the compression thrusts the smaller particles into

the interstices of the larger. And thus, when the small parts are placed

side by side with the larger, and the lesser divide the greater and the

greater unite the lesser, all the elements are borne up and down and

hither and thither towards their own places; for the change in the size

of each changes its position in space. And these causes generate an

inequality which is always maintained, and is continually creating a

perpetual motion of the elements in all time.

In the next place we have to consider that there are divers kinds

of fire. There are, for example, first, flame; and secondly, those

emanations of flame which do not burn but only give light to the eyes;

thirdly, the remains of fire, which are seen in red-hot embers after the

flame has been extinguished. There are similar differences in the air;

of which the brightest part is called the aether, and the most turbid

sort mist and darkness; and there are various other nameless kinds which

arise from the inequality of the triangles. Water, again, admits in the

first place of a division into two kinds; the one liquid and the other

fusile. The liquid kind is composed of the small and unequal particles

of water; and moves itself and is moved by other bodies owing to the

want of uniformity and the shape of its particles; whereas the fusile

kind, being formed of large and uniform particles, is more stable than

the other, and is heavy and compact by reason of its uniformity.

But when fire gets in and dissolves the particles and destroys the

uniformity, it has greater mobility, and becoming fluid is thrust forth

by the neighbouring air and spreads upon the earth; and this dissolution

of the solid masses is called melting, and their spreading out upon the

earth flowing. Again, when the fire goes out of the fusile substance, it

does not pass into a vacuum, but into the neighbouring air; and the air

which is displaced forces together the liquid and still moveable mass

into the place which was occupied by the fire, and unites it with

itself. Thus compressed the mass resumes its equability, and is again

at unity with itself, because the fire which was the author of the

inequality has retreated; and this departure of the fire is called

cooling, and the coming together which follows upon it is termed

congealment. Of all the kinds termed fusile, that which is the densest

and is formed out of the finest and most uniform parts is that most

precious possession called gold, which is hardened by filtration through

rock; this is unique in kind, and has both a glittering and a yellow

colour. A shoot of gold, which is so dense as to be very hard, and takes

a black colour, is termed adamant. There is also another kind which has

parts nearly like gold, and of which there are several species; it is

denser than gold, and it contains a small and fine portion of earth, and

is therefore harder, yet also lighter because of the great interstices

which it has within itself; and this substance, which is one of the

bright and denser kinds of water, when solidified is called copper.

There is an alloy of earth mingled with it, which, when the two parts

grow old and are disunited, shows itself separately and is called rust.

The remaining phenomena of the same kind there will be no difficulty in

reasoning out by the method of probabilities. A man may sometimes set

aside meditations about eternal things, and for recreation turn to

consider the truths of generation which are probable only; he will thus

gain a pleasure not to be repented of, and secure for himself while

he lives a wise and moderate pastime. Let us grant ourselves this

indulgence, and go through the probabilities relating to the same

subjects which follow next in order.

Water which is mingled with fire, so much as is fine and liquid (being

so called by reason of its motion and the way in which it rolls along

the ground), and soft, because its bases give way and are less stable

than those of earth, when separated from fire and air and isolated,

becomes more uniform, and by their retirement is compressed into itself;

and if the condensation be very great, the water above the earth becomes

hail, but on the earth, ice; and that which is congealed in a less

degree and is only half solid, when above the earth is called snow, and

when upon the earth, and condensed from dew, hoar-frost. Then, again,

there are the numerous kinds of water which have been mingled with one

another, and are distilled through plants which grow in the earth; and

this whole class is called by the name of juices or saps. The unequal

admixture of these fluids creates a variety of species; most of them are

nameless, but four which are of a fiery nature are clearly distinguished

and have names. First, there is wine, which warms the soul as well

as the body: secondly, there is the oily nature, which is smooth and

divides the visual ray, and for this reason is bright and shining and of

a glistening appearance, including pitch, the juice of the castor berry,

oil itself, and other things of a like kind: thirdly, there is the class

of substances which expand the contracted parts of the mouth, until they

return to their natural state, and by reason of this property create

sweetness;--these are included under the general name of honey: and,

lastly, there is a frothy nature, which differs from all juices, having

a burning quality which dissolves the flesh; it is called opos (a

vegetable acid).

As to the kinds of earth, that which is filtered through water passes

into stone in the following manner:--The water which mixes with the

earth and is broken up in the process changes into air, and taking this

form mounts into its own place. But as there is no surrounding vacuum it

thrusts away the neighbouring air, and this being rendered heavy, and,

when it is displaced, having been poured around the mass of earth,

forcibly compresses it and drives it into the vacant space whence the

new air had come up; and the earth when compressed by the air into an

indissoluble union with water becomes rock. The fairer sort is that

which is made up of equal and similar parts and is transparent; that

which has the opposite qualities is inferior. But when all the watery

part is suddenly drawn out by fire, a more brittle substance is formed,

to which we give the name of pottery. Sometimes also moisture may

remain, and the earth which has been fused by fire becomes, when cool,

a certain stone of a black colour. A like separation of the water

which had been copiously mingled with them may occur in two substances

composed of finer particles of earth and of a briny nature; out of

either of them a half-solid-body is then formed, soluble in water--the

one, soda, which is used for purging away oil and earth, the other,

salt, which harmonizes so well in combinations pleasing to the palate,

and is, as the law testifies, a substance dear to the gods. The

compounds of earth and water are not soluble by water, but by fire only,

and for this reason:--Neither fire nor air melt masses of earth; for

their particles, being smaller than the interstices in its structure,

have plenty of room to move without forcing their way, and so they leave

the earth unmelted and undissolved; but particles of water, which are

larger, force a passage, and dissolve and melt the earth. Wherefore

earth when not consolidated by force is dissolved by water only; when

consolidated, by nothing but fire; for this is the only body which can

find an entrance. The cohesion of water again, when very strong, is

dissolved by fire only--when weaker, then either by air or fire--the

former entering the interstices, and the latter penetrating even the

triangles. But nothing can dissolve air, when strongly condensed, which

does not reach the elements or triangles; or if not strongly condensed,

then only fire can dissolve it. As to bodies composed of earth and

water, while the water occupies the vacant interstices of the earth

in them which are compressed by force, the particles of water which

approach them from without, finding no entrance, flow around the entire

mass and leave it undissolved; but the particles of fire, entering into

the interstices of the water, do to the water what water does to earth

and fire to air (The text seems to be corrupt.), and are the sole causes

of the compound body of earth and water liquefying and becoming fluid.

Now these bodies are of two kinds; some of them, such as glass and the

fusible sort of stones, have less water than they have earth; on the

other hand, substances of the nature of wax and incense have more of

water entering into their composition.

I have thus shown the various classes of bodies as they are diversified

by their forms and combinations and changes into one another, and now I

must endeavour to set forth their affections and the causes of them. In

the first place, the bodies which I have been describing are necessarily

objects of sense. But we have not yet considered the origin of flesh, or

what belongs to flesh, or of that part of the soul which is mortal. And

these things cannot be adequately explained without also explaining the

affections which are concerned with sensation, nor the latter without

the former: and yet to explain them together is hardly possible; for

which reason we must assume first one or the other and afterwards

examine the nature of our hypothesis. In order, then, that the

affections may follow regularly after the elements, let us presuppose

the existence of body and soul.

First, let us enquire what we mean by saying that fire is hot; and about

this we may reason from the dividing or cutting power which it exercises

on our bodies. We all of us feel that fire is sharp; and we may further

consider the fineness of the sides, and the sharpness of the angles,

and the smallness of the particles, and the swiftness of the motion--all

this makes the action of fire violent and sharp, so that it cuts

whatever it meets. And we must not forget that the original figure of

fire (i.e. the pyramid), more than any other form, has a dividing power

which cuts our bodies into small pieces (Kepmatizei), and thus naturally

produces that affection which we call heat; and hence the origin of

the name (thepmos, Kepma). Now, the opposite of this is sufficiently

manifest; nevertheless we will not fail to describe it. For the larger

particles of moisture which surround the body, entering in and driving

out the lesser, but not being able to take their places, compress the

moist principle in us; and this from being unequal and disturbed, is

forced by them into a state of rest, which is due to equability and

compression. But things which are contracted contrary to nature are

by nature at war, and force themselves apart; and to this war and

convulsion the name of shivering and trembling is given; and the whole

affection and the cause of the affection are both termed cold. That

is called hard to which our flesh yields, and soft which yields to

our flesh; and things are also termed hard and soft relatively to one

another. That which yields has a small base; but that which rests on

quadrangular bases is firmly posed and belongs to the class which offers

the greatest resistance; so too does that which is the most compact and

therefore most repellent. The nature of the light and the heavy will be

best understood when examined in connexion with our notions of above and

below; for it is quite a mistake to suppose that the universe is parted

into two regions, separate from and opposite to each other, the one

a lower to which all things tend which have any bulk, and an upper to

which things only ascend against their will. For as the universe is in

the form of a sphere, all the extremities, being equidistant from the

centre, are equally extremities, and the centre, which is equidistant

from them, is equally to be regarded as the opposite of them all. Such

being the nature of the world, when a person says that any of these

points is above or below, may he not be justly charged with using an

improper expression? For the centre of the world cannot be rightly

called either above or below, but is the centre and nothing else; and

the circumference is not the centre, and has in no one part of itself a

different relation to the centre from what it has in any of the opposite

parts. Indeed, when it is in every direction similar, how can one

rightly give to it names which imply opposition? For if there were any

solid body in equipoise at the centre of the universe, there would be

nothing to draw it to this extreme rather than to that, for they are

all perfectly similar; and if a person were to go round the world in

a circle, he would often, when standing at the antipodes of his former

position, speak of the same point as above and below; for, as I was

saying just now, to speak of the whole which is in the form of a globe

as having one part above and another below is not like a sensible man.

The reason why these names are used, and the circumstances under which

they are ordinarily applied by us to the division of the heavens, may be

elucidated by the following supposition:--if a person were to stand

in that part of the universe which is the appointed place of fire, and

where there is the great mass of fire to which fiery bodies gather--if,

I say, he were to ascend thither, and, having the power to do this, were

to abstract particles of fire and put them in scales and weigh them, and

then, raising the balance, were to draw the fire by force towards the

uncongenial element of the air, it would be very evident that he could

compel the smaller mass more readily than the larger; for when two

things are simultaneously raised by one and the same power, the smaller

body must necessarily yield to the superior power with less reluctance

than the larger; and the larger body is called heavy and said to

tend downwards, and the smaller body is called light and said to tend

upwards. And we may detect ourselves who are upon the earth doing

precisely the same thing. For we often separate earthy natures, and

sometimes earth itself, and draw them into the uncongenial element of

air by force and contrary to nature, both clinging to their kindred

elements. But that which is smaller yields to the impulse given by us

towards the dissimilar element more easily than the larger; and so we

call the former light, and the place towards which it is impelled we

call above, and the contrary state and place we call heavy and below

respectively. Now the relations of these must necessarily vary, because

the principal masses of the different elements hold opposite positions;

for that which is light, heavy, below or above in one place will be

found to be and become contrary and transverse and every way diverse in

relation to that which is light, heavy, below or above in an opposite

place. And about all of them this has to be considered:--that the

tendency of each towards its kindred element makes the body which is

moved heavy, and the place towards which the motion tends below, but

things which have an opposite tendency we call by an opposite name. Such

are the causes which we assign to these phenomena. As to the smooth

and the rough, any one who sees them can explain the reason of them

to another. For roughness is hardness mingled with irregularity, and

smoothness is produced by the joint effect of uniformity and density.

The most important of the affections which concern the whole body

remains to be considered--that is, the cause of pleasure and pain in the

perceptions of which I have been speaking, and in all other things which

are perceived by sense through the parts of the body, and have both

pains and pleasures attendant on them. Let us imagine the causes of

every affection, whether of sense or not, to be of the following nature,

remembering that we have already distinguished between the nature which

is easy and which is hard to move; for this is the direction in which we

must hunt the prey which we mean to take. A body which is of a nature

to be easily moved, on receiving an impression however slight, spreads

abroad the motion in a circle, the parts communicating with each other,

until at last, reaching the principle of mind, they announce the quality

of the agent. But a body of the opposite kind, being immobile, and not

extending to the surrounding region, merely receives the impression, and

does not stir any of the neighbouring parts; and since the parts do not

distribute the original impression to other parts, it has no effect

of motion on the whole animal, and therefore produces no effect on the

patient. This is true of the bones and hair and other more earthy parts

of the human body; whereas what was said above relates mainly to sight

and hearing, because they have in them the greatest amount of fire

and air. Now we must conceive of pleasure and pain in this way. An

impression produced in us contrary to nature and violent, if sudden,

is painful; and, again, the sudden return to nature is pleasant; but a

gentle and gradual return is imperceptible and vice versa. On the other

hand the impression of sense which is most easily produced is most

readily felt, but is not accompanied by pleasure or pain; such, for

example, are the affections of the sight, which, as we said above, is a

body naturally uniting with our body in the day-time; for cuttings and

burnings and other affections which happen to the sight do not give

pain, nor is there pleasure when the sight returns to its natural state;

but the sensations are clearest and strongest according to the manner in

which the eye is affected by the object, and itself strikes and touches

it; there is no violence either in the contraction or dilation of the

eye. But bodies formed of larger particles yield to the agent only with

a struggle; and then they impart their motions to the whole and cause

pleasure and pain--pain when alienated from their natural conditions,

and pleasure when restored to them. Things which experience gradual

withdrawings and emptyings of their nature, and great and sudden

replenishments, fail to perceive the emptying, but are sensible of the

replenishment; and so they occasion no pain, but the greatest pleasure,

to the mortal part of the soul, as is manifest in the case of perfumes.

But things which are changed all of a sudden, and only gradually and

with difficulty return to their own nature, have effects in every

way opposite to the former, as is evident in the case of burnings and

cuttings of the body.

Thus have we discussed the general affections of the whole body, and

the names of the agents which produce them. And now I will endeavour to

speak of the affections of particular parts, and the causes and agents

of them, as far as I am able. In the first place let us set forth what

was omitted when we were speaking of juices, concerning the affections

peculiar to the tongue. These too, like most of the other affections,

appear to be caused by certain contractions and dilations, but they

have besides more of roughness and smoothness than is found in other

affections; for whenever earthy particles enter into the small veins

which are the testing instruments of the tongue, reaching to the heart,

and fall upon the moist, delicate portions of flesh--when, as they

are dissolved, they contract and dry up the little veins, they are

astringent if they are rougher, but if not so rough, then only harsh.

Those of them which are of an abstergent nature, and purge the whole

surface of the tongue, if they do it in excess, and so encroach as to

consume some part of the flesh itself, like potash and soda, are all

termed bitter. But the particles which are deficient in the alkaline

quality, and which cleanse only moderately, are called salt, and having

no bitterness or roughness, are regarded as rather agreeable than

otherwise. Bodies which share in and are made smooth by the heat of

the mouth, and which are inflamed, and again in turn inflame that which

heats them, and which are so light that they are carried upwards to the

sensations of the head, and cut all that comes in their way, by reason

of these qualities in them, are all termed pungent. But when these same

particles, refined by putrefaction, enter into the narrow veins, and

are duly proportioned to the particles of earth and air which are there,

they set them whirling about one another, and while they are in a whirl

cause them to dash against and enter into one another, and so form

hollows surrounding the particles that enter--which watery vessels of

air (for a film of moisture, sometimes earthy, sometimes pure, is spread

around the air) are hollow spheres of water; and those of them which are

pure, are transparent, and are called bubbles, while those composed

of the earthy liquid, which is in a state of general agitation and

effervescence, are said to boil or ferment--of all these affections the

cause is termed acid. And there is the opposite affection arising from

an opposite cause, when the mass of entering particles, immersed in the

moisture of the mouth, is congenial to the tongue, and smooths and

oils over the roughness, and relaxes the parts which are unnaturally

contracted, and contracts the parts which are relaxed, and disposes

them all according to their nature;--that sort of remedy of violent

affections is pleasant and agreeable to every man, and has the name

sweet. But enough of this.

The faculty of smell does not admit of differences of kind; for all

smells are of a half-formed nature, and no element is so proportioned

as to have any smell. The veins about the nose are too narrow to admit

earth and water, and too wide to detain fire and air; and for this

reason no one ever perceives the smell of any of them; but smells always

proceed from bodies that are damp, or putrefying, or liquefying, or

evaporating, and are perceptible only in the intermediate state, when

water is changing into air and air into water; and all of them are

either vapour or mist. That which is passing out of air into water is

mist, and that which is passing from water into air is vapour; and hence

all smells are thinner than water and thicker than air. The proof of

this is, that when there is any obstruction to the respiration, and a

man draws in his breath by force, then no smell filters through, but the

air without the smell alone penetrates. Wherefore the varieties of smell

have no name, and they have not many, or definite and simple kinds;

but they are distinguished only as painful and pleasant, the one sort

irritating and disturbing the whole cavity which is situated between the

head and the navel, the other having a soothing influence, and restoring

this same region to an agreeable and natural condition.

In considering the third kind of sense, hearing, we must speak of the

causes in which it originates. We may in general assume sound to be a

blow which passes through the ears, and is transmitted by means of the

air, the brain, and the blood, to the soul, and that hearing is the

vibration of this blow, which begins in the head and ends in the region

of the liver. The sound which moves swiftly is acute, and the sound

which moves slowly is grave, and that which is regular is equable and

smooth, and the reverse is harsh. A great body of sound is loud, and

a small body of sound the reverse. Respecting the harmonies of sound I

must hereafter speak.

There is a fourth class of sensible things, having many intricate

varieties, which must now be distinguished. They are called by the

general name of colours, and are a flame which emanates from every sort

of body, and has particles corresponding to the sense of sight. I have

spoken already, in what has preceded, of the causes which generate

sight, and in this place it will be natural and suitable to give a

rational theory of colours.

Of the particles coming from other bodies which fall upon the sight,

some are smaller and some are larger, and some are equal to the parts of

the sight itself. Those which are equal are imperceptible, and we call

them transparent. The larger produce contraction, the smaller dilation,

in the sight, exercising a power akin to that of hot and cold bodies on

the flesh, or of astringent bodies on the tongue, or of those heating

bodies which we termed pungent. White and black are similar effects of

contraction and dilation in another sphere, and for this reason have

a different appearance. Wherefore, we ought to term white that which

dilates the visual ray, and the opposite of this is black. There is also

a swifter motion of a different sort of fire which strikes and dilates

the ray of sight until it reaches the eyes, forcing a way through their

passages and melting them, and eliciting from them a union of fire and

water which we call tears, being itself an opposite fire which comes

to them from an opposite direction--the inner fire flashes forth like

lightning, and the outer finds a way in and is extinguished in the

moisture, and all sorts of colours are generated by the mixture. This

affection is termed dazzling, and the object which produces it is

called bright and flashing. There is another sort of fire which is

intermediate, and which reaches and mingles with the moisture of the

eye without flashing; and in this, the fire mingling with the ray of

the moisture, produces a colour like blood, to which we give the name

of red. A bright hue mingled with red and white gives the colour called

auburn (Greek). The law of proportion, however, according to which the

several colours are formed, even if a man knew he would be foolish in

telling, for he could not give any necessary reason, nor indeed any

tolerable or probable explanation of them. Again, red, when mingled with

black and white, becomes purple, but it becomes umber (Greek) when the

colours are burnt as well as mingled and the black is more thoroughly

mixed with them. Flame-colour (Greek) is produced by a union of auburn

and dun (Greek), and dun by an admixture of black and white; pale yellow

(Greek), by an admixture of white and auburn. White and bright meeting,

and falling upon a full black, become dark blue (Greek), and when dark

blue mingles with white, a light blue (Greek) colour is formed, as

flame-colour with black makes leek green (Greek). There will be no

difficulty in seeing how and by what mixtures the colours derived from

these are made according to the rules of probability. He, however,

who should attempt to verify all this by experiment, would forget

the difference of the human and divine nature. For God only has the

knowledge and also the power which are able to combine many things into

one and again resolve the one into many. But no man either is or ever

will be able to accomplish either the one or the other operation.

These are the elements, thus of necessity then subsisting, which the

creator of the fairest and best of created things associated with

himself, when he made the self-sufficing and most perfect God, using the

necessary causes as his ministers in the accomplishment of his work,

but himself contriving the good in all his creations. Wherefore we may

distinguish two sorts of causes, the one divine and the other necessary,

and may seek for the divine in all things, as far as our nature admits,

with a view to the blessed life; but the necessary kind only for the

sake of the divine, considering that without them and when isolated from

them, these higher things for which we look cannot be apprehended or

received or in any way shared by us.

Seeing, then, that we have now prepared for our use the various classes

of causes which are the material out of which the remainder of our

discourse must be woven, just as wood is the material of the carpenter,

let us revert in a few words to the point at which we began, and then

endeavour to add on a suitable ending to the beginning of our tale.

As I said at first, when all things were in disorder God created in

each thing in relation to itself, and in all things in relation to each

other, all the measures and harmonies which they could possibly receive.

For in those days nothing had any proportion except by accident; nor did

any of the things which now have names deserve to be named at all--as,

for example, fire, water, and the rest of the elements. All these the

creator first set in order, and out of them he constructed the universe,

which was a single animal comprehending in itself all other animals,

mortal and immortal. Now of the divine, he himself was the creator,

but the creation of the mortal he committed to his offspring. And they,

imitating him, received from him the immortal principle of the soul; and

around this they proceeded to fashion a mortal body, and made it to

be the vehicle of the soul, and constructed within the body a soul of

another nature which was mortal, subject to terrible and irresistible

affections,--first of all, pleasure, the greatest incitement to evil;

then, pain, which deters from good; also rashness and fear, two

foolish counsellors, anger hard to be appeased, and hope easily led

astray;--these they mingled with irrational sense and with all-daring

love according to necessary laws, and so framed man. Wherefore, fearing

to pollute the divine any more than was absolutely unavoidable, they

gave to the mortal nature a separate habitation in another part of the

body, placing the neck between them to be the isthmus and boundary,

which they constructed between the head and breast, to keep them apart.

And in the breast, and in what is termed the thorax, they encased the

mortal soul; and as the one part of this was superior and the other

inferior they divided the cavity of the thorax into two parts, as the

women's and men's apartments are divided in houses, and placed the

midriff to be a wall of partition between them. That part of the

inferior soul which is endowed with courage and passion and loves

contention they settled nearer the head, midway between the midriff and

the neck, in order that it might be under the rule of reason and might

join with it in controlling and restraining the desires when they are no

longer willing of their own accord to obey the word of command issuing

from the citadel.

The heart, the knot of the veins and the fountain of the blood which

races through all the limbs, was set in the place of guard, that when

the might of passion was roused by reason making proclamation of any

wrong assailing them from without or being perpetrated by the desires

within, quickly the whole power of feeling in the body, perceiving

these commands and threats, might obey and follow through every turn and

alley, and thus allow the principle of the best to have the command in

all of them. But the gods, foreknowing that the palpitation of the heart

in the expectation of danger and the swelling and excitement of passion

was caused by fire, formed and implanted as a supporter to the heart the

lung, which was, in the first place, soft and bloodless, and also had

within hollows like the pores of a sponge, in order that by receiving

the breath and the drink, it might give coolness and the power of

respiration and alleviate the heat. Wherefore they cut the air-channels

leading to the lung, and placed the lung about the heart as a soft

spring, that, when passion was rife within, the heart, beating against

a yielding body, might be cooled and suffer less, and might thus become

more ready to join with passion in the service of reason.

The part of the soul which desires meats and drinks and the other things

of which it has need by reason of the bodily nature, they placed between

the midriff and the boundary of the navel, contriving in all this region

a sort of manger for the food of the body; and there they bound it down

like a wild animal which was chained up with man, and must be nourished

if man was to exist. They appointed this lower creation his place here

in order that he might be always feeding at the manger, and have his

dwelling as far as might be from the council-chamber, making as little

noise and disturbance as possible, and permitting the best part to

advise quietly for the good of the whole. And knowing that this lower

principle in man would not comprehend reason, and even if attaining

to some degree of perception would never naturally care for rational

notions, but that it would be led away by phantoms and visions night

and day,--to be a remedy for this, God combined with it the liver, and

placed it in the house of the lower nature, contriving that it should

be solid and smooth, and bright and sweet, and should also have a bitter

quality, in order that the power of thought, which proceeds from the

mind, might be reflected as in a mirror which receives likenesses of

objects and gives back images of them to the sight; and so might strike

terror into the desires, when, making use of the bitter part of the

liver, to which it is akin, it comes threatening and invading, and

diffusing this bitter element swiftly through the whole liver produces

colours like bile, and contracting every part makes it wrinkled and

rough; and twisting out of its right place and contorting the lobe and

closing and shutting up the vessels and gates, causes pain and

loathing. And the converse happens when some gentle inspiration of the

understanding pictures images of an opposite character, and allays the

bile and bitterness by refusing to stir or touch the nature opposed

to itself, but by making use of the natural sweetness of the liver,

corrects all things and makes them to be right and smooth and free, and

renders the portion of the soul which resides about the liver happy

and joyful, enabling it to pass the night in peace, and to practise

divination in sleep, inasmuch as it has no share in mind and reason. For

the authors of our being, remembering the command of their father when

he bade them create the human race as good as they could, that they

might correct our inferior parts and make them to attain a measure of

truth, placed in the liver the seat of divination. And herein is a proof

that God has given the art of divination not to the wisdom, but to the

foolishness of man. No man, when in his wits, attains prophetic truth

and inspiration; but when he receives the inspired word, either his

intelligence is enthralled in sleep, or he is demented by some distemper

or possession. And he who would understand what he remembers to have

been said, whether in a dream or when he was awake, by the prophetic

and inspired nature, or would determine by reason the meaning of the

apparitions which he has seen, and what indications they afford to

this man or that, of past, present or future good and evil, must first

recover his wits. But, while he continues demented, he cannot judge

of the visions which he sees or the words which he utters; the ancient

saying is very true, that 'only a man who has his wits can act or judge

about himself and his own affairs.' And for this reason it is customary

to appoint interpreters to be judges of the true inspiration. Some

persons call them prophets; they are quite unaware that they are only

the expositors of dark sayings and visions, and are not to be called

prophets at all, but only interpreters of prophecy.

Such is the nature of the liver, which is placed as we have described

in order that it may give prophetic intimations. During the life of each

individual these intimations are plainer, but after his death the liver

becomes blind, and delivers oracles too obscure to be intelligible. The

neighbouring organ (the spleen) is situated on the left-hand side, and

is constructed with a view of keeping the liver bright and pure,--like

a napkin, always ready prepared and at hand to clean the mirror. And

hence, when any impurities arise in the region of the liver by reason of

disorders of the body, the loose nature of the spleen, which is composed

of a hollow and bloodless tissue, receives them all and clears them

away, and when filled with the unclean matter, swells and festers, but,

again, when the body is purged, settles down into the same place as

before, and is humbled.

Concerning the soul, as to which part is mortal and which divine, and

how and why they are separated, and where located, if God acknowledges

that we have spoken the truth, then, and then only, can we be confident;

still, we may venture to assert that what has been said by us is

probable, and will be rendered more probable by investigation. Let us

assume thus much.

The creation of the rest of the body follows next in order, and this we

may investigate in a similar manner. And it appears to be very meet that

the body should be framed on the following principles:--

The authors of our race were aware that we should be intemperate in

eating and drinking, and take a good deal more than was necessary or

proper, by reason of gluttony. In order then that disease might not

quickly destroy us, and lest our mortal race should perish without

fulfilling its end--intending to provide against this, the gods made

what is called the lower belly, to be a receptacle for the superfluous

meat and drink, and formed the convolution of the bowels, so that the

food might be prevented from passing quickly through and compelling

the body to require more food, thus producing insatiable gluttony, and

making the whole race an enemy to philosophy and music, and rebellious

against the divinest element within us.

The bones and flesh, and other similar parts of us, were made as

follows. The first principle of all of them was the generation of the

marrow. For the bonds of life which unite the soul with the body are

made fast there, and they are the root and foundation of the human race.

The marrow itself is created out of other materials: God took such of

the primary triangles as were straight and smooth, and were adapted by

their perfection to produce fire and water, and air and earth--these, I

say, he separated from their kinds, and mingling them in due proportions

with one another, made the marrow out of them to be a universal seed of

the whole race of mankind; and in this seed he then planted and enclosed

the souls, and in the original distribution gave to the marrow as many

and various forms as the different kinds of souls were hereafter to

receive. That which, like a field, was to receive the divine seed, he

made round every way, and called that portion of the marrow, brain,

intending that, when an animal was perfected, the vessel containing this

substance should be the head; but that which was intended to contain

the remaining and mortal part of the soul he distributed into figures at

once round and elongated, and he called them all by the name 'marrow';

and to these, as to anchors, fastening the bonds of the whole soul,

he proceeded to fashion around them the entire framework of our body,

constructing for the marrow, first of all a complete covering of bone.

Bone was composed by him in the following manner. Having sifted pure and

smooth earth he kneaded it and wetted it with marrow, and after that he

put it into fire and then into water, and once more into fire and again

into water--in this way by frequent transfers from one to the other he

made it insoluble by either. Out of this he fashioned, as in a lathe,

a globe made of bone, which he placed around the brain, and in this he

left a narrow opening; and around the marrow of the neck and back

he formed vertebrae which he placed under one another like pivots,

beginning at the head and extending through the whole of the trunk.

Thus wishing to preserve the entire seed, he enclosed it in a stone-like

casing, inserting joints, and using in the formation of them the power

of the other or diverse as an intermediate nature, that they might have

motion and flexure. Then again, considering that the bone would be too

brittle and inflexible, and when heated and again cooled would soon

mortify and destroy the seed within--having this in view, he contrived

the sinews and the flesh, that so binding all the members together by

the sinews, which admitted of being stretched and relaxed about the

vertebrae, he might thus make the body capable of flexion and extension,

while the flesh would serve as a protection against the summer heat

and against the winter cold, and also against falls, softly and easily

yielding to external bodies, like articles made of felt; and containing

in itself a warm moisture which in summer exudes and makes the surface

damp, would impart a natural coolness to the whole body; and again in

winter by the help of this internal warmth would form a very tolerable

defence against the frost which surrounds it and attacks it from

without. He who modelled us, considering these things, mixed earth with

fire and water and blended them; and making a ferment of acid and salt,

he mingled it with them and formed soft and succulent flesh. As for

the sinews, he made them of a mixture of bone and unfermented flesh,

attempered so as to be in a mean, and gave them a yellow colour;

wherefore the sinews have a firmer and more glutinous nature than flesh,

but a softer and moister nature than the bones. With these God covered

the bones and marrow, binding them together by sinews, and then

enshrouded them all in an upper covering of flesh. The more living and

sensitive of the bones he enclosed in the thinnest film of flesh, and

those which had the least life within them in the thickest and most

solid flesh. So again on the joints of the bones, where reason indicated

that no more was required, he placed only a thin covering of flesh,

that it might not interfere with the flexion of our bodies and make them

unwieldy because difficult to move; and also that it might not, by being

crowded and pressed and matted together, destroy sensation by reason of

its hardness, and impair the memory and dull the edge of intelligence.

Wherefore also the thighs and the shanks and the hips, and the bones of

the arms and the forearms, and other parts which have no joints, and the

inner bones, which on account of the rarity of the soul in the marrow

are destitute of reason--all these are abundantly provided with flesh;

but such as have mind in them are in general less fleshy, except

where the creator has made some part solely of flesh in order to give

sensation,--as, for example, the tongue. But commonly this is not the

case. For the nature which comes into being and grows up in us by a law

of necessity, does not admit of the combination of solid bone and much

flesh with acute perceptions. More than any other part the framework

of the head would have had them, if they could have co-existed, and the

human race, having a strong and fleshy and sinewy head, would have had

a life twice or many times as long as it now has, and also more healthy

and free from pain. But our creators, considering whether they should

make a longer-lived race which was worse, or a shorter-lived race which

was better, came to the conclusion that every one ought to prefer a

shorter span of life, which was better, to a longer one, which was

worse; and therefore they covered the head with thin bone, but not with

flesh and sinews, since it had no joints; and thus the head was added,

having more wisdom and sensation than the rest of the body, but also

being in every man far weaker. For these reasons and after this manner

God placed the sinews at the extremity of the head, in a circle round

the neck, and glued them together by the principle of likeness and

fastened the extremities of the jawbones to them below the face, and the

other sinews he dispersed throughout the body, fastening limb to limb.

The framers of us framed the mouth, as now arranged, having teeth and

tongue and lips, with a view to the necessary and the good contriving

the way in for necessary purposes, the way out for the best purposes;

for that is necessary which enters in and gives food to the body; but

the river of speech, which flows out of a man and ministers to the

intelligence, is the fairest and noblest of all streams. Still the head

could neither be left a bare frame of bones, on account of the extremes

of heat and cold in the different seasons, nor yet be allowed to

be wholly covered, and so become dull and senseless by reason of an

overgrowth of flesh. The fleshy nature was not therefore wholly dried

up, but a large sort of peel was parted off and remained over, which

is now called the skin. This met and grew by the help of the cerebral

moisture, and became the circular envelopment of the head. And the

moisture, rising up under the sutures, watered and closed in the skin

upon the crown, forming a sort of knot. The diversity of the sutures was

caused by the power of the courses of the soul and of the food, and the

more these struggled against one another the more numerous they became,

and fewer if the struggle were less violent. This skin the divine power

pierced all round with fire, and out of the punctures which were thus

made the moisture issued forth, and the liquid and heat which was pure

came away, and a mixed part which was composed of the same material as

the skin, and had a fineness equal to the punctures, was borne up by

its own impulse and extended far outside the head, but being too slow

to escape, was thrust back by the external air, and rolled up underneath

the skin, where it took root. Thus the hair sprang up in the skin, being

akin to it because it is like threads of leather, but rendered harder

and closer through the pressure of the cold, by which each hair, while

in process of separation from the skin, is compressed and cooled.

Wherefore the creator formed the head hairy, making use of the causes

which I have mentioned, and reflecting also that instead of flesh the

brain needed the hair to be a light covering or guard, which would give

shade in summer and shelter in winter, and at the same time would not

impede our quickness of perception. From the combination of sinew,

skin, and bone, in the structure of the finger, there arises a triple

compound, which, when dried up, takes the form of one hard skin

partaking of all three natures, and was fabricated by these second

causes, but designed by mind which is the principal cause with an eye

to the future. For our creators well knew that women and other animals

would some day be framed out of men, and they further knew that many

animals would require the use of nails for many purposes; wherefore they

fashioned in men at their first creation the rudiments of nails. For

this purpose and for these reasons they caused skin, hair, and nails to

grow at the extremities of the limbs.

And now that all the parts and members of the mortal animal had come

together, since its life of necessity consisted of fire and breath,

and it therefore wasted away by dissolution and depletion, the gods

contrived the following remedy: They mingled a nature akin to that of

man with other forms and perceptions, and thus created another kind

of animal. These are the trees and plants and seeds which have been

improved by cultivation and are now domesticated among us; anciently

there were only the wild kinds, which are older than the cultivated. For

everything that partakes of life may be truly called a living being, and

the animal of which we are now speaking partakes of the third kind of

soul, which is said to be seated between the midriff and the navel,

having no part in opinion or reason or mind, but only in feelings of

pleasure and pain and the desires which accompany them. For this nature

is always in a passive state, revolving in and about itself, repelling

the motion from without and using its own, and accordingly is not

endowed by nature with the power of observing or reflecting on its own

concerns. Wherefore it lives and does not differ from a living

being, but is fixed and rooted in the same spot, having no power of

self-motion.

Now after the superior powers had created all these natures to be food

for us who are of the inferior nature, they cut various channels through

the body as through a garden, that it might be watered as from a running

stream. In the first place, they cut two hidden channels or veins down

the back where the skin and the flesh join, which answered severally

to the right and left side of the body. These they let down along the

backbone, so as to have the marrow of generation between them, where it

was most likely to flourish, and in order that the stream coming down

from above might flow freely to the other parts, and equalize the

irrigation. In the next place, they divided the veins about the head,

and interlacing them, they sent them in opposite directions; those

coming from the right side they sent to the left of the body, and those

from the left they diverted towards the right, so that they and the skin

might together form a bond which should fasten the head to the body,

since the crown of the head was not encircled by sinews; and also in

order that the sensations from both sides might be distributed over the

whole body. And next, they ordered the water-courses of the body in a

manner which I will describe, and which will be more easily understood

if we begin by admitting that all things which have lesser parts retain

the greater, but the greater cannot retain the lesser. Now of all

natures fire has the smallest parts, and therefore penetrates through

earth and water and air and their compounds, nor can anything hold it.

And a similar principle applies to the human belly; for when meats and

drinks enter it, it holds them, but it cannot hold air and fire, because

the particles of which they consist are smaller than its own structure.

These elements, therefore, God employed for the sake of distributing

moisture from the belly into the veins, weaving together a network

of fire and air like a weel, having at the entrance two lesser weels;

further he constructed one of these with two openings, and from the

lesser weels he extended cords reaching all round to the extremities of

the network. All the interior of the net he made of fire, but the lesser

weels and their cavity, of air. The network he took and spread over the

newly-formed animal in the following manner:--He let the lesser weels

pass into the mouth; there were two of them, and one he let down by the

air-pipes into the lungs, the other by the side of the air-pipes into

the belly. The former he divided into two branches, both of which he

made to meet at the channels of the nose, so that when the way through

the mouth did not act, the streams of the mouth as well were replenished

through the nose. With the other cavity (i.e. of the greater weel) he

enveloped the hollow parts of the body, and at one time he made all this

to flow into the lesser weels, quite gently, for they are composed of

air, and at another time he caused the lesser weels to flow back again;

and the net he made to find a way in and out through the pores of the

body, and the rays of fire which are bound fast within followed the

passage of the air either way, never at any time ceasing so long as the

mortal being holds together. This process, as we affirm, the name-giver

named inspiration and expiration. And all this movement, active as

well as passive, takes place in order that the body, being watered and

cooled, may receive nourishment and life; for when the respiration is

going in and out, and the fire, which is fast bound within, follows

it, and ever and anon moving to and fro, enters through the belly and

reaches the meat and drink, it dissolves them, and dividing them into

small portions and guiding them through the passages where it goes,

pumps them as from a fountain into the channels of the veins, and makes

the stream of the veins flow through the body as through a conduit.

Let us once more consider the phenomena of respiration, and enquire into

the causes which have made it what it is. They are as follows:--Seeing

that there is no such thing as a vacuum into which any of those things

which are moved can enter, and the breath is carried from us into the

external air, the next point is, as will be clear to every one, that

it does not go into a vacant space, but pushes its neighbour out of its

place, and that which is thrust out in turn drives out its neighbour;

and in this way everything of necessity at last comes round to that

place from whence the breath came forth, and enters in there, and

following the breath, fills up the vacant space; and this goes on like

the rotation of a wheel, because there can be no such thing as a vacuum.

Wherefore also the breast and the lungs, when they emit the breath,

are replenished by the air which surrounds the body and which enters

in through the pores of the flesh and is driven round in a circle; and

again, the air which is sent away and passes out through the body forces

the breath inwards through the passage of the mouth and the nostrils.

Now the origin of this movement may be supposed to be as follows. In the

interior of every animal the hottest part is that which is around the

blood and veins; it is in a manner an internal fountain of fire, which

we compare to the network of a creel, being woven all of fire and

extended through the centre of the body, while the outer parts are

composed of air. Now we must admit that heat naturally proceeds outward

to its own place and to its kindred element; and as there are two exits

for the heat, the one out through the body, and the other through the

mouth and nostrils, when it moves towards the one, it drives round the

air at the other, and that which is driven round falls into the fire

and becomes warm, and that which goes forth is cooled. But when the heat

changes its place, and the particles at the other exit grow warmer, the

hotter air inclining in that direction and carried towards its native

element, fire, pushes round the air at the other; and this being

affected in the same way and communicating the same impulse, a circular

motion swaying to and fro is produced by the double process, which we

call inspiration and expiration.

The phenomena of medical cupping-glasses and of the swallowing of drink

and of the projection of bodies, whether discharged in the air or bowled

along the ground, are to be investigated on a similar principle;

and swift and slow sounds, which appear to be high and low, and are

sometimes discordant on account of their inequality, and then again

harmonical on account of the equality of the motion which they excite in

us. For when the motions of the antecedent swifter sounds begin to pause

and the two are equalized, the slower sounds overtake the swifter and

then propel them. When they overtake them they do not intrude a new

and discordant motion, but introduce the beginnings of a slower, which

answers to the swifter as it dies away, thus producing a single mixed

expression out of high and low, whence arises a pleasure which even the

unwise feel, and which to the wise becomes a higher sort of delight,

being an imitation of divine harmony in mortal motions. Moreover, as to

the flowing of water, the fall of the thunderbolt, and the marvels that

are observed about the attraction of amber and the Heraclean stones,--in

none of these cases is there any attraction; but he who investigates

rightly, will find that such wonderful phenomena are attributable to the

combination of certain conditions--the non-existence of a vacuum, the

fact that objects push one another round, and that they change places,

passing severally into their proper positions as they are divided or

combined.

Such as we have seen, is the nature and such are the causes of

respiration,--the subject in which this discussion originated. For the

fire cuts the food and following the breath surges up within, fire and

breath rising together and filling the veins by drawing up out of the

belly and pouring into them the cut portions of the food; and so the

streams of food are kept flowing through the whole body in all animals.

And fresh cuttings from kindred substances, whether the fruits of the

earth or herb of the field, which God planted to be our daily food,

acquire all sorts of colours by their inter-mixture; but red is the most

pervading of them, being created by the cutting action of fire and by

the impression which it makes on a moist substance; and hence the liquid

which circulates in the body has a colour such as we have described.

The liquid itself we call blood, which nourishes the flesh and the whole

body, whence all parts are watered and empty places filled.

Now the process of repletion and evacuation is effected after the

manner of the universal motion by which all kindred substances are drawn

towards one another. For the external elements which surround us are

always causing us to consume away, and distributing and sending off like

to like; the particles of blood, too, which are divided and contained

within the frame of the animal as in a sort of heaven, are compelled

to imitate the motion of the universe. Each, therefore, of the divided

parts within us, being carried to its kindred nature, replenishes the

void. When more is taken away than flows in, then we decay, and when

less, we grow and increase.

The frame of the entire creature when young has the triangles of each

kind new, and may be compared to the keel of a vessel which is just off

the stocks; they are locked firmly together and yet the whole mass is

soft and delicate, being freshly formed of marrow and nurtured on milk.

Now when the triangles out of which meats and drinks are composed come

in from without, and are comprehended in the body, being older and

weaker than the triangles already there, the frame of the body gets the

better of them and its newer triangles cut them up, and so the animal

grows great, being nourished by a multitude of similar particles. But

when the roots of the triangles are loosened by having undergone many

conflicts with many things in the course of time, they are no longer

able to cut or assimilate the food which enters, but are themselves

easily divided by the bodies which come in from without. In this way

every animal is overcome and decays, and this affection is called old

age. And at last, when the bonds by which the triangles of the marrow

are united no longer hold, and are parted by the strain of existence,

they in turn loosen the bonds of the soul, and she, obtaining a natural

release, flies away with joy. For that which takes place according to

nature is pleasant, but that which is contrary to nature is painful. And

thus death, if caused by disease or produced by wounds, is painful and

violent; but that sort of death which comes with old age and fulfils

the debt of nature is the easiest of deaths, and is accompanied with

pleasure rather than with pain.

Now every one can see whence diseases arise. There are four natures out

of which the body is compacted, earth and fire and water and air, and

the unnatural excess or defect of these, or the change of any of them

from its own natural place into another, or--since there are more kinds

than one of fire and of the other elements--the assumption by any of

these of a wrong kind, or any similar irregularity, produces disorders

and diseases; for when any of them is produced or changed in a manner

contrary to nature, the parts which were previously cool grow warm, and

those which were dry become moist, and the light become heavy, and the

heavy light; all sorts of changes occur. For, as we affirm, a thing

can only remain the same with itself, whole and sound, when the same is

added to it, or subtracted from it, in the same respect and in the

same manner and in due proportion; and whatever comes or goes away

in violation of these laws causes all manner of changes and infinite

diseases and corruptions. Now there is a second class of structures

which are also natural, and this affords a second opportunity of

observing diseases to him who would understand them. For whereas marrow

and bone and flesh and sinews are composed of the four elements, and the

blood, though after another manner, is likewise formed out of them, most

diseases originate in the way which I have described; but the worst

of all owe their severity to the fact that the generation of these

substances proceeds in a wrong order; they are then destroyed. For the

natural order is that the flesh and sinews should be made of blood, the

sinews out of the fibres to which they are akin, and the flesh out

of the clots which are formed when the fibres are separated. And the

glutinous and rich matter which comes away from the sinews and the

flesh, not only glues the flesh to the bones, but nourishes and imparts

growth to the bone which surrounds the marrow; and by reason of the

solidity of the bones, that which filters through consists of the purest

and smoothest and oiliest sort of triangles, dropping like dew from the

bones and watering the marrow. Now when each process takes place in this

order, health commonly results; when in the opposite order, disease. For

when the flesh becomes decomposed and sends back the wasting substance

into the veins, then an over-supply of blood of diverse kinds, mingling

with air in the veins, having variegated colours and bitter properties,

as well as acid and saline qualities, contains all sorts of bile and

serum and phlegm. For all things go the wrong way, and having become

corrupted, first they taint the blood itself, and then ceasing to

give nourishment to the body they are carried along the veins in all

directions, no longer preserving the order of their natural courses, but

at war with themselves, because they receive no good from one another,

and are hostile to the abiding constitution of the body, which they

corrupt and dissolve. The oldest part of the flesh which is corrupted,

being hard to decompose, from long burning grows black, and from being

everywhere corroded becomes bitter, and is injurious to every part of

the body which is still uncorrupted. Sometimes, when the bitter element

is refined away, the black part assumes an acidity which takes the place

of the bitterness; at other times the bitterness being tinged with blood

has a redder colour; and this, when mixed with black, takes the hue of

grass; and again, an auburn colour mingles with the bitter matter

when new flesh is decomposed by the fire which surrounds the internal

flame;--to all which symptoms some physician perhaps, or rather some

philosopher, who had the power of seeing in many dissimilar things one

nature deserving of a name, has assigned the common name of bile. But

the other kinds of bile are variously distinguished by their colours. As

for serum, that sort which is the watery part of blood is innocent,

but that which is a secretion of black and acid bile is malignant when

mingled by the power of heat with any salt substance, and is then called

acid phlegm. Again, the substance which is formed by the liquefaction

of new and tender flesh when air is present, if inflated and encased in

liquid so as to form bubbles, which separately are invisible owing to

their small size, but when collected are of a bulk which is visible,

and have a white colour arising out of the generation of foam--all this

decomposition of tender flesh when intermingled with air is termed by us

white phlegm. And the whey or sediment of newly-formed phlegm is sweat

and tears, and includes the various daily discharges by which the body

is purified. Now all these become causes of disease when the blood is

not replenished in a natural manner by food and drink but gains bulk

from opposite sources in violation of the laws of nature. When the

several parts of the flesh are separated by disease, if the foundation

remains, the power of the disorder is only half as great, and there

is still a prospect of an easy recovery; but when that which binds the

flesh to the bones is diseased, and no longer being separated from the

muscles and sinews, ceases to give nourishment to the bone and to unite

flesh and bone, and from being oily and smooth and glutinous becomes

rough and salt and dry, owing to bad regimen, then all the substance

thus corrupted crumbles away under the flesh and the sinews, and

separates from the bone, and the fleshy parts fall away from their

foundation and leave the sinews bare and full of brine, and the

flesh again gets into the circulation of the blood and makes the

previously-mentioned disorders still greater. And if these bodily

affections be severe, still worse are the prior disorders; as when the

bone itself, by reason of the density of the flesh, does not obtain

sufficient air, but becomes mouldy and hot and gangrened and receives no

nutriment, and the natural process is inverted, and the bone crumbling

passes into the food, and the food into the flesh, and the flesh again

falling into the blood makes all maladies that may occur more virulent

than those already mentioned. But the worst case of all is when the

marrow is diseased, either from excess or defect; and this is the cause

of the very greatest and most fatal disorders, in which the whole course

of the body is reversed.

There is a third class of diseases which may be conceived of as arising

in three ways; for they are produced sometimes by wind, and sometimes by

phlegm, and sometimes by bile. When the lung, which is the dispenser of

the air to the body, is obstructed by rheums and its passages are not

free, some of them not acting, while through others too much air enters,

then the parts which are unrefreshed by air corrode, while in other

parts the excess of air forcing its way through the veins distorts them

and decomposing the body is enclosed in the midst of it and occupies the

midriff; thus numberless painful diseases are produced, accompanied by

copious sweats. And oftentimes when the flesh is dissolved in the body,

wind, generated within and unable to escape, is the source of quite as

much pain as the air coming in from without; but the greatest pain is

felt when the wind gets about the sinews and the veins of the shoulders,

and swells them up, and so twists back the great tendons and the sinews

which are connected with them. These disorders are called tetanus and

opisthotonus, by reason of the tension which accompanies them. The

cure of them is difficult; relief is in most cases given by fever

supervening. The white phlegm, though dangerous when detained within by

reason of the air-bubbles, yet if it can communicate with the outside

air, is less severe, and only discolours the body, generating leprous

eruptions and similar diseases. When it is mingled with black bile and

dispersed about the courses of the head, which are the divinest part

of us, the attack if coming on in sleep, is not so severe; but when

assailing those who are awake it is hard to be got rid of, and being an

affection of a sacred part, is most justly called sacred. An acid and

salt phlegm, again, is the source of all those diseases which take the

form of catarrh, but they have many names because the places into which

they flow are manifold.

Inflammations of the body come from burnings and inflamings, and all of

them originate in bile. When bile finds a means of discharge, it boils

up and sends forth all sorts of tumours; but when imprisoned within, it

generates many inflammatory diseases, above all when mingled with pure

blood; since it then displaces the fibres which are scattered about in

the blood and are designed to maintain the balance of rare and dense,

in order that the blood may not be so liquefied by heat as to exude

from the pores of the body, nor again become too dense and thus find

a difficulty in circulating through the veins. The fibres are so

constituted as to maintain this balance; and if any one brings them

all together when the blood is dead and in process of cooling, then the

blood which remains becomes fluid, but if they are left alone, they soon

congeal by reason of the surrounding cold. The fibres having this power

over the blood, bile, which is only stale blood, and which from being

flesh is dissolved again into blood, at the first influx coming in

little by little, hot and liquid, is congealed by the power of the

fibres; and so congealing and made to cool, it produces internal cold

and shuddering. When it enters with more of a flood and overcomes the

fibres by its heat, and boiling up throws them into disorder, if it have

power enough to maintain its supremacy, it penetrates the marrow and

burns up what may be termed the cables of the soul, and sets her free;

but when there is not so much of it, and the body though wasted still

holds out, the bile is itself mastered, and is either utterly banished,

or is thrust through the veins into the lower or upper belly, and is

driven out of the body like an exile from a state in which there has

been civil war; whence arise diarrhoeas and dysenteries, and all such

disorders. When the constitution is disordered by excess of fire,

continuous heat and fever are the result; when excess of air is the

cause, then the fever is quotidian; when of water, which is a more

sluggish element than either fire or air, then the fever is a tertian;

when of earth, which is the most sluggish of the four, and is only

purged away in a four-fold period, the result is a quartan fever, which

can with difficulty be shaken off.

Such is the manner in which diseases of the body arise; the disorders

of the soul, which depend upon the body, originate as follows. We must

acknowledge disease of the mind to be a want of intelligence; and of

this there are two kinds; to wit, madness and ignorance. In whatever

state a man experiences either of them, that state may be called

disease; and excessive pains and pleasures are justly to be regarded as

the greatest diseases to which the soul is liable. For a man who is in

great joy or in great pain, in his unreasonable eagerness to attain

the one and to avoid the other, is not able to see or to hear anything

rightly; but he is mad, and is at the time utterly incapable of any

participation in reason. He who has the seed about the spinal marrow too

plentiful and overflowing, like a tree overladen with fruit, has

many throes, and also obtains many pleasures in his desires and their

offspring, and is for the most part of his life deranged, because his

pleasures and pains are so very great; his soul is rendered foolish and

disordered by his body; yet he is regarded not as one diseased, but as

one who is voluntarily bad, which is a mistake. The truth is that

the intemperance of love is a disease of the soul due chiefly to the

moisture and fluidity which is produced in one of the elements by the

loose consistency of the bones. And in general, all that which is termed

the incontinence of pleasure and is deemed a reproach under the

idea that the wicked voluntarily do wrong is not justly a matter for

reproach. For no man is voluntarily bad; but the bad become bad by

reason of an ill disposition of the body and bad education, things which

are hateful to every man and happen to him against his will. And in

the case of pain too in like manner the soul suffers much evil from the

body. For where the acid and briny phlegm and other bitter and bilious

humours wander about in the body, and find no exit or escape, but are

pent up within and mingle their own vapours with the motions of the

soul, and are blended with them, they produce all sorts of diseases,

more or fewer, and in every degree of intensity; and being carried to

the three places of the soul, whichever they may severally assail, they

create infinite varieties of ill-temper and melancholy, of rashness and

cowardice, and also of forgetfulness and stupidity. Further, when to

this evil constitution of body evil forms of government are added and

evil discourses are uttered in private as well as in public, and no sort

of instruction is given in youth to cure these evils, then all of us

who are bad become bad from two causes which are entirely beyond our

control. In such cases the planters are to blame rather than the plants,

the educators rather than the educated. But however that may be,

we should endeavour as far as we can by education, and studies, and

learning, to avoid vice and attain virtue; this, however, is part of

another subject.

There is a corresponding enquiry concerning the mode of treatment by

which the mind and the body are to be preserved, about which it is meet

and right that I should say a word in turn; for it is more our duty to

speak of the good than of the evil. Everything that is good is fair, and

the fair is not without proportion, and the animal which is to be

fair must have due proportion. Now we perceive lesser symmetries or

proportions and reason about them, but of the highest and greatest

we take no heed; for there is no proportion or disproportion more

productive of health and disease, and virtue and vice, than that between

soul and body. This however we do not perceive, nor do we reflect that

when a weak or small frame is the vehicle of a great and mighty soul,

or conversely, when a little soul is encased in a large body, then

the whole animal is not fair, for it lacks the most important of all

symmetries; but the due proportion of mind and body is the fairest and

loveliest of all sights to him who has the seeing eye. Just as a body

which has a leg too long, or which is unsymmetrical in some other

respect, is an unpleasant sight, and also, when doing its share of work,

is much distressed and makes convulsive efforts, and often stumbles

through awkwardness, and is the cause of infinite evil to its own

self--in like manner we should conceive of the double nature which we

call the living being; and when in this compound there is an impassioned

soul more powerful than the body, that soul, I say, convulses and fills

with disorders the whole inner nature of man; and when eager in the

pursuit of some sort of learning or study, causes wasting; or again,

when teaching or disputing in private or in public, and strifes and

controversies arise, inflames and dissolves the composite frame of

man and introduces rheums; and the nature of this phenomenon is not

understood by most professors of medicine, who ascribe it to the

opposite of the real cause. And once more, when a body large and too

strong for the soul is united to a small and weak intelligence, then

inasmuch as there are two desires natural to man,--one of food for the

sake of the body, and one of wisdom for the sake of the diviner part

of us--then, I say, the motions of the stronger, getting the better and

increasing their own power, but making the soul dull, and stupid, and

forgetful, engender ignorance, which is the greatest of diseases. There

is one protection against both kinds of disproportion:--that we should

not move the body without the soul or the soul without the body, and

thus they will be on their guard against each other, and be healthy and

well balanced. And therefore the mathematician or any one else whose

thoughts are much absorbed in some intellectual pursuit, must allow his

body also to have due exercise, and practise gymnastic; and he who

is careful to fashion the body, should in turn impart to the soul its

proper motions, and should cultivate music and all philosophy, if he

would deserve to be called truly fair and truly good. And the separate

parts should be treated in the same manner, in imitation of the pattern

of the universe; for as the body is heated and also cooled within by

the elements which enter into it, and is again dried up and moistened by

external things, and experiences these and the like affections from both

kinds of motions, the result is that the body if given up to motion when

in a state of quiescence is overmastered and perishes; but if any one,

in imitation of that which we call the foster-mother and nurse of the

universe, will not allow the body ever to be inactive, but is always

producing motions and agitations through its whole extent, which form

the natural defence against other motions both internal and external,

and by moderate exercise reduces to order according to their affinities

the particles and affections which are wandering about the body, as we

have already said when speaking of the universe, he will not allow enemy

placed by the side of enemy to stir up wars and disorders in the body,

but he will place friend by the side of friend, so as to create health.

Now of all motions that is the best which is produced in a thing

by itself, for it is most akin to the motion of thought and of the

universe; but that motion which is caused by others is not so good, and

worst of all is that which moves the body, when at rest, in parts only

and by some external agency. Wherefore of all modes of purifying and

re-uniting the body the best is gymnastic; the next best is a surging

motion, as in sailing or any other mode of conveyance which is not

fatiguing; the third sort of motion may be of use in a case of extreme

necessity, but in any other will be adopted by no man of sense: I mean

the purgative treatment of physicians; for diseases unless they are

very dangerous should not be irritated by medicines, since every form of

disease is in a manner akin to the living being, whose complex frame

has an appointed term of life. For not the whole race only, but each

individual--barring inevitable accidents--comes into the world having a

fixed span, and the triangles in us are originally framed with power to

last for a certain time, beyond which no man can prolong his life. And

this holds also of the constitution of diseases; if any one regardless

of the appointed time tries to subdue them by medicine, he only

aggravates and multiplies them. Wherefore we ought always to manage

them by regimen, as far as a man can spare the time, and not provoke a

disagreeable enemy by medicines.

Enough of the composite animal, and of the body which is a part of him,

and of the manner in which a man may train and be trained by himself so

as to live most according to reason: and we must above and before all

provide that the element which is to train him shall be the fairest and

best adapted to that purpose. A minute discussion of this subject would

be a serious task; but if, as before, I am to give only an outline, the

subject may not unfitly be summed up as follows.

I have often remarked that there are three kinds of soul located within

us, having each of them motions, and I must now repeat in the fewest

words possible, that one part, if remaining inactive and ceasing from

its natural motion, must necessarily become very weak, but that which is

trained and exercised, very strong. Wherefore we should take care

that the movements of the different parts of the soul should be in due

proportion.

And we should consider that God gave the sovereign part of the human

soul to be the divinity of each one, being that part which, as we say,

dwells at the top of the body, and inasmuch as we are a plant not of an

earthly but of a heavenly growth, raises us from earth to our kindred

who are in heaven. And in this we say truly; for the divine power

suspended the head and root of us from that place where the generation

of the soul first began, and thus made the whole body upright. When a

man is always occupied with the cravings of desire and ambition, and is

eagerly striving to satisfy them, all his thoughts must be mortal, and,

as far as it is possible altogether to become such, he must be mortal

every whit, because he has cherished his mortal part. But he who has

been earnest in the love of knowledge and of true wisdom, and has

exercised his intellect more than any other part of him, must have

thoughts immortal and divine, if he attain truth, and in so far as

human nature is capable of sharing in immortality, he must altogether be

immortal; and since he is ever cherishing the divine power, and has the

divinity within him in perfect order, he will be perfectly happy. Now

there is only one way of taking care of things, and this is to give to

each the food and motion which are natural to it. And the motions which

are naturally akin to the divine principle within us are the thoughts

and revolutions of the universe. These each man should follow, and

correct the courses of the head which were corrupted at our birth,

and by learning the harmonies and revolutions of the universe, should

assimilate the thinking being to the thought, renewing his original

nature, and having assimilated them should attain to that perfect life

which the gods have set before mankind, both for the present and the

future.

Thus our original design of discoursing about the universe down to the

creation of man is nearly completed. A brief mention may be made of the

generation of other animals, so far as the subject admits of brevity;

in this manner our argument will best attain a due proportion. On the

subject of animals, then, the following remarks may be offered. Of the

men who came into the world, those who were cowards or led unrighteous

lives may with reason be supposed to have changed into the nature of

women in the second generation. And this was the reason why at that time

the gods created in us the desire of sexual intercourse, contriving

in man one animated substance, and in woman another, which they formed

respectively in the following manner. The outlet for drink by which

liquids pass through the lung under the kidneys and into the bladder,

which receives and then by the pressure of the air emits them, was so

fashioned by them as to penetrate also into the body of the marrow,

which passes from the head along the neck and through the back, and

which in the preceding discourse we have named the seed. And the seed

having life, and becoming endowed with respiration, produces in that

part in which it respires a lively desire of emission, and thus creates

in us the love of procreation. Wherefore also in men the organ of

generation becoming rebellious and masterful, like an animal disobedient

to reason, and maddened with the sting of lust, seeks to gain absolute

sway; and the same is the case with the so-called womb or matrix of

women; the animal within them is desirous of procreating children, and

when remaining unfruitful long beyond its proper time, gets discontented

and angry, and wandering in every direction through the body, closes up

the passages of the breath, and, by obstructing respiration, drives

them to extremity, causing all varieties of disease, until at length the

desire and love of the man and the woman, bringing them together and

as it were plucking the fruit from the tree, sow in the womb, as in a

field, animals unseen by reason of their smallness and without form;

these again are separated and matured within; they are then finally

brought out into the light, and thus the generation of animals is

completed.

Thus were created women and the female sex in general. But the race of

birds was created out of innocent light-minded men, who, although their

minds were directed toward heaven, imagined, in their simplicity, that

the clearest demonstration of the things above was to be obtained by

sight; these were remodelled and transformed into birds, and they grew

feathers instead of hair. The race of wild pedestrian animals, again,

came from those who had no philosophy in any of their thoughts, and

never considered at all about the nature of the heavens, because they

had ceased to use the courses of the head, but followed the guidance of

those parts of the soul which are in the breast. In consequence of these

habits of theirs they had their front-legs and their heads resting upon

the earth to which they were drawn by natural affinity; and the crowns

of their heads were elongated and of all sorts of shapes, into which the

courses of the soul were crushed by reason of disuse. And this was the

reason why they were created quadrupeds and polypods: God gave the more

senseless of them the more support that they might be more attracted to

the earth. And the most foolish of them, who trail their bodies entirely

upon the ground and have no longer any need of feet, he made without

feet to crawl upon the earth. The fourth class were the inhabitants

of the water: these were made out of the most entirely senseless and

ignorant of all, whom the transformers did not think any longer worthy

of pure respiration, because they possessed a soul which was made impure

by all sorts of transgression; and instead of the subtle and pure medium

of air, they gave them the deep and muddy sea to be their element of

respiration; and hence arose the race of fishes and oysters, and other

aquatic animals, which have received the most remote habitations as a

punishment of their outlandish ignorance. These are the laws by which

animals pass into one another, now, as ever, changing as they lose or

gain wisdom and folly.

We may now say that our discourse about the nature of the universe has

an end. The world has received animals, mortal and immortal, and is

fulfilled with them, and has become a visible animal containing the

visible--the sensible God who is the image of the intellectual, the

greatest, best, fairest, most perfect--the one only-begotten heaven.

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