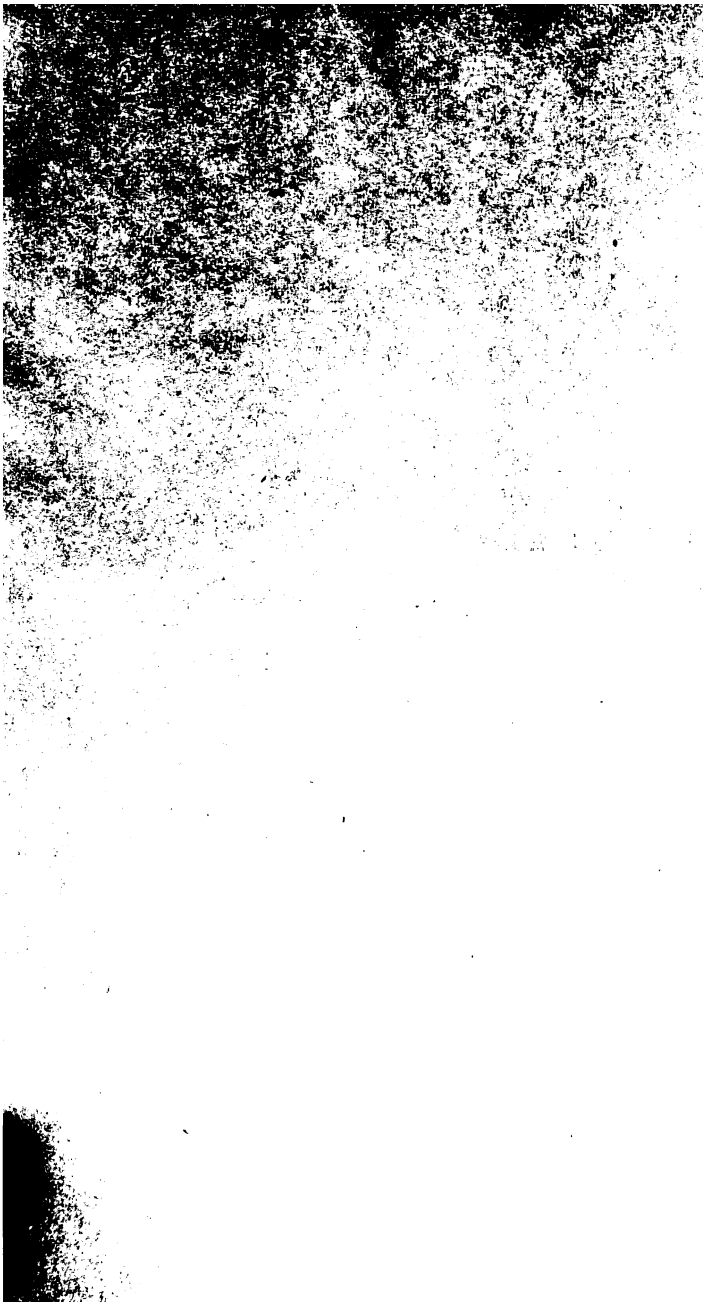

DIALOGUES

IN A

LIBRARY.

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ADVERTISEMENT.

THESE Dialogues are held in a Library, from the contemplation of which ſcene they derive their origin. The ſubjects ariſe incidentally, but have, in general, a concatenation, more or leſs obvious, with each other. It is the deſign of the Speakers to take firſt a view of the Creation, and afterwards to extend their proſpect through the Moral and Political World.

CONTENTS.

X.

DIALOGUES

IN A

LIBRARY.

DIALOGUE I.

PARMENIO, SOPHRONIUS.

PARMENIO.

WHAT a noble library! Sophronius.

SOPHRONIUS.

Yes, Parmenio; and the books are not more ſplendid in appearance than judiciouſly ſelected. You will find here none of thoſe imitations which vanity has ſubſtituted for the real productions of literary genius and induſtry. The library of Polymetis, far from being reſtricted to

gratify the eyes of the ſpectator, affords the moſt certain means of attaining to the illuſtrious character of Good and Great.

PARMENIO.

Your obſervation ſuggeſts the cauſe of a ſentiment which I have often experienced: for I never enter a large library without feeling my mind impreſſed with a reverential awe, as if in the preſence of a great aſſembly of men renowned for ſuperior talents and virtue. But I ſhould be glad to know the proper method of employing a library towards the attainment of the character you mention.

SOPHRONIUS.

It is the prerogative of uſeful books, that they contain the principles of knowledge: knowledge leads to wiſdom, and wiſdom never fails to inculcate the precepts of virtue. By peruſing, therefore, ſuch books with attention, and by meditating on the ſtores which they ſupply, the mind is gradually improved in the moſt eſſential

eſſential accompliſhments of human nature.

PARMENIO.

You ſay *uſeful books*, Sophronius, meaning, I preſume, thoſe which convey information and inſtruction to the mind, in contradiſtinction to ſuch as only afford entertainment.

SOPHRONIUS.

You judge perfectly right of my alluſion, though I would not exclude books of innocent entertainment from all pretenſions to utility, while they are uſed only to relax the attention from more ſerious employment, and are not permitted to occupy too great a part of our time. Beſides, ſuch books may be rendered highly ſubſervient to the purpoſes of morality.

PARMENIO.

Undoubtedly they may; and of ſuch we know many examples. But I wiſh to be favoured with your opinion more ex-

plicitly reſpecting the important object which you juſt now mentioned, *the principles of knowledge.* It appears to me that the ſubjects of inveſtigation are infinitely various, and ſo numerous beſides, as to prove unattainable by the moſt induſtrious reſearch, though continued with unwearied application, to the utmoſt extent of human life. Such being the caſe, it is a matter deeply intereſting, to determine what province of enquiry affords the particular ſpecies of knowledge moſt uſeful and important to mankind; for to that, you will allow, we ought principally to direct our attention.

SOPHRONIUS.

I certainly muſt allow your concluſion; and as you appreciate ſo juſtly the importance of the queſtion propoſed, there remains little doubt of your anticipating the province to which that importance is attached. It can be no other than the ſcience which relates to the conduct of life.

PARMENIO.

PARMENIO.

That, indeed, is my own idea: I only wiſh for the preciſe aſcertainment of ſuch moral and prudential rules as are adapted to the purpoſe. On this intereſting ſubject, various ſyſtems have been offered to the world by men of ſpeculation; but ſome of them being repugnant to each other, they ſerve rather to confound the perception of good and evil, than to elucidate the diſtinction. Amidſt all this diverſity of ſentiment, it is remarkable that each of thoſe philoſophical ſects affects to eſtabliſh its own peculiar doctrines on the principles of Reaſon. Is it poſſible, Sophronius, that Reaſon can be of ſo ductile a nature as to admit of being accommodated to ſuch various and oppoſite theories?

SOPHRONIUS.

It were impious to think ſo. Reaſon is the guide which Providence has aſſigned to man for the direction of his conduct. Its perception is clear, and its deci-

ſions, when faithfully reported, are uniformly founded in truth, though they are often ſo over-ruled by prejudice or paſſion, as to be rendered abortive of effect. Ignorance, vanity, intereſt, caprice, the love of ſingularity, a variety of motives may darken or miſlead the underſtanding. In the contemplation of ſpeculative points, it is liable to unintentional error, but with reſpect to moral duty, its admonitions are ſeldom imperfect.

PARMENIO.

But if men are ſubjected to moral obligation, and Reaſon has been implanted for the direction of their conduct, why ſhould it ever prove ineffectual for the purpoſe intended? Is this not a radical imperfection in the conſtitution of human nature?

SOPHRONIUS.

An imperfection certainly it is, but not neceſſarily inherent in human nature.

PARMENIO.

PARMENIO.

How! you mean, I ſuppoſe, that by aſſiduous attention it may always be exerted with effect.

SOPHRONIUS.

Yes; that is my meaning.

PARMENIO.

But why is obedience to its dictates ever reſiſted by any other internal principle in our frame? This contrariety of influencing powers, each thwarting its antagoniſt, bears a ſtrong reſemblance to the doctrine maintained by ſome ancient philoſophers, that the world is governed by a good and a bad Demon, who are conſtantly oppoſing each other.

SOPHRONIUS.

Indeed, what thoſe philoſophers have whimſically imagined in reſpect of the univerſe, is too certainly verified in the moral œconomy of the human mind. It

is actuated by a variety of paſſions, which controul the authority of Reaſon.

PARMENIO.

You acknowledge, then, the reality of that imperfection for which I contend?

SOPHRONIUS.

I acknowledge an eventual, but not a radical imperfection. The paſſions are a neceſſary part of our conſtitution, without the impulſe of which we ſhould be utterly deſtitute of any motive to action; it is only when improperly directed, or when they exceed their juſt bounds, that they become reprehenſible or injurious.

PARMENIO.

But what is the cauſe of their improper direction? muſt it not proceed from ſome principle which is natural to the mind?

SOPHRONIUS.

No; it proceeds from a cauſe which is not natural, but the effect of a ſupervening depravity.

PARMENIO.

PARMENIO.

By what ſtandard ſhall we judge of the moral rectitude or depravity of the paſſions?

SOPHRONIUS.

By the ſtandard of virtue.

PARMENIO.

Virtue is indeed a high-ſounding name; and has, for almoſt three thouſand years, been made the ſtalking-horſe of viſionary ſophiſts; but pray, can ever its precepts be otherwiſe really expedient than as they are conducive to our intereſts in the world? and it is obvious, that to theſe the precepts of virtue, as inculcated by moraliſts, are extremely repugnant.

SOPHRONIUS.

You aſtoniſh me, Parmenio, by the declaration of ſuch ſentiments. According to your principle, the greateſt crimes would be juſtifiable, if productive of

of temporal good, or, in other words, if they contributed to the gratification of the paſſions. Reflect, for a moment, on the conſequences; under ſuch a wild and tumultuary mode of action, human ſociety could not ſubſiſt a ſingle day.

PARMENIO.

And does it ſubſiſt at preſent upon any other baſis than that of reciprocal advantage, and the terror of penal laws?

SOPHRONIUS.

Theſe, doubtleſs, are the pillars which ſupport the fabric of political aſſociations; and would they not be at once overthrown by the anarchy of general revolt? Could ever reaſon, or even ſelf-intereſt, which you regard as the ſole object of human purſuit, be more flagrantly violated than by the introduction of ſuch principles as you have ſuggeſted? Confeſs, therefore, that the conſtitution of the human mind is admirably fitted for a ſtate of exiſtence, in which

which our obedience or diſobedience to the government of reaſon will hereafter procure us the glorious reward of virtue, or, on the contrary, the puniſhment of vice.

PARMENIO.

Still I cannot renounce the idea, that reaſon alone, eſpecially when aſſailed by the paſſions, is inſufficient for the ſteady purſuit of any moral purpoſe, not intimately connected with perſonal gratification.

SOPHRONIUS.

I perceive, that in your argument you reſt much on the uncertainty of the deciſions of reaſon in moral enquiries. To obviate this defect, however, there has happily been promulgated to mankind a ſyſtem of laws, ſtamped with an authority ſuperior to that of reaſon itſelf. But here comes Polymetis.

DIALOGUE II.

PARMENIO, SOPHRONIUS, POLYMETIS.

POLYMETIS.

IF I conjecture right, my friends, ye are engaged in converſation on ſome intereſting topic of morality.

SOPHRONIUS.

Yes, Polymetis, your library is a ſcene auſpicious to the communication of ſentiment, and has incidentally excited a kind of diſpute on no leſs a ſubject than the conſtitution of the human mind. Parmenio maintains the inſufficiency of reaſon for the government of life, and I had juſt ſuggeſted that the defect is ſupplied by the ſacred ſcriptures, when you entered the room.

POLYMETIS.

POLYMETIS.

I am happy in having joined you ſo opportunely, for partaking of the diſcourſe: though wholly untainted with bigotry or fanaticiſm, I ſhall ever hold religion as the object of greateſt importance to mankind; and ſhould think I had long enjoyed the uſe of a library to very little purpoſe, had it not, before this time, confirmed me in the knowledge and practice of thoſe duties which I owe to the beneficent Creator of the univerſe, and to ſociety. Of the imperfection of human nature, in its moſt cultivated ſtate, we are all of us abundantly ſenſible, but have, at the ſame time, the greateſt cauſe to be ſatisfied with the ſtation allotted to us, amongſt the productions of Omnipotence. We are placed in this world at the head of the creation, with faculties which ſtrongly indicate a ſuperior deſtiny, and have the animating aſſurance that we ſhall exiſt through all eternity, when this

tranſitory ſcene is no more.—Lives there a man who can behold ſuch a proſpect, without ſentiments of complacency and gratitude?

PARMENIO.

To thoſe who are convinced of its reality, the proſpect which you deſcribe affords ſubject of ſincere felicitation; but for my own part, I muſt acknowledge I feel difficulty in ſubſcribing either to the dignity of human nature, or the truth of its exiſtence beyond the grave.

POLYMETIS.

It gives me pain to hear ſuch a declaration proceed from Parmenio.—Whence, my good friend, have you derived your ideas on this ſubject? Have you formed them by means of deliberate diſquiſition, or imbibed them from ſceptical writers? There are in this library ſome of the moſt eminent productions of that kind, which, however ungrateful, I have not heſitated to peruſe, though I have

I have ever ſince conſigned them to oblivion, and they now occupy the ſhelves merely as monuments of perverted reaſoning, and obſtinate incredulity. I have called them *ſceptical* writers; but there is reaſon for thinking, that if not always, at leaſt on ſeveral occaſions, their ſcepticiſm is only affected: for, like ſome ancient philoſophers, they ſeem to pride themſelves in maintaining opinions repugnant to the general intereſts of mankind. From whatever ſource your ſentiments may be derived, you will oblige us by explaining them.—In the firſt place, by what arguments do you diſprove the dignity of human nature?

PARMENIO.

In fact, I ſee not upon what foundation its dignity can juſtly be eſtabliſhed. Man, though endowed with ſome peculiar qualities, is nevertheleſs an animal, affected by external cauſes, impelled by natural appetites, and ſubject to accidents, diſeaſes, and death, in the ſame way

way as the various other ſpecies of the animal tribe.—Among the human qualities moſt obvious to our ſenſes, I might mention, in particular, that of ſpeech; but we perceive, from a variety of inſtances, that numerous other tribes have the power of reciprocal communication by the voice as well as man.—A quality peculiar to the human ſpecies, it muſt be acknowledged, is laughter; but I am much miſtaken if this can be conſidered as a characteriſtic of dignity, and by ſome it has been reprobated as a ſymptom of folly or madneſs.—Both theſe qualities belong excluſively to this arrogant creature, man, who, notwithſtanding his aſſumed ſuperiority, is moſt of all diſtinguiſhed from other animals by the conſcious guilt of doing wrong. Let me add, that the faculty of reaſon, on which he piques himſelf, is infinitely ſurpaſſed in certainty, and of conſequence, in utility, by the inſtinct of brutes.

POLYMETIS.

POLYMETIS.

You diſplay ſo much ingenuity in your arguments on the ſubject, that we might draw from your own example a forcible proof of the intellectual abilities with which mankind is endowed; but even admitting all your obſervations to be well founded, man, when cloſely compared with every other animal, muſt appear to extraordinary advantage.—Surrounded as we now are by this large collection of books, all of them the production of his underſtanding or invention, what muſt we think of the vaſt capacity which he has received from the hand of his Creator? Where his mind is totally uncultivated, he may indeed ſeem an object of no high conſideration in the ſcale of animal exiſtence; but view him enriched with the attainments of ſcience, the admirable powers of genius, and exerting himſelf in the practice or contemplation of virtue, is it poſſible not to acknowledge his infinite ſuperio-

rity? The wonderful faculties of the underſtanding, the memory, the imagination, bear the ſtrongeſt marks of divine origin: made likewiſe after the image of God, and only a little lower than the Angels; the preſages, the hopes, the deſires of his ſoul itſelf, as an emanation from Heaven, anticipating a future ſtate, are to me an earneſt, independent of revelation, that he is deſtined for immortality.

PARMENIO.

May it not be queſtioned whether ſuch hopes and deſires as you mention prevail in the bulk of mankind? That they are not general, appears evident.

POLYMETIS.

I grant it; but mankind, when viewed in the bulk, appears not in its genuine form; it is weakened by neglect, clouded by vice, and oppreſſed by ſenſuality. We are undoubtedly born very ignornt creatures, and it is by the improvement of

of our faculties only that we arrive at knowledge: what elſe than intellectual cultivation occaſions the prodigious difference which we find between the comprehenſions of the rudeſt peaſant and the moſt intelligent philoſopher? Common ſenſe, indeed, is widely diſtributed by nature, without the aid of induſtrious application; but common ſenſe, though ſufficient for the ordinary purpoſes of life, is inadequate to the attainment of thoſe arduous parts of ſcience, which not only tend moſt to diſplay the powers of the human mind, but to elucidate the ſtupendous wiſdom of God in the creation of the univerſe; and I hold that this purpoſe is a laudable and uſeful, as well as an eſſential object for the contemplation of man.

PARMENIO.

An acquaintance with the more abſtruſe parts of ſcience muſt undoubtedly be highly gratifying to an inquiſitive mind; but you know it is a maxim long

ſince inculcated, and generally received, that the moſt important attainment of man is the knowledge of himſelf.

POLYMETIS.

I approve of the apophthegm, and revere the authorities upon which it has been recommended; but however much that ſpecies of knowledge deſerves to be cultivated, it ought not to confine our reſearch from penetrating into the various other provinces of the world in which we are placed, and even as far as poſſible into the remote regions of nature: for by ſuch means the knowledge of ourſelves is improved, through comparative elucidation; and we are taught to admire that infinite wiſdom which I juſt now mentioned as an object moſt worthy of our attention.

PARMENIO.

Do you conſider it as of any great importance to man, that he ſhould employ himſelf in ſuch ſpeculations? for I look

look upon the gratification of curioſity as the principal object of thoſe reſearches.

POLYMETIS.

The gratification of curioſity is the motive, but ought not to be the end of thoſe reſearches. Curioſity, like every other principle which actuates the human mind, muſt have been implanted by God for ſome uſeful purpoſe; that purpoſe, there is reaſon to conclude, was to promote enquiry. Now as infinite wiſdom would impel us to no purſuit in vain, we may reſt aſſured that the purpoſe of enquiry was knowledge; and where the knowledge obtained, by reſearches into nature, contributes but little to the immediate uſe or temporal intereſts of mankind, what other cauſe can be aſſigned for the expediency of its attainment, than that we ſhould be made acquainted with the wondrous works of the creation? Such enquiries will likewiſe beſt teach us that knowledge of ourſelves, which you mentioned a little ago as an attain-

ment of the greateſt importance. It will afford convincing proof, that God has formed us with inconceivable wiſdom, that we ſubſiſt by the continual ſupport of his bountiful goodneſs, and that it would betray extreme inſenſibility not to adore Him by the united impulſes of admiration and gratitude. It is aſtoniſhing to behold the inattention of mankind to the wonderful works of the creation.

SOPHRONIUS.

Before you entered the room, Parmenio and I had agreed that the ſcience of greateſt importance to mankind was that which reſpects the moral conduct of life. The converſation has ſince taken a different turn, to the propriety of which, however, I moſt readily aſſent. As man was formed, and is ſupported by the great Creator of the Univerſe, the principal duties of life are juſtly conſecrated to our bountiful benefactor; and the knowledge of theſe being moſt clearly evinced by a general view of the creation,

tion, I wiſh, if the propoſal be acceptable to you both, that we might embrace the preſent opportunity of proſecuting the ſubject.

POLYMETIS.

Sophronius, I am glad to ſee you reſume your part in the converſation, which both your learning and abilities qualify you ſo well to maintain; and I ſhall, with great pleaſure, avail myſelf of ſo favourable an occaſion.

PARMENIO.

I have long entertained a deſire to know the ſentiments of intelligent men on thoſe ſubjects; for I muſt confeſs that my own opinions upon them are neither clear nor determinate.

DIALOGUE III.

POLYMETIS.

LET us, therefore, my friends, conſider what we are, and what is around us. The ſcene is full of wonderful objects. In the firſt place, view our own bodies. How aſtoniſhing is their ſtructure! how exquiſitely are all the parts adapted to each other! and how admirably is each of them formed for its particular function! Without extending our obſervation to the curious anatomy of the internal organs, the perpetual motion of the heart, the alternate action of the lungs, and the circulation of the blood, thoſe efficient cauſes by which animal life is maintained, let us conſider with how much wiſdom every part is arranged, to anſwer the purpoſe of utility. The eyes

are

are placed in our head, as on an eminence, that they may command a more extenſive proſpect: the ears are likewiſe ſtationed in an elevated ſituation, for the more commodious reception of ſound, which naturally aſcends: the noſtrils have a ſimilar poſition, becauſe all ſcent likewiſe aſcends, and are placed contiguous to the mouth, as being uſeful in aſſiſting us to judge of the ſtate of meat and drink: the taſte, which is intended to diſtinguiſh the quality of our nutriment, is in a part of the mouth, whence the food or drink may either be tranſmitted to the ſtomach, or repelled in their paſſage, according to the dictates of that ſenſe. But while the faculties of ſeeing, hearing, ſmelling, and taſting, are reſtrained to particular parts, the ſenſe of feeling is, with admirable contrivance, diffuſed over the whole body; that by communicating intimation of inclement heat or cold, or any other external oppreſſion, we may be excited to our own defence.

SOPHRONIUS.

It is wonderful to reflect on the ſeveral diſtinct modes of perception afforded us by means of the five ſenſes, and how happily they are accommodated to the various channels through which our bodily organs can be affected by external objects; yet there may, in other worlds, exiſt creatures endowed with different ſenſes, of which we can form no conception. The obſervations which you have made, Polymetis, are worthy of your enlightened underſtanding; but let us attend a little more to ſome particular circumſtances reſpecting our eyes. To ſecure them againſt injury, they are covered with a fine membrane, ſo tranſparent, that we may ſee through it, and yet ſo firm in its texture, as to anſwer all the purpoſes of defence. The eyelids are ſoft and ſmooth, that they may not injure the membrane, and are made to ſhut involuntarily, in an inſtant, at the apprehenſion of any accident, or to open

at

at pleaſure. They are fortified with a ſort of paliſade of hairs, to keep off what might be noxious to them when open, and to be a fence to their repoſe when ſleep cloſes them, and ſuſpends their perception. They are likewiſe defended by eminences on every ſide: for on the upper part, the eye-brows turn aſide the ſweat which falls from the forehead; the cheeks beneath, having a little elevation, protect the lower part; and the noſe is placed between them as a wall of ſeparation.

POLYMETIS.

Sophronius, you have well elucidated a variety of circumſtances relative to the formation and poſition of the eyes; I ſhall next mention a few with regard to hearing. The channel of this ſenſe is always open, as being uſeful even during ſleep; for if any ſound enters, we immediately awake. It has a winding paſſage, the better to prevent the intruſion of any thing extraneous: nature alſo has taken the precaution of lubricating the

the paſſage with a viſcous humour, that if any inſects ſhould endeavour to enter, they might be obſtructed in their progreſs. The external appendage of the ears is prominent, to facilitate the hearing, leſt the ſound ſhould diſſipate before the ſenſe is affected. The upper part, and the entrances, are hard and horny, and their form winding, becauſe bodies of that kind are particularly well adapted to return and increaſe the ſound.

PARMENIO.

What are your remarks upon the noſtrils?

POLYMETIS.

They are, in like manner, ever open, becauſe we have continual uſe for them. Their apertures are narrow, leſt any thing noxious ſhould enter them; and they have a conſtant humidity, for the purpoſe of excluding duſt, and other extraneous bodies.

SOPHRONIUS.

SOPHRONIUS.

Adjoining to the parts we have been conſidering, what an admirable proviſion is likewiſe made for our ſafety in our throats or gullets! As the paſſage for the entrance of the air into the lungs is placed cloſe to that by which our food is conveyed into the ſtomach, we ſhould be in imminent danger, by every morſel we ſwallowed, of ſtopping our breath, had not the great Creator, whoſe wiſdom and care extends to the minuteſt particular, ordained a little coverlet over the reſpiratory paſſage, which conſtantly ſhuts down of itſelf, after every act of deglutition: and though we have occaſion for it ſo often, yet ſo exactly does it perform its office, that there are very few inſtances of any fatal accident having happened, from a deviation of the food into the wind-pipe.

POLYMETIS.

We might extend our obſervations to our hands, our feet, and every other part

part of our body, for they all manifeſt a wonderful ſtructure and contrivance, ſuch as could only be the effects of infinite wiſdom. There is one particularity in the hand extremely worthy of attention; I mean the difference in the length of our fingers. By this circumſtance, when we graſp any thing of a large circumference, the tops of them come to an equality, by which we are enabled to take the firmer hold. It is equally ſerviceable to our holding between our fingers ſmall things, which would have been apt to ſlip away, had our fingers been all of an equal length; and many other inconveniences ſhould we have found from ſuch a formation.

PARMENIO.

As you have mentioned the hands and feet, let me aſk you if you accede to the opinion of a modern writer, who intimates a conjecture that mankind was intended to go upon all four, in the manner of the quadrupeds?

POLYMETIS.

POLYMETIS.

I know to whom you allude, and I reſpect the author for his learning and ingenuity in other particulars; but the very formation of the hands and feet, and the articulation of the arms and knees, afford evidence ſtrong as demonſtration, that man was intended to walk erect. The ſentiment of Ovid on this ſubject is more worthy of human nature:—

Pronaque cum ſpectent animalia cetera terram,
Os homini ſublime dedit: cœlumque tueri
Juſſit, & erectos ad ſidera tollere vultus.

SOPHRONIUS.

It has always appeared ſurpriſing to me, that men of the medical faculty, who, from their more intimate acquaintance with the ſtructure of the human body, ought to be particularly impreſſed with a conviction of its wonderful contrivance, ſhould ever have incurred the imputation of atheiſm: yet *Religio Medici* has long been proverbial.

POLYMETIS.

POLYMETIS.

Whence the imputation has become ſo, I know not; but certain it is, that the man who can view the ſtructure of the human body, without acknowledging it to be the production of infinite wiſdom and goodneſs, muſt be utterly deſtitute of clear perception or of ſound underſtanding.—Who can behold the diſſection of a human body without wonder and ſurpriſe? What an amazing number of inconceivably fine veins and arteries, that convey the blood to every part of the body! What a multitude likewiſe of nervous filaments, to give motion and ſenſation to all! How many muſcles and tendons are diſplayed to the ſight! without which the body could not be able to riſe up or lie down, to walk or ſtand ſtill, or perform any of its functions.—What proviſion do we find made in the ſtomach, for digeſting the food we ſwallow, and to make it nouriſh the whole body! How ſurpriſing the perpetual motion

tion of the heart, which drives the blood to the remoteſt extremities! No leſs ſo is the conſtant motion of the lungs, which alternately dilate and contract, to receive and return the air we breathe, without which we could not live. What ſtrong ſupports of the body are the bones, which yet are ſo light, that they are no incumbrance to us! How admirably are the joints contrived to render our limbs pliant, and fit for every motion; and yet ſo ſtrong, as not to be injured by the perpetual uſe of them! In ſhort, there is not one circumſtance which is not ſufficient to excite aſtoniſhment in any perſon of common ſenſibility and common underſtanding.

DIALOGUE IV.

POLYMETIS.

IN our laſt converſation, we took a curſory view of the admirable ſtructure of the human body, and had before taken ſome notice of the nobler part of our conſtitution, the ſoul; that divine principle, which renders man ſuperior to the brute creation. The aſtoniſhing faculties with which it is endowed proclaim the excellence of our nature beyond all contradiction. What curious arts, and abſtruſe receſſes of knowledge, have been explored by the induſtry and penetration of man! The capacity alone, which could diſcover a method of expreſſing every thought of our minds by twenty-four letters, and all numbers by that of ten figures only, almoſt exceeds comprehenſion.

ſion. How great a genius did it require to inveſtigate the laws of the ſolar ſyſtem, and to derive, from the obſervation of the celeſtial bodies, the noble ſciences of aſtronomy and navigation! To invent likewiſe the many curious inſtruments made uſe of in each department, and in that of geography; with thoſe of clocks and watches, for the meaſurement of time! To dive to the bottom of the ocean in a veſſel of glaſs, and there to remain, during a conſiderable period, without danger of ſuffocation! To aſcertain the properties of the air itſelf, an inviſible fluid; and to diſcover its weight, rarefaction, and condenſation, by means of the barometer! Theſe are ſuch inſtances as may juſtly fill us with aſtoniſhment at the prodigious capacity of our ſpecies.

SOPHRONIUS.

Does it not ſeem ſtrange that ſuch a capacity had ſo long lain dormant in man? for excepting aſtronomy, which began to be cultivated at an early period

among the Eaſtern nations, the other ſciences and arts are of modern invention.

POLYMETIS.

Navigation could not be much improved before the accidental diſcovery of the quality of the load-ſtone; but with reſpect to the other purſuits, it may indeed ſeem ſtrange, and we can only account for it from that indolence of mind, in which men too commonly ſuffer the powers of their nature to ſtagnate. The capacity that is given, perhaps almoſt to all, for the attainment of knowledge, is much greater than our ſloth and irreſolution permit us to employ. The complaint ſo generally made, of want of time, is far from being ſuch an obſtacle to our advancement in knowledge as we are apt to imagine; for our lives, though much contracted by incidental diſtractions, and inevitable avocations, in procuring the neceſſaries of life; though leſſened by ſleep, and other requiſite refreſh-

refreſhments and relaxations after labour, will yet afford us a large ſpace for the exerciſe both of reaſon and virtue. The truth is, that we want not time, but diligence, for uſeful enquiries.

SOPHRONIUS.

I am convinced, that he who will reſolutely aſſign to ſtudy thoſe vacancies which intervene in the moſt crowded variety of employment or diverſion, would find himſelf every day improve in knowledge, and diſcover how much more may be attained by frequency and perſeverance of application, than by ſudden and deſultory efforts. He that will not ſuffer himſelf to be diſcouraged by imaginary impoſſibilities, will find the powers of his mind increaſed by the frequent exertion of them.

POLYMETIS.

Beyond all doubt, Sophronius; and it is a fact, that among thoſe who have contributed to the advancement of learning,

many have riſen to eminence, in oppoſition to all the obſtacles which external circumſtances could place in their way; amidſt the tumult of buſineſs, the preſſure of poverty, or the diſſipations of a wandering and unſettled ſtate.

PARMENIO.

But are you of opinion, that the cultivation of the arts and ſciences is the moſt uſeful purſuit of mankind?

POLYMETIS.

In point of utility, the arts and ſciences are not all either equally or immediately important, ſome contributing more, and others leſs, to our convenience or gratification; but they all ultimately tend to the conſummation of our happineſs, by extending the ſphere of domeſtic enjoyment, enlarging the powers of our mind, and raiſing our thoughts with gratitude to that Almighty Being, who has beſtowed upon us the means of rendering the preſent life comfortable,

and

and of ſecuring, if we reject not the offer, eternal felicity in the next. To theſe great objects the attention of mankind ought always to be chiefly directed; and they can only be obtained by the purſuits of knowledge and virtue.

SOPHRONIUS.

No man is inſenſible of the value of knowledge; it is praiſed and deſired almoſt by all; but few have reſolution enough to rouſe themſelves from the couch of ſloth to obtain it. Some who make the effort perform it ſo languidly, that the ſlighteſt invitation of pleaſure draws them away from ſtudy; any other method of ſpending the day ſeems more eligible to them than the uſe of books; and they are more eaſily engaged by any converſation, than ſuch as may rectify their notions, or enlarge their comprehenſion.

PARMENIO.

It ſeems to me that the objects of knowledge are infinite, and therefore,

that in the purſuit of it we never can completely be gratified.

POLYMETIS.

How far it is poſſible to extend the limits of knowledge in every direction, the human mind, with all its capacity, is incompetent to determine; but the proſecution of knowledge will always be rewarded both with profit and pleaſure; and it is the only kind of indulgence in which the moſt ample gratification never can be productive of ſatiety: but ſince you appear to inſinuate ſome diſcouragement, Parmenio, at the boundleſs proſpect of univerſal knowledge, I would obſerve that Knowledge, properly ſo called, is that which directs us in the conduct of life, ſo as to render it more happy and more eaſy than it is in common.

PARMENIO.

The ſentiment you now expreſs coincides entirely with my own idea; and I wiſh to ſee it extended in a courſe of precepts

precepts and obſervations adapted to practice.

POLYMETIS.

In reſpect of the precepts on this ſubject, they are delivered upon the higheſt authority in the Sacred Scriptures, with this addition, that while they teach us the means of ſecuring tranquillity of mind, which is the utmoſt degree of happineſs attainable in our temporal ſtate, they likewiſe afford us the glorious proſpect of a happy immortality.—Can there be any ſtronger inducement to receive and practiſe them?

PARMENIO.

As there are ſome men who profeſs to entertain doubts reſpecting the authority of Scripture, it would afford me great pleaſure to hear the queſtion diſcuſſed by you and Sophronius, ſince I know you to be intimately acquainted with a ſubject of ſo great importance to mankind.

POLYMETIS.

We ſhould indeed have paſſed our lives in very criminal inattention, had we not before this time uſed every endeavour to examine the foundations both of ſcepticiſm and faith, and to eſtabliſh our opinions accordingly. Since you have mentioned the ſubject as a queſtion, it is our duty to ſolve it, ſo far as lies in our power; and I know that Sophronius will concur with me in adopting the propoſal.

DIALOGUE V.

POLYMETIS.

PARMENIO, do you believe in hiſtorical evidence?

PARMENIO.

Yes, when the narrative appears to be founded upon authentic documents, and the character of the hiſtorian, in point of veracity, is not impeached.

POLYMETIS.

But by what rule ſhall we judge of ancient documents, the authenticity of which it is impoſſible now to aſcertain?

PARMENIO.

I know not any other method of judging, than by the credit in which they appear

appear to have been held during the time of their exiſtence.

POLYMETIS.

Should you be ſatisfied with the evidence of three or four men, concurring in the recital of certain facts; men who could be actuated by no motive of intereſt to impoſe upon mankind, and who ſhould even lay down their lives in confirmation of their veracity?

PARMENIO.

Of all evidence that can be produced of remote tranſactions, I ſhould conſider the kind you mention as the moſt convincing.

POLYMETIS.

Then the authenticity of the New Teſtament, and the truth of the Chriſtian religion, reſt exactly upon that foundation. The hiſtory of Jeſus Chriſt is ſeparately related by the four Evangeliſts, with a little inconſiderable variation, as their memory was more or leſs impreſſed by

by particular circumſtances, but without any inconſiſtency.

PARMENIO.

So far as their evidence relates to credible occurrences, it would be unreaſonable to queſtion their veracity; but they have recorded likewiſe a variety of tranſactions contrary to the courſe of nature, and which therefore are difficult of belief.

POLYMETIS.

The recital of thoſe miraculous tranſactions, ſo far from reflecting any diſcredit on their teſtimony, affords, in my opinion, the ſtrongeſt proof of its veracity. Nothing leſs than perſonal conviction, and a notoriety of the facts, could have induced them to record events of ſo extraordinary and miraculous a nature, which, if not well founded, would have been effectually diſproved by the inhabitants of the country. But the miracles of Jeſus Chriſt ceaſe to be incredible,

incredible, when we reflect by whom they were performed.—They were the work of ſuch a perſon as never before, nor ſince, has appeared in the world; the promiſed Meſſiah of the Jews, predicted by a number of Prophets; of Him whoſe divine nature was manifeſted both at his birth and crucifixion, by extraordinary incidents, and whoſe precepts and example tranſcend in moral purity the moſt celebrated patterns of excellence recorded in the annals of mankind.

PARMENIO.

I muſt own that your obſervations impreſs my mind with irreſiſtible conviction.

SOPHRONIUS.

They cannot fail of operating, with equal efficacy, on the mind of every unprejudiced perſon, who pays attention to the ſubject. As Polymetis finiſhed his argument with the crucifixion of our Saviour, it may not be improper to add,

that the Reſurrection of Jeſus Chriſt, the grand foundation of our confidence in a future ſtate, is confirmed by the ſame perſons who have recorded the previous events; with additional evidence, of equal authority, rendered, if poſſible, yet more convincing, by the peculiar circumſtances which accompanied its origin, the benevolent zeal with which it was enforced and diſſeminated, and the difficulties, dangers, and perſecution encountered by the enlightener of the Gentiles, in the diſcharge of his apoſtolical commiſſion.—In a word, the whole narrative reſpecting the hiſtory of our Saviour, conſidered with regard to the evidence of its diſtinct parts, and the circumambient light which they reflect upon each other, affords ſuch teſtimony of its truth, as I ſhall ever maintain to be both ſatisfactory and irrefragable.

POLYMETIS.

So firmly am I perſuaded, from rational evidence, of the truth of the goſpel, that I entertain but a very mean opinion of thoſe

thoſe who would reject its authority. But an infidel is leſs an object of abhorrence than of commiſeration, and I might even add, of contempt. If indolence towards inquiry prevents him from being informed, he betrays a degree of weakneſs which merits the ſevereſt reprehenſion: if on the other hand, he endeavours to inquire, and cannot be ſatisfied with the teſtimony, he diſcovers ſuch a perverſion of intellect, as being repugnant to natural ſentiment, can only be aſcribed to depravity. There is reaſon however to ſuſpect, that infidelity is often only pretended. As the greateſt cowards are generally the moſt remarkable for declarations of courage, ſo men of this claſs conceive an opinion, that they cannot better diſplay a ſuperiority of mind, than by ſcorning to join in the faith maintained by other men, and even by ſetting at defiance the threatened vengeance of the Omnipotent himſelf. I think we may reſt aſſured that all ſuch intimations are void of ſincerity.

DIALOGUE VI.

POLYMETIS.

HAVING formerly taken a view of the wonderful formation of man, will it be agreeable to you that we now direct our attention to the World in which we are placed?

SOPHRONIUS.

The tranſition is natural, and the ſubject cannot but be intereſting.

PARMENIO.

I have only to ſay, that the proſecution of it will afford me great pleaſure.

POLYMETIS.

It has been diſcovered by diligent inquiries, that this Earth is a round body,

and that it reſts upon nothing, but is pendent in the air, without any viſible cauſe to uphold or ſupport it: that inſtead of being fixed and at reſt, as we ſuppoſe, it is continually moving through the regions of the ſky at the rate of a million and a half of miles every day, till in the ſpace of twelve months it finiſhes its circuit round the ſun, and comes again to the ſame point in the Ecliptic. But beſides this prodigious motion in its annual circuit, it daily turns upon its own axis like a wheel, or to make uſe of another compariſon, like a top that ſpins round; and this motion is at no leſs a rate than a thouſand miles an hour. It is by means of this rotation on its axis, that the day breaks in one part of the world, while night approaches in the oppoſite part; as it turns its ſides alternately to the great fountain of light, the Sun, which always remains fixed in one place: for though it appears to us to riſe every day in the Eaſt, and move to the Weſt, this is only a falſe appearance, occaſioned by the motion

motion of the Earth from weſt to eaſt, which conſequently makes the Sun, Moon, and all the heavenly bodies appear to move the contrary way, from eaſt to weſt.

SOPHRONIUS.

How aſtoniſhingly great muſt be the force of that attraction, which ſomewhere exiſts, to maintain the world pendent; and the gravitation to thecentre, by which the looſe bodies on the ſurface of the earth are preſerved from flying off in a tangent, by the rapidity of its motion!

PARMENIO.

How wonderful is it likewiſe, that though our heads be downwards during a great part of the day, we are not ſenſible of the ſmalleſt change in our poſition!

POLYMETIS.

The whole is amazing beyond the power of human comprehenſion. By this

conſtant rotation of the earth, every part enjoys the comfortable light and heat of the Sun, and the grateful viciſſitude of day and night.—Without this, one half of it, during half of the year, would be oppreſſed with intenſe cold and diſmal darkneſs, while the other half would be ſcorched and oppreſſed by a continual heat and light.

SOPHRONIUS.

We may remark another benefit ariſing from the diurnal motion of the earth, which is, that by this means the whole earth never lies a moment unconſcious or torpid: if in one ſpot of it more animals lie buried, and extinguiſhed as it were in ſleep, on another, at that very time, they are all alive and active, enjoying happineſs, and performing the offices of life.

POLYMETIS.

It would indeed, in ſome meaſure, be like an extinguiſhing of the creation, was the

the whole earth to fall together into the death-like ſtate of ſleep and inaction every twenty-four hours: but according to the wiſe arrangement of Providence, while we in this quarter of the world are obliged to fall into a ſtate of inaction, others, in a diſtant part, are actively employed, perhaps for our convenience or gratification, in providing and ſhipping off their manufactures and products, till we ariſe again into action to do the ſame, while they ſink into a ſtate of inactivity.

SOPHRONIUS.

Let us now direct our attention to the prodigious and almoſt incredible multitude of herbs, trees, fruits and flowers, which the earth produces.—How aſtoniſhingly and delightfully various are their kinds! how exquiſitely delicious are ſome! how beautiful are others! and how uſeful, did we know the utility of each of them, are all! Is it not amazing, that the ſame earth and air ſhould produce ſo many kinds, quite different from

each other in figure, colours, and properties! Our admiration is likewiſe excited by the general colour with which it has pleaſed the Creator to beautify every plant.—Had all the fields been cloathed in white or red, what eyes could have endured perpetually the luſtre of their dreſs? If he had beſtowed upon them darker colours, who could have been delighted with ſo ſad and mournful a ſpectacle? An agreeable verdure holds the mean between theſe two extremes, and is ſo happily adapted to the ſtructure of the eye, as to refreſh and preſerve the ſight, inſtead of tiring and exhauſting it. But what at firſt we ſhould judge to be one colour, is an aſtoniſhing variety of ſhades; ſcarcely any plant is coloured exactly as another; and this ſurpriſing variety, which no art can imitate, is farther diverſified in each plant, which, in its firſt ſhooting forth, in its growth and maturity, aſſumes a different verdure.

SOPHRONIUS.

SOPHRONIUS.

The ſame may be ſaid of the figure, ſmell, taſte, and uſes of plants, both for nouriſhment and medicine.

POLYMETIS.

Let us tranſport ourſelves in thought to a field covered with flowers, or a garden well cultivated. What beautiful enamel, what colours, what richneſs, what fragrance, and at the ſame time, how great a harmony in the ſhades with which they are blended! From what ſource could ariſe the beauties ſo fitted to excite admiration? What is in itſelf the principle of ſo much ſplendor, and of ornaments ſo infinitely diverſified? It is from God they have received their aſtoniſhing decorations; and it may well be ſaid of a multitude of kinds, that "Solomon, in all his glory, was not arrayed like one of theſe."

SOPHRONIUS.

I ſeldom ever behold a beautiful flower without reflecting on the blind-

neſs and vanity of mankind, who reckon upon beauty, youth, authority, and human glory, as ſolid benefits, not remembering that they are as the tranſient flower of an herb, which to-morrow ſhall be no more.

POLYMETIS.

Hitherto we have conſidered the Earth as a field, or a garden of herbs; let us now conſider it as a rich orchard, abounding with all kinds of fruit, which ſucceed one another according to the ſeaſons.—Let us figure to ourſelves one of thoſe trees extending its branches, bowing down to the earth under the weight of delicious fruit, the colour and ſmell of which invite the taſte of the beholder. This tree, by the pomp it diſplays before our eyes, ſeems to cry out, "Learn of me how great is the goodneſs and munificence of God, who has formed me for you.—It is neither for him nor for me that I thus abound in riches. He ſtands in need of nothing, and I can make no uſe

of

of what is given me.—Bleſs him and unload me; give thanks to him, and as he has made me the miniſter of your entertainment, do you become the miniſter of my gratitude."—Such invitations as theſe we ſeem to hear from every quarter; and as we advance in the ſtudy of nature, we ſhall diſcover new ſubjects of praiſe and admiration.

SOPHRONIUS.

Nothing exhibits in ſo ſtrong a light the goodneſs of God to all his creatures, as the knowledge of Nature; and the indifference of mankind to this pleaſing and inſtructive ſubject is a mark of great inſenſibility.

PARMENIO.

The knowledge of nature, in the light that each of you conſiders it, affords not only high entertainment, but an inexhauſtible ſource of gratitude to the beneficent Creator of the Univerſe.—Were it conſiſtent with your convenience and inclination,

inclination, a proſecution of the ſubject, through ſome parts at leaſt of the animal kingdom, would be extremely deſirable. I do not mean an extenſive and ſyſtematical view, but a conciſe and general proſpect of the intereſting objects which it contains.

POLYMETIS.

You were going to ſpeak, Sophronius?

SOPHRONIUS.

I meant only to expreſs my approbation of what Parmenio ſuggeſts.

POLYMETIS.

And mine ſhall never be withheld, where the proſecution of knowledge is the ſubject. Let us, therefore, enter upon it in our next converſation.

DIALOGUE VII.

POLYMETIS.

WHAT an amazing abundance of fiſh do the waters produce of every ſize! Theſe animals have neither feet nor arms: their very head cannot be freely moved; and were we to conſider only their figure, we ſhould think them deprived of all that was neceſſary for the preſervation of their life: yet with their few outward organs, they are more nimble, dextrous, and artificial than if they had ſeveral hands and feet. The uſe which they make of their tails and fins carries them along as arrows, and gives them a velocity like that of the birds in the air.

PARMENIO.

As the fiſh devour one another, is it not ſurpriſing that the different kinds ſhould ſtill continue to ſubſiſt?

POLYMETIS.

POLYMETIS.

God has provided for it, by multiplying them in ſo prodigious a manner, that their fruitfulneſs infinitely ſurpaſſes the havoc which is made amongſt them by their mutual deſire of depredation. Senſibility is intereſted in reflecting how the little ones ſhould eſcape thoſe of ſuperior ſize, which look upon them as their prey, and are continually in purſuit of them. But this weak race are ſwifter in their courſe than the others; they creep into places where the low water will not admit of the larger fiſh, and it ſeems as if God had given them a foreſight in proportion to their weakneſs and dangers.

SOPHRONIUS.

In reſpect of fiſh, there are many conſiderations particularly worthy of attention, and which all evince in the plaineſt manner the care and goodneſs of Providence towards man. While the ſea-fiſh live in the waters, loaded with ſalt, that we can ſcarce bear a drop of them in our mouths,

mouths, and exiſt in that element in perfect vigor and health; yet they preſerve in the midſt of ſalt a fleſh which has not the ſmalleſt taſte of ſuch a ſubſtance. The beſt of thoſe tribes, and ſuch as are moſt fit for the uſe of man, draw near the coaſt, as if to offer themſelves to his diſpoſal; whilſt many others, which are uſeleſs to him, keep aloof from the ſhore.

POLYMETIS.

This peculiar favor towards us is every where to be diſcerned: and the innumerable ſhells which are ſpread upon the ſhore hide different kinds of fiſh, which, with a very ſmall appearance of life, are ſure to open their ſhells at ſtated times to take in freſh water: and retain in their habitation, by ſpeedily joining its parts together, the prey which falls into that ſnare.

SOPHRONIUS.

We ſee a ſurpriſing imitation of reaſon in many animals, but it no where appears

in

in a more evident manner than in the induſtry of birds in building their neſts. In the firſt place, what maſter has taught them that they have need of them? Who has enjoined to prepare them in time, and intimated how they ſhould build them? What mathematician has ſuggeſted to them the figure; or what architect inſtructed them to chooſe a firm place, and to build upon a ſolid foundation? What tender mother has adviſed them to cover the bottom with a ſoft and delicate ſubſtance, ſuch as down and cotton? And when thoſe materials are deficient, who has ſuggeſted to them that ingenious charity, which leads them to pluck off ſo many feathers from their own breaſts, with their beaks, as is requiſite for preparing a convenient cradle for their young?

In the ſecond place, what wiſdom has pointed out to every diſtinct kind a peculiar manner of building their neſts, ſo as to obſerve the ſame precautions, though in a thouſand different ways? Who has commanded

commanded the ſwallow, the moſt ſkilful of birds, to draw near to man, and make choice of his houſe for her neſt, within his view, without fear of his knowing it, and ſeeming rather to invite him to a conſideration of her labour? Neither does this bird build like others with little bits of ſticks and ſtubble, but employs cement and mortar, and in ſo ſolid a manner, that it requires ſome pains to demoliſh its work: yet in all this it makes uſe of no other inſtrument but its beak. Do I weary you with my obſervations?

POLYMETIS.

So far from it, they are highly agreeable.

PARMENIO.

Proceed, Soprhonius: your remarks are ingenious and intereſting.

SOPHRONIUS.

Who has made all the birds comprehend that they muſt hatch their eggs by ſitting upon them? that this neceſſity was indiſpenſable? that the father and mother could

could not leave them at the ſame time, and that if one went abroad to ſeek for food, the other muſt wait till its return? Who has fixed in the calendar the preciſe number of days that this aſſiduous attention is to laſt? Who has excited them to aſſiſt the young, which are already formed, in coming out of the egg, by firſt breaking the ſhell? and who has ſo exactly inſtructed them in the very moment before which they never come?

Who has given leſſons to all the birds, upon the care they ought to take of their young, till ſuch time as they are grown up, and in a condition to provide for themſelves? Who has made them to diſtinguiſh ſuch things as agree well with one ſpecies, but are prejudicial to another? And amongſt ſuch as are proper for the parents, and unfit for the young, who has taught them to diſtinguiſh what is ſalutary? Who has inſtructed ſeveral among the birds that wonderful induſtry of retaining food or water in their gullet, without ſwallowing either one or the other,

and

and preſerving them for their young, to whom firſt preparation ſerves inſtead of milk?

But let us ſet bounds to our obſervations on the induſtry of birds, for the ſubject is infinite, and hearken for a moment to the concert of their muſic, the firſt praiſe which God received from nature, and the firſt ſong of thankſgiving which was offered to him before man was formed. All their ſounds are different, but all harmonious, and altogether compoſe a choir which men have but poorly imitated.

Some of the birds are extremely beautiful, nor can any thing be more rich and variegated than their plumage. The peacock, for one, is laviſhly adorned, and diſplays with gold and azure the ſhades of every other colour. This bird ſeems ſenſible of its advantage, and looks as if deſigned to exhibit its beauties to our eyes, when it expands that ſplendid circumference which ſets them all to view.

In examining the feathers of the reſt, we find one thing very ſingular in thoſe of the ſwans and other river-fowl; for they are proof againſt water, and continue always dry: notwithſtanding which we cannot diſcover either the artifice or difference of them.

Looking at the feet of the birds laſt mentioned, we obſerve upon them webs, which plainly mark their diſtinction. While ſo ſure are thoſe birds that they run no hazard by throwing themſelves into the water, others to whom God has not given the like feathers or feet, are never ſo raſh as to endanger themſelves by the experiment. Who has told the former that they run no danger, and who retains the other from following their example? It is not unuſual to ſet duck-eggs under a hen, which in this caſe is deceived by her affection, and takes a foreign brood for her natural offspring. They run into the water as they come out of the ſhell, nor can their imaginary mother prevent them by her repeated calls

to

to deſiſt. She ſtands upon the brink in aſtoniſhment at their raſhneſs, and ſtill more at the ſucceſs of it. She finds herſelf violently tempted to follow them, and warmly expreſſes her impatience, but nothing is capable of carrying her to an indiſcretion which the author of nature has prohibited.

We ſhould never have done, ſhould we undertake to conſider the many miracles of a like nature with thoſe which have been related. I ſhall content myſelf with one obſervation more, which relates to birds of paſſage.

They have all their allotted times, which they do not exceed; but thoſe times are not the ſame for every ſpecies. Some wait for the winter, others the ſpring; ſome the ſummer, and others the autumn. There is amongſt each claſs a public and general rule of government, which guides and retains every individual bird in its duty. Before the general edict, none thinks of departing; after its promulgation no one tarries behind. A kind of

council fixes the day, and grants a certain time to prepare for it; after which they all take their flight: and ſo exact is their diſcipline, that the next day there is not a ſtraggler or deſerter to be found.

POLYMETIS.

Wherever we turn our eyes, we find freſh matter of admiration, at the infinite wiſdom of Providence, and the amazing inſtinct which appears through the whole creation. The ſingle inſtance of the dog, which is known to all, ſhews the power of God, in giving all the outward appearances of underſtanding, fidelity, friendſhip and gratitude, perhaps without the principle of them.

The actions of the bee are no leſs admirable. Inſtead of contenting itſelf with ſucking the honey, which is better preſerved in the cups of flowers than any where elſe, and feeding upon it day by day, it lays up a proviſion for the whole year, and principally for the winter. It loads the little hooks which adorn its legs with

with all the wax and gum that it can carry; and in ſucking up the honey with the trunk fixed at the extremity of its head, it avoids the daubing of its wings, of which it ſtands in need to fly from place to place, and to carry it home.

If care is not taken to prepare a hive for it, it makes one itſelf in the hollow of ſome tree or rock. There its firſt care is to form the comb, which it compoſes of ſmall equal cells, that they may be the better joined, and leave no interval between. It then pours out the honey, pure and unmixed, into thoſe ſmall reſervoirs, and how plentifully ſoever its magazines are filled, it allows itſelf no reſt, until the time of labour and harveſt is over. In this Republic, there is no idleneſs, no avarice or ſelf-love, but all is in common. What is neceſſary is granted to all, but to none a ſuperfluity; and it is for the public good that their acquiſitions are preſerved. New colonies, which would be a burden to the State, are ſent

abroad: they know how to work, and are obliged to do ſo by being diſmiſſed.—Among the beſt governed nations have we the copy of ſo perfect a model?

But let us paſs from the bee to the ant, which reſembles it in many reſpects, except that the former enriches man, and the latter ſtrives all he can to impoveriſh him, by ſtealing from him. This little animal is informed that the winter is long, and that the ripe corn is not a great while expoſed in the field. Thus the ant never ſleeps during harveſt. It draws along, with the little inſtruments which are fixed to its head, grains of corn which are thrice as heavy as itſelf, and goes backward with them as well as it can. Sometimes it finds a friend by the way which lends its aſſiſtance, but never waits for it.

The repoſitory, where all is public, and no one thinks of making a ſeparate proviſion for itſelf, is compoſed of ſeveral chambers, which communicate with each other by galleries, and which are dug ſo deep,

deep, that neither the winter rains nor ſnows can penetrate them. When their granaries are full, and the winter comes on, they begin to ſecure the grain, by biting off the two ends of it, and thereby preventing it from growing. Thus their firſt object appears to be a care for futurity, to which they are determined rather by motives of prudence than neceſſity. Hence we may obſerve what a fund of induſtry God has placed in this little animal. He has given it a kind of prophetic underſtanding, to oblige us to recur to him, to whom alone it belongs to work ſuch prodigies; who eannot, in my opinion, more evidently ſhew us that he is the ſource of wiſdom, than by exhibiting ſuch palpable operations of it in an agent ſo extremely diminutive.

Can we ſufficiently admire the induſtry of certain animals, which ſpin with ſuch art and delicacy, and all appears to be the effect of thought, and a mathematical contrivance? Who has taught the ſpider, an animal in other reſpects contemptible, to

form ſuch fine threads, ſo equal in their texture and ſo artificially ſuſpended? Who has inſtructed it to begin with fixing them to certain points, to unite them all in one common centre, to draw them firſt in a right line, and then to ſtrengthen them by circles exactly parallel to each other? Who has told it that thoſe threads ſhould be a ſnare to catch other inſects that have wings, and that it could not procure them but by this ſtratagem? Who has appointed him his place in the centre, where all the lines meet, and whence it may be informed by the ſlighteſt motion, that ſome prey is fallen into its nets? Laſtly, who has told him, that his firſt care then ſhould be to embarraſs the wings of that prey, by new threads, leſt it ſhould ſtill have the power of diſengaging itſelf from confinement?

All the world is acquainted with the labours of the ſilk-worm; but have the moſt ſkilful artiſts hitherto been able to imitate them? Have they found out the ſecret of drawing ſo fine a thread, ſo

ſtrong,

ſtrong, ſo even, ſo bright and uniform? Have they any materials of greater value than this thread for making the richeſt ſtuffs? Do they know how this worm converts the juice of the mulberry-leaf into golden threads? Can they aſſign a reaſon why that which was liquid before being expoſed to the air, ſhould, after its expoſure to that element, grow ſtrong, and lengthen itſelf *in infinitum?* Can any of them explain how this worm is taught to form itſelf a retreat under the numberleſs windings of the ſilk, which has proceeded from itſelf, and how in this receſs it obtains wings, of which it was originally deſtitute?

SOPHRONIUS.

Is it not ſurpriſing that man, placed in the midſt of nature, which preſents him with the greateſt ſpectacle it is poſſible to imagine, and ſurrounded on all ſides with an infinity of wonders made for his contemplation, ſhould ſcarcely ever think either of conſidering thoſe wonders, which

are ſo deſerving of his attention, or of taking a view of himſelf? He lives in the midſt of a world of which he is the ſovereign, as a ſtranger, who looks with indifference upon all that paſſes in it, and as if it was not his concern. But the Univerſe preſents to our eyes a large picture, of which every part has its uſe, every line its grace and beauty, though it is moſt wonderful when conſidered in the whole together. By laying before us ſo beautiful a ſpectacle, it teaches us to obſerve the order, ſymmetry and proportion, that reigns throughout all; and with what uniformity this order, both of the aggregate and of every part, is preſerved and maintained; leading us by that means to the inviſible hand and the directing wiſdom by which the whole is diſplayed.

PARMENIO.

Never before did I attend to ſuch ſpeculations on the economy of nature. It appears to me to be a ſubject of vaſt extent, and not more curious in point of

enquiry, than uſeful for the moſt important rational purpoſes, with which it is immediately connected.

POLYMETIS.

You judge right, Parmenio; it may be rendered of the moſt important advantage to us, both in regulating our ſentiments of a ſuperintending Providence, and our conduct in life. We are inſtructed by God himſelf that this is the proper uſe we ought to make of the creatures, which all teach us our duty. He ſends the ſluggard in the Scriptures to the ant, to learn induſtry; the ungrateful to the ox and aſs, who make a grateful return for their maſter's care; the inconſiderate to the ſtork and the ſwallow, who know their appointed times. Jeſus Chriſt lays down the conſideration of the lillies of the valley and the birds of the air, as an inſtruction to all mankind, to rely implicitly upon the care of a Providence, which is watchful over all, abundant in goodneſs, and almighty. We ſhould not

anſwer

anſwer the intentions of Divine Wiſdom, and ſhall loſe many important inſtructions, if we do not conſider the footſteps of the Deity in all his creatures, as he has been pleaſed to diſplay himſelf, and point out our duty in them.

DIALOGUE VIII.

POLYMETIS.

THAT men in general look with indifference on the wonders which are around them, can be only owing to want of conſideration. Entirely occupied with their own little concerns, and the narrow ſcenes in which it is their lot to be ſtationed, they never accuſtom their thoughts to range abroad, and take a wide ſurvey of nature in the luxuriant fields of ſpeculation.—What an amazing proſpect does it preſent of quadrupeds, birds, fiſhes, and, above all, of inſects! We are aſſured, by thoſe who have taken pains to inveſtigate the animal creation, that of quadrupeds, they have found about one hundred and fifty kinds, entirely different from each other; of birds,

birds, upwards of five hundred; of fiſhes, three thouſand; and of inſects, twenty thouſand.—But amazing as this number is, they conjecture that the whole ſum of terreſtrial animals exceeds, by a third part, what they have diſcovered, and fiſhes by one half. The great naturaliſt, Mr. Ray, after employing ſome years in diſcovering the different kinds of inſects, declared that he thought, if he was to employ twenty years longer, with the utmoſt diligence and induſtry, in ſearching them out, he ſhould not come to an end of the enquiry.—Extremely numerous likewiſe are the different kinds of plants, they being reckoned more than eighteen thouſand.

SOPHRONIUS.

Our aſtoniſhment is not only excited at the great number of different kinds of animals in the world, but of the vaſt multitude of each kind, eſpecially of thoſe which are deſtined for the food of man. In this ſmall ſpot of our own iſland,

iſland, there are, by computation, twenty-four millions of ſheep and lambs daily feeding on our downs and plains.—More than one thouſand fattened oxen are ſlaughtered and conſumed every week in the capital only, beſides many thouſand ſheep, hogs, calves, pigs, and lambs.—Many hundred ſhips are annually employed in taking cod on the bank of Newfoundland, and they generally bring away twenty or thirty thouſand cod a-piece, in the whole an immenſe number. But though this vaſt annual conſumption has continued for upwards of two hundred years, yet they ſtill are found in equal plenty. If we extend our thoughts farther, and include the whole world, what an inconceivable multitude of animals muſt be conſumed every day by the inhabitants, and yet there is ſtill a freſh ſupply!

POLYMETIS.

The more we conſider the aſtoniſhing number of creatures daily ſubſiſting on the

the earth, the more will our ideas of the creation be raiſed and increaſed. The mind is almoſt loſt amidſt ſo many millions of the animal tribes.—What leſs than an omnipotent God could prepare ſufficient food, at all times and ſeaſons, for ſo infinite a number of creatures?

SOPHRONIUS.

Our ideas of the earth we live on are likewiſe formed from thoſe little ſpots of it only, which we ourſelves have ſeen; but did we ſtretch our imagination to embrace the whole, what a vaſt and magnificent habitation would it appear, ſince the whole face of it is above one hundred and ninety-nine millions of miles! How many kingdoms and people, how vaſt a multitude of animals, beaſts, birds, and fiſhes; how immenſe a number of trees, and plants, and flowers; what numberleſs buildings, what amazing and various ſcenes may we not ſuppoſe upon ſo vaſt a ſurface! Here ſtupendous rocks and mountains, there immenſe fields and plains; here vaſt woods, and there magnificent

nificent cities; here boundleſs ſeas, and there noble rivers! Our wonder will ſtill riſe higher, if we conſider what a vaſt quantity of matter the earth conſiſts of; no leſs, as is proved by mathematical calculation, than two hundred and ſixty-four thouſand millions of miles ſolid contents! a work too grand for any other than a God to execute.

POLYMETIS.

Let us conſider the two great elements of which our habitation conſiſts, viz. Land and Water.—How wonderfully are both theſe contrived for our uſe and benefit! Had the land been of a little harder conſiſtence than it is, man would have been unable to cultivate it: had it been ſofter, it would have been inſufficient to bear him. How great an inſtance of the wiſdom and goodneſs of God do we perceive in that univerſal covering of the earth, the graſs of the field! We find it is the proper food of almoſt all animals; it accordingly ſprings

up in amazing abundance, almoſt every where: though continually fed upon and cropped, it as often renews itſelf again; it endures through all ſeaſons: even winter, which nips almoſt every thing that flouriſhed in the ſummer, hurts the graſs but little.—Was there not ſuch a diſpoſition in the earth, to produce and nouriſh the graſs without any cultivation, where could ſuſtenance be found for ſo many millions of living creatures, which we have daily occaſion for, either for our food, or to aſſiſt us in our labour? By this means too, in making the graſs to ſpring up every where ſpontaneouſly, God has provided for the creatures of the foreſts, &c. which have never known the care of man: "For his tender mercies are over all his works."

SOPHRONIUS.

It is obſervable, that though the graſs grows thus wonderfully every where, in all ſoils and ſituations, we find moſt other plants and trees dwindle in a ſoil which does

does not agree with them. How great a mark then, of the wiſdom and contrivance of the Creator, are the various ſoils and moulds of which this earth conſiſts! ſo that there is a fit proviſion for every ſingle vegetable.

POLYMETIS.

Yes, Sophronius, we find that different vegetables require different ſoils; and yet experiments ſhew that they owe not their life and growth to the earth itſelf, but to ſome agreeable and congenial juices or ſalts, &c. reſiding in the earth. The great Mr. Boyle ordered his gardener to dig up, and dry in an oven, ſome earth fit for the purpoſe, to weigh it, and to ſet in it the ſeeds of a kind of Indian pompion. The ſeeds, when ſown, were watered with rain or ſpring water only; but though fruit was produced in one experiment of near three pounds, and in another of above fourteen pounds, yet the earth when dried, and weighed

again, was ſcarcely any thing diminiſhed in its weight.

He adduces another experiment from Helmont, who dried two hundred pounds of earth, and planted in it a willow weighing five pounds, which he watered with rain or diſtilled water; and to ſecure it from any earth getting in, he put over it a cover of tin perforated. After five years, weighing the tree with all the leaves it had produced in that time, he found it to weigh a hundred and ſixty-nine pounds, three ounces; but the earth to be diminiſhed only about two ounces in its weight.

SOPHRONIUS.

There is reaſon to think, from theſe experiments, that plants derive much of their nouriſhment from the air; and indeed later experiments evince that this fluid is abſolutely neceſſary for their exiſtence.

POLYMETIS.

POLYMETIS.

To the convenience which the various ſoils that cover the earth are of to vegetables, we may add their great uſe and benefit to various animals; to many kinds of quadrupeds, fowls, inſects, and reptiles, who make in the earth their places of repoſe and reſt; their retreat in winter, their ſecurity from their enemies, and their neſts to accommodate their young; ſome delighting in a lax and porous mould, admitting them an eaſy paſſage; and others in a more ſolid earth, that will better ſecure them againſt injuries from without.

SOPHRONIUS.

But there were many other things neceſſary for the convenience of man; therefore, beſides the advantages he derives from the ſurface, the very bowels of the earth have been ſtocked with a variety of materials for his uſe: thus, in one place he finds ſtone and ſlate; in an-

other, clay, proper for making bricks; in another, lime; all which are adapted for building him a convenient habitation, lodgments for the ſheltering of his cattle, granaries for his corn and fruits, churches for public worſhip, and halls for public meetings.—Here he finds iron, copper, lead, and tin, which enable him to make inſtruments for tilling the ground, cutting down timber, and knives to cut his food in pieces, veſſels in which to dreſs it, and a great number of other utenſils uſeful for the conveniency of life. In many places are inexhauſtible quantities of coal, to ſupply us with fuel, and which is of yet more ſervice, being endowed with the property of ſoftening iron, and rendering it malleable. In the earth are likewiſe found gold and ſilver, convenient for the carrying on of trade and commerce with the greater facility.

PARMENIO.

There, Sophronius, you have mentioned the *irritamenta malorum*.—Had it not

not been happy for mankind that theſe metals had never been diſcovered?

SOPHRONIUS.

You well know, Parmenio, that we ought never to argue againſt the uſe of any thing from the abuſe of it: if not gold and ſilver, ſome other medium of exchange muſt neceſſarily have been adopted; and none could be ſo convenient as thoſe ſubſtances, which, from their proportionable ſcarcity, acquire the greater eſtimation.—The iron money of Lycurgus would not be portable even in a moderate quantity; and you will own, that the moſt ancient medium of traffic, which appears to have been ſheep or oxen, could not well be adopted, when the object of barter amounted in value to only a part of thoſe animals.

PARMENIO.

I very readily acknowledge the juſtneſs of your obſervations.

POLYMETIS.

Beſides thoſe we have already mentioned, there are many other inexhauſtible treaſures laid up for us in the earth: and here we may admire with what infinite wiſdom God has diſpoſed every thing. He might have placed all theſe on the ſurface of the earth, to be near at hand, and ready to be employed on all occaſions; but then the vaſt quantity of them would have almoſt covered the earth, and have obſtructed all huſbandry, as well as the free paſſage of the inhabitants.—Metals, ſtores, and a hundred other materials, which are conſtantly employed for our uſe, and were deſigned to be a never-failing treaſure for the ſervice of all ſucceeding ages, are carefully locked up in the vaſt ſtore-houſes under our feet, to which we are enabled to reſort in all caſes of neceſſity; for Providence has ſo wiſely ordered it, that they are not buried near the centre of the earth, nor yet at ſuch a depth, as

to

to make them inacceſſible to us, but at ſuch a proper diſtance below the ſurface, as that the coat of earth above them ſhould have a ſufficient depth of ſoil to produce fruits for the uſe of man, and yet not be of ſuch thickneſs, as to prevent his digging into thoſe ſubterraneous magazines of treaſure, which are depoſited to ſupply his exigencies.

DIALOGUE IX.

PARMENIO.

I AM perfectly convinced of the wiſdom and goodneſs of Providence, ſo conſpicuouſly manifeſt in all the obſervations you have made: but there is one thing that ſeems to me unaccountable, and reſpecting which I ſhould be glad to know your opinion. It is, why there ſhould be ſo many animals, and inſects in particular, which, ſo far from being uſeful, are extremely noxious; ſome by their fierceneſs, and others, as well as many plants, by their poiſonous nature.

POLYMETIS.

The ſubject of your queſtion, Parmenio, has ſometimes excited my own reflections. The proper anſwer ſeems to be,

be, that in great variety, the greater power and contrivance are ſeen; and that the fierce, poiſonous and noxious creatures ſerve as rods and ſcourges to chaſtiſe us, as means to excite us to wiſdom, induſtry and care. It is poſſible, beſides, that thoſe creatures may be of ſome uſe in the creation, which we are not able to diſcover. Though the infinitely wiſe Creator has put it in the power of ſome animals to chaſtiſe us, yet he has ſhewed no leſs wiſdom and kindneſs, in ordering many, if not moſt of them in ſuch a manner, that it ſhall be in the power of man, and other creatures, to obviate or eſcape their evils. For beſides the antidotes afforded by minerals, vegetables, &c. many, if not moſt of our European venemous animals, carry their cure, as well as their poiſon, in their own bodies. The oil, and I believe the body too of the Scorpion, is a certain remedy againſt its ſtroke. A bee, waſp, or hornet, cruſhed and rubbed, and then applied to the part with a bandage, is a certain cure for the ſting of thoſe creatures;

tures; and it is reputed, that the fleſh, eſpecially the head of vipers, affords a remedy for their bites. Our viper-catchers have a remedy in which they place ſo great confidence, as to be no more afraid of the bite of a viper, than of a common puncture; immediately curing themſelves by the application of their ſpecific. This, though they keep it a great ſecret, is found to be no other than viper-fat, preſently rubbed into the wound.

SOPHRONIUS.

As to the means of eſcaping the miſchief of ſuch noxious animals, beſides what may be effected by the care, induſtry and ſagacity of man, ſome of them are ſo contrived as to give warning or time for eſcape, to creatures in danger of being attacked by them. Thus, for inſtance, the rattle-ſnake, the moſt poiſonous of any ſerpent, which darts its venom to ſome diſtance, gives warning involuntarily by the rattle in its tail. So the ſhark, the moſt rapacious animal of the waters, is forced

forced to turn himſelf on his back, before he can catch his prey. Sir Hans Sloane obſerves, that were it not for the time required in turning itſelf, there would be nothing that could avoid it: it is ſo quick in ſwimming, has ſuch vaſt ſtrength, with a moſt capacious throat, and extremely voracious.

POLYMETIS.

That terrible creature the crocodile, can only catch its prey directly before it, and not on one ſide, being unable to turn its body any way without taking a great compaſs; during which time, thoſe it purſues are enabled to make their eſcape: for otherwiſe, from the velocity of its motion, there is ſcarce a poſſibility of eſcaping it, when it runs ſtraight forward.

PARMENIO.

May I beg the favor, Polymetis, to have a deſcription of that animal? for it is a creature celebrated in antiquity, for inſidious and hypocritical weeping.

POLYMETIS.

POLYMETIS.

I ſhall give it you with great pleaſure in a moment: but the ſtory of their weeping is merely fabulous.

The crocodile is an amphibious animal, living both by land and water, which, from an egg not much larger than that of a turkey, arrives ſometimes to eight or ten yards in length. For, though other creatures have a certain period to their growth, the crocodile, as is ſaid, continues increaſing in length, as well as thickneſs, to the end of its life, which is reported to be about a hundred years. Its head is flat above and below, with jaws wide enough to ſwallow a man entire; a ſharp long ſnout, full of teeth, but no tongue. The body is of equal dimenſions, covered on the back with high ſcales, like the heads of broad nails; of a greeniſh colour, and ſo hard, that a halbert cannot pierce them. Its tail is long, and covered with ſuch ſcales as the back; its belly white and pretty tender, being the only part

part where it is eaſily wounded. It has four ſhort legs, with five claws on its fore, and four on its hinder feet. It moves only the upper jaw in eating. Its fleſh is not poiſonous, but inſipid. It is a very ravenous and ſubtle creature, hiding itſelf in the ſands, and behind the projecting banks of rivers, to watch the beaſts coming to drink. When any comes within its reach, it ruſhes with it into the water, and holds it down till it is ſtrangled. The only way to eſcape their purſuit, is by flying in circles: for their body being of a vaſt length, requires ſome time to turn about; but directly forward, they can run with great ſwiftneſs. It lays its eggs in the ſand, to be hatched by the heat of the ſun.

PARMENIO.

What a formidable animal! The terror it muſt inſpire was probably the cauſe of its being worſhipped by the ancient Egyptians.

POLYMETIS.

POLYMETIS.

That may have been one cauſe: but they ſeem likewiſe to have held it in veneration for deſtroying the numerous animals which breed in the ſlime of the Nile, after the waters have ſubſided.

The crocodiles would increaſe prodigiouſly in Egypt, was it not for the activity of the ichneumon, which deſtroys their eggs. You know how much that little creature has been celebrated for its courage; but as perhaps you have never ſeen a poem on that ſubject, written by Opianus, a Greek phyſician, I ſhall ſhew you a tranſlation of it, as one of my earlieſt poetical productions.

SOPHRONIUS.

You will greatly oblige us both by the communication.

POLYMETIS.

I ſhall read it, upon the condition, however, that neither you nor Parmenio,

ſhall, now at leaſt, expreſs any opinion on the ſubject.

Small is th' Ichneumon, yet its fame extends,
For mighty deeds, to earth's remoteſt ends.
The greateſt monſter, bred where Nilus flows
In his ſev'n ſtreams, it craftily o'erthrows.
For when the Crocodile, with ſleep oppreſt,
Stretches his weary limbs and turns to reſt;
His ſnouted mouth, and jaws immenſe, unbound,
A throat diſcloſing of a hideous round;
The ſly Ichneumon, wond'rous in its art,
Each motion views attentively apart;
Till his huge ſides it ſees in heavings riſe,
And lockt in ſleep th' enormous monſter lies.
Then from the mud, in rapid courſe it bends,
And boldly down the dreadful throat deſcends.
Now rous'd from ſleep, and pierc'd with inward pain,
The raging monſter ſeeks the watry plain;
And now the ſlime, and now the deep explores;
Now reſtleſs rolls him on the ſandy ſhores:
To furious rage his fervid anguiſh fires,
And his foul mouth hot clouds of ſmoke expires.
The glad Ichneumon, maſter of the prize,
Unmov'd beholds the mortal fury riſe:
While in his entrails fixt, it probes around,
Tears ev'ry nerve, and feeds in ev'ry wound;
Till fated with the carnage and the gore,
It leaves the corpſe extended on the ſhore.

O highly for ſuch enterprize renown'd!
What words, Ichneumon, can thy deeds reſound?
What ſtrains thy intrepidity relate,
Who bravely ventur'd in the jaws of fate?

Nay, pray, remember my injunction.

SOPHRONIUS.

Then we muſt forbear.

Does it not evidently appear, that the great variety of things in the world is a moſt wiſe proviſion for the uſes of the various creatures which inhabit it? Some for food, ſome for medicine, ſome for habitation, ſome for utenſils, and ſome for recreation and pleaſure, either to man, or to ſome of the inferior creatures themſelves; even for which inferior creatures the liberal Creator has provided all things neceſſary, or any way conducive to their comfortable living in the world, as well as for man.

POLYMETIS.

Let us next conſider the element of water, which we ſhall find no leſs fitly and

wonderfully diſpoſed for our ſervice. Let us reflect a little upon its nature and qualities: how admirably are theſe adapted to make it infinitely uſeful to us! Had it been of a little finer conſiſtence than it is, it might perhaps have ſerved to nouriſh the earth, and ſatisfy our thirſt: but then, of how many benefits which it now affords us, ſhould we have been deprived? For had it been of a lighter nature, it could not have ſupported boats and ſhips upon it. If on the other hand, inſtead of a thinner, water had been of a thicker conſiſtence than it is, it would have been no leſs unfit for our uſe: For then it would have ſtagnated, inſtead of running, would not have anſwered the purpoſe of navigation, and would have produced putrid diſeaſes over all the creation. Beſides, it could not have penetrated into the pores of the earth, to render it fruitful, nor the roots and fibres of trees and plants, to give them their nouriſhment: neither would it have been of that ſervice which it now is to all

creatures, in ſatisfying their thirſt, and diluting the food they eat, ſo as to make it fitter for nouriſhment.

SOPHRONIUS.

As water is thus of ſuch infinite ſervice to us for various purpoſes, what an inſtance of goodneſs and deſign is it, that it is diſperſed through the whole earth! When we but reflect a little on the vaſt length of many rivers, ſuch as the Rhine, which runs above ſix hundred miles; the Danube, which paſſes over fifteen hundred; the Niger, which waters three thouſand three hundred miles of land in the ſultry climes of Africa; the river of Amazons in America, which runs three thouſand miles, and diſcharges itſelf into the ocean by an outlet of prodigious breadth; beſides the Ganges, and many others, ſome of which run the vaſt courſe of ſix thouſand miles; when we conſider this, our reaſon tells us, that nothing but the omnipotent hand of God could form

and

and hollow channels from one end of the earth to the other.

POLYMETIS.

The whole diſtribution of the waters, and the dry land, though it may ſeem rude and undeſigned to a careleſs view, is admirably well adjuſted to the uſes and conveniences of the world. In the firſt place, the diſtribution is ſo well made, that there is a juſt equipoiſe of the whole globe. In the next place, the earth and the waters are ſo admirably well placed about the globe, as to be helpful to each other, and to miniſter to one another's uſes. The great oceans, and the leſſer ſeas and lakes are ſo extremely well diſtributed, as to afford ſufficient vapors for clouds and rain, to temperate the cold of the northern frozen air, to mitigate the heats of the torrid zone, and to refreſh the earth with fertile ſhowers.

SOPHRONIUS.

What a wonderful inſtance of contrivance it is, that all the rivers on the

face of the earth, in whatever part they ariſe, diſcharge themſelves at laſt into the ſea; otherwiſe, vaſt as the ocean is, it could not have ſupplied vapors enough to form clouds and rain for watering the whole earth, but would have been ſoon exhauſted. It has been found by calculation, that from the Mediterranean only, which is but a very ſmall ſea compared to ſome others, there may be raiſed in vapors, in a ſummer's day, no leſs than five thouſand two hundred and eighty millions of tons of water! What inconceivable quantities muſt then be raiſed from the whole ſurface of the ſeas in general!

PARMENIO.

While you are ſpeaking of the great uſe of the clouds and vapors for ſupplying us with rain, I wiſh you would explain the manner in which natural philoſophers account for the formation of clouds and rain.

POLYMETIS.

Your curioſity, Parmenio, is laudable, and either Sophronius or I ſhall endeavour to gratify it.

SOPHRONIUS.

There is none, Polymetis, more equal to the taſk than yourſelf.

POLYMETIS.

Clouds and rain then are made of vapors raiſed from water, or moiſture only. Thoſe vapors are demonſtratively nothing elſe than ſmall bubbles, or bladders, detached from the waters by the power of the ſun, or a ſubterraneous heat, or both; and being lighter than the atmoſphere, are buoyed up by it, until they become of an equal weight with it, in ſome of its regions aloft in the air, or nearer the earth; in which thoſe vapors are formed into clouds, rain, ſnow, hail, lightning, dew, miſts, and other meteors.

In this formation of meteors, the grand agent is cold, which commonly, if not

always, occupies the ſuperior regions of the air; as is manifeſt from the ſummits of high mountains, which are always covered with ſnow and ice.

This cold, if it approaches near the earth, precipitates the vapors, either in dews; or if the vapors aſcend in greater quantity, and ſoon meet with cold, they are then condenſed into mizzling, or elſe into ſhowers of ſmall rain. If the vapors are not only copious, but of an equal weight with the lower air itſelf, they become viſible, ſwim at a little height above the earth, and make what we call a miſt or fog. But if they are a degree lighter, ſo as to mount higher, not however to any great height, and neither meet with cold enough to condenſe them, nor wind to diſſipate them, they then form a heavy, thick, dark ſky, laſting often for ſeveral weeks, without either ſun or rain. In this caſe, it is ſcarcely ever known to rain, till it has been firſt fair weather.

PARMENIO.

PARMENIO.

What you ſay correſponds with a remark which I have frequently heard made; but pray how do you account for it?

POLYMETIS.

The caſe is eaſily accounted for, and it is thus: Whilſt the vapors remain in the ſame ſtate, the weather does ſo too; and ſuch weather is generally attended with moderate warmth, with little or no wind to diſturb the vapors, and a heavy atmoſphere to ſupport them; the barometer being then commonly high. But when the cold approaches, and by condenſing drives the vapors into clouds or drops, then is way made for the beams of the ſun, till the ſame vapors, being by farther condenſation formed into rain, fall down in drops.

The approach of the cold towards the vapors, and conſequently the alteration of ſuch dark weather, is often perceived before

before hand, by ſome few ſmall drops of rain, hail, or ſnow, now and then falling: which probably happens from the cold meeting ſome of the ſtraggling vapors, or the uppermoſt of them, and condenſing them into drops, before it reaches the main body of the vapors below, and exerts itſelf upon them.

PARMENIO.

The clouds then are a vaſt heap of vapors exhaled from ſea and land?

POLYMETIS.

They are ſo, and are raiſed to that height in the air, where they become of equal weight or gravity with it. In thoſe parts therefore they float, and by ſtriking againſt one another, and coaleſcing, they become more denſe and weighty. The thinner or rarer the clouds are, the higher they ſoar; but the more denſe or weighty they are, they hover nearer to the earth. The height at which the clouds fly in the atmoſphere, is from about a quarter of a mile to a mile.

PARMENIO.

PARMENIO.

But whence proceeds the wonderful variety in the colours of the clouds, and the multiplicity of figures which they aſſume?

POLYMETIS.

The variety in the colours of the clouds is owing to their particular ſituation with reſpect to the ſun, and the different reflections of his light: and as to their figure, it reſults from their looſe and voluble texture, revolving into any form, according to the force of the winds. When various heaps of clouds are driven together by the agitation of the winds, they mix, and run into one body, and thus diſſolve or condenſe each other into their former ſubſtance of water. The coldneſs of the air likewiſe is a powerful means to compact and condenſe clouds into water.

PARMENIO.

Give me leave now to aſk you the manner in which ſnow and hail are produced.

POLYMETIS.

POLYMETIS.

Snow is produced thus: When the vapors are become conſiderably condenſed, yet not ſo far as to be liquified, or diſſolved into water, then by a ſpecial degree of coldneſs in the upper air, the particles of condenſed vapors are compelled into a glacial ſubſtance, ſeveral of which adhering together, form little white fleeces, ſomewhat heavier than the air, and therefore deſcend in a ſlow and gentle manner.

In reſpect of hail, it is generated in this manner: when the cloud which rains is very high in the air, or when all the regions of the air are very cold, the falling drops of water are congealed, and grow into an icy ſubſtance, of different ſize and figure, according to the particles of water, the degrees of temperature, the wind, and other circumſtances.

The manner how vapors are precipitated by the cold, and reduced into drops, is conceived to be thus: Vapors being

no

other than inflated bladders of water, when they meet with an air colder than what is contained in them, the contained air is reduced into a leſs ſpace, and the watery ſhell or caſe rendered by that means thicker, ſo as to become heavier than the air by which they are buoyed up, and conſequently muſt needs fall down. Many of thoſe thickened bladders likewiſe run into one, and ſo form drops, greater or ſmaller, according to the quantity of vapors collected together.

PARMENIO.

It appears that the air is a univerſal and important agent in all the phenomena of the clouds.

POLYMETIS.

It is indeed both, Parmenio; and not more in the clouds, than on the face of the earth, and in the waters.

DIALOGUE X.

POLYMETIS.

YOU ſay well, Sophronius, that new wonders ſtill ariſe around us, and every thing declares itſelf the workmanſhip of the Moſt High. What a matter of aſtoniſhment, what a ſubject of veneration towards the Great Maker of the world, is the common Air we breathe! In vain had the earth and waters been ſpread abroad, in vain had they been adorned with ſo many admirable properties, had not the infinitely wiſe Creator provided, and diſtributed every where that fine fluid which we call the air, to excite, give life to, and maintain the whole world. It is this, however common, and however little taken notice of, that preſerves the health and ſtrength of the whole animal creation, aquatic

aquatic as well as terreſtrial; and not only of animals, but of vegetables, from the lofty cedar to the humbleſt blade of graſs that exiſts on the ſurface of the globe. Without this uſeful element, moſt animals can ſcarcely live half a minute; and others that are the moſt accuſtomed to the want of it, cannot live without it many days. That this a fact, is proved to ocular demonſtration by the Air-pump.

It has been found by repeated experiments, that animals whoſe hearts have two ventricles and no *foramen ovale*, as birds, dogs, cats, rats, mice, &c. when put into a Receiver, from which the air is exhauſted, die in leſs than half a minute, reckoning from the very firſt exſuction, eſpecially in a ſmall Receiver.

PARMENIO.

I ſhould think that a mole, from its manner of life under ground, would live longer in an exhauſted Receiver than any other quadruped.

POLYMETIS.

POLYMETIS.

The idea is plauſible, and the ſame opinion was entertained by the ingenious philoſopher who made the experiments juſt now mentioned: but he found that a mole died in one minute, without recovery, in a large Receiver, and doubtleſs would hardly have ſurvived half a minute in a ſmall one. A bat, though wounded, ſuſtained the pump two minutes, and revived upon the re-admiſſion of the air. It afterwards remained four minutes and a half in the exhauſted Receiver, and again revived. Being ſubjected to a third experiment, after it had been five minutes in the Receiver, it continued gaſping for a time; and after twenty minutes the air was re-admitted, but the bat revived no more.

In reſpect of inſects; waſps, bees, hornets, graſshoppers and lady-cows, ſeemed to be dead in two minutes, and were kept *in vacuo* twenty-four hours; notwithſtanding

ing which they revived in the open air, in the ſpace of two or three hours.

Snails bear the air pump ſurpriſingly, particularly thoſe in ſhells. Two of thoſe lay in the Receiver above twenty-four hours, and ſeemed not much affected. After a ſecond exhauſtion, the ſame ſnails were left in the Receiver twenty-eight hours more; when one of them was quite dead, but the other revived.

Frogs and toads likewiſe bear the air-pump a long time, eſpecially the former. A large toad ſuſtained the ſituation almoſt ſix hours; within which time, however, it died irrecoverable. Another toad and a frog were put into the Receiver together: the toad was ſeemingly dead in two hours, but the frog juſt alive. After they had remained eleven hours, the frog recovered in the open air, apparently weak; but the toad was quite dead. The ſame frog being put in again for twenty-ſeven hours, was then likewiſe quite dead.

The animalcules in pepper-water remained *in vacuo* twenty-four hours. After they had been expoſed a day or two in the open air, ſome of them were found dead, and ſome alive.

SOPHRONIUS.

I have been witneſs to ſeveral experiments of a ſimilar nature, which are all demonſtrative of the indiſpenſible neceſſity of the air for the ſupport of animal life; and that the air is the principal cauſe of the vegetation of plants, is likewiſe proved by the ſame engine.

PARMENIO.

I clearly recollect one remarkable inſtance to that purpoſe. A few lettuce ſeeds being ſown upon earth in the open air, and others at the ſame time upon earth placed in the Receiver, which was afterwards exhauſted, the ſeed expoſed to the air was grown up an inch and a half high in the ſpace of eight days; but that in the exhauſted Receiver not at all.

Air

Air being again admitted into the Receiver, to ſee whether any of the ſeeds would then come up, in the ſpace of one week it grew up to the height of two or three inches.

PARMENIO.

I have likewiſe ſeen ſome experiments made with animals by means of the air-pump; it is ſurpriſing how the creatures ſwell in the exhauſted Receiver.

SOPHRONIUS.

Yes, that is occaſioned by the air within the body expanding itſelf, when the preſſure of the external air is removed.

POLYMETIS.

We ſee then the neceſſity of air for the ſupport both of animal and vegetable life; and it is amazing to conſider the weight which bodies ſuſtain from this element.—The height of the atmoſphere reaches above forty-four miles, ſo that the weight of air preſſing upon the body

of a man ſix foot high, is equal to twenty-eight thouſand pounds or upwards.

PARMENIO.

How is it then that we conſtantly ſupport ſo enormous a weight, without being cruſhed to pieces?

POLYMETIS.

It is by an internal air, placed by the Creator in all bodies, which, though in ſo ſmall a quantity as to appear inſignificant, is yet ſufficient to counterbalance the prodigious weight of the incumbent atmoſphere. What but the hand of God could eſtabliſh ſo wonderful a balance? It is by this equilibrium of the internal and external air, that we are rendered quite inſenſible of ſo immenſe a weight, and move about as if we ſuſtained not the ſmalleſt preſſure from the atmoſphere.

PARMENIO.

You have clearly ſhewn the fatal effects reſulting to bodies from a removal of the

the external air; I preſume that the removal of their internal air would prove equally prejudicial.

POLYMETIS.

You conjecture right; for if the internal air is extracted from any animal, the external air will ſqueeze the animal flat, and preſs it to death. By a flat empty bottle laid on its ſide, it will appear evidently that it is the air within the bottle, whether it be ſtopped or not, which counterbalances the external preſſure of the air, and thereby keeps the bottle from being broke; for by applying a ſyringe to the mouth of the bottle, and extracting the air within it, this is no ſooner done, than the preſſure of the external air breaks the bottle into a thouſand pieces.—Thus let a globe, or hollow ball of braſs, be divided exactly into two equal parts; the edges being made ſmooth, let them be put together, without any cement, and the air within them be extracted by means of a cock;

the external air will immediately preſs them ſo cloſe together, that it will require a fifteen pound weight for every ſquare inch of their circumference, to pull them aſunder.

The force of the internal air in bodies is no leſs powerful; for when the external is taken away, it has been found that the former will, by the mere force of its ſpring, dilate itſelf into thirteen thouſand times the ſpace which it occupied under the preſſure of the atmoſphere. If a ſtrong glaſs bottle, cloſely ſealed up, is put under the Receiver, and the air exhauſted, the air within the bottle will expand itſelf with ſo much force, as to break the bottle into a thouſand pieces: if, inſtead of a bottle, we put an animal, the internal air in its body will dilate itſelf to ſuch a degree, as to make it ſwell till it burſts.

SOPHRONIUS.

By means of theſe experiments, ſome of the terrible effects of lightning are accounted

counted for. There have often been inſtances of men and cattle being killed by lightning, without the leaſt mark or hurt viſible on any part of their bodies. This is ſuppoſed to be occaſioned by the lightning's rarefying or taking off the preſſure of the external air ſo much, that the air within their bodies expands itſelf with a force ſufficient to burſt the interior blood-veſſels, &c. whence immediate death enſues, without any outward ſigns of injury.

POLYMETIS.

It is the expanſive property of this admirable fluid which is the cauſe of all ſounds. This is proved beyond a doubt, by putting a bell under the Receiver of an air-pump. By ſhaking it before the air is exhauſted from the Receiver, it may be made to ſound, and heard at a conſiderable diſtance; but when the air is exhauſted, the bell can ſcarcely be heard at the neareſt diſtance. If, inſtead of exhauſting the air, a greater quantity of

it be compreſſed into the Receiver, the bell will ſound louder and louder, in proportion to the denſity of the fluid.

SOPHRONIUS.

The vaſt ſwiftneſs with which ſound flies is likewiſe highly worthy of obſervation, being fifty-two times greater than that of a briſk wind, or current of air. It is by this property rendered of much greater uſe to us than if its motion had been ſlower. Sound, by experiments which have been repeatedly made, is known to fly no leſs than one thouſand one hundred aud forty-two feet in one ſecond of time; and whether the ſound be loud or languid, whether of bells, guns, &c. great or ſmall, or any other ſonorous body, it conſtantly flies with the ſame extraordinary ſwiftneſs; paſſing over the laſt mile with as much velocity as it did the firſt. Neither do the differences of day or night, ſummer or winter, heat or cold, cloudy or clear weather, a heavy or light air, make any alteration

teration in the ſwiftneſs of its progreſs, though it is more or leſs loud at a diſtance, according as the wind is with it or againſt it, and that in proportion to the ſtrength of the wind.

It is ſo obvious, as ſcarcely to need mentioning, that the velocity with which ſound flies is of very great ſervice to us on many occaſions. How often have we occaſion to call thoſe to our immediate aid who are at a diſtance? Were then the motion of ſound ſlow, we ſhould periſh before they would know that we wanted their help. How much inconvenience, what delay, what loſs of time would have ariſen, had the motion of ſound been ſlow, even in calling to any of our family out of one room or part of a houſe to another? We ſhould have been either obliged to have gone to each other for every thing we wanted to communicate, or have loſt a great part of our time in waiting while the ſound of our voice reached them, and their's returned to us again.

This

This property of the air, as well as every object which we have hitherto conſidered, proves that the world, and all things in it, were made by a Being, wiſe beyond our utmoſt conception; who beheld at one view, in his all-comprehenſive mind, every particular which would conduce to the intereſt or pleaſure of the inhabitants whom he intended to place in the world.

POLYMETIS.

Theſe properties of the air are indeed wonderful, but there is ſtill more ſubject for our admiration. It deſerves to be remarked, that though the air is a fluid, yet it cannot, by the moſt exceſſive cold, be congealed or frozen like water. Were it in any manner capable of ſuch a change, it would prove fatal to every creature on the earth. What a manifeſt inſtance is it then of deſign and contrivance, that though it has every other property of a fluid, yet it ſhould be without this one? Beſides the many other uſes

of

of air, it is abſolutely neceſſary to fire and flame: for a candle or live-coal will inſtantly go out in the exhauſted Receiver.

There is ſtill another very great uſe of air, equal to any we have mentioned, except that of ſuſtaining life itſelf. It is owing to the air that we enjoy light all around us: for were it not that the rays of the ſun are reflected back to our eyes from every part of the particles of the air, the heavens by day would have the appearance of night. The ſun indeed would appear a great light in that part of the dark firmament where it was; but whenever we turned our face the contrary way, darkneſs would ſurround us even at noon. The air has not only the power of reflecting the rays of the ſun, but likewiſe of refracting them, or turning them out of a direct line, and bending them towards the earth; ſo that thoſe rays which would in their courſe paſs directly through the ſky, and be of no ſervice to us, are by this power of the air turned towards the earth. It is by this means that we enjoy a conſiderable

ſiderable degree of light, before the ſun riſes, and after he ſets; which we call the twilight.

Were it not for this, the moment that the ſun ſet, we ſhould be in total darkneſs, and a cloudy night would then preſent us with the blackeſt darkneſs poſſible. Still more injurious to us would be the riſing of the ſun: for if after the pitchy darkneſs of the night, the day was to break in ſuddenly upon us, in the full ſtrength and power of its brightneſs, the tender organs of ſight might be hurt by ſuch exceſſive ſplendor, ſo ſuddenly communicated: or if not prejudicial, it would at leaſt be very inconvenient and unpleaſant.

PARMENIO.

Of every thing that has been mentioned, the weight of the air ſuſtained by our bodies moſt ſurpriſes me: but pray, by what means is the weight of the air aſcertained?

POLYMETIS.

A method has been diſcovered of weighing air in a balance, as we do other bodies.

bodies. A Florence flaſk, with a valve fitted on the top, is exhauſted under the Receiver, and while empty, it is equipoiſed with weights in a fine balance. Then lifting up the valve, the air reenters the flaſk, and by its weight carries it down. The number of grains put into the other ſcale, to reſtore the equilibrium, is the weight of the air which fills the bottle. This we find to be nearly eight grains for a pint.

PARMENIO.

But how do you determine the weight of the body of air, incumbent, we ſhall ſuppoſe, upon a ſquare foot?

POLYMETIS.

In this manner, Parmenio. Let a glaſs tube, of a ſquare form, exactly a ſquare inch area in the bore, and about thirty-three inches long, one end of which has been cloſed up at the glaſs-houſe, ſo that not the fineſt ſpirit can get through it, be filled at the other end quite full with very pure

pure mercury or quickſilver: when thus full, let it be inverted, with the open end (by which it was filled) ſtopped, into a wide baſon of mercury. Then that end being again opened, the mercury will fall down from the top of the tube into the baſon, till it is only twenty nine inches high in the tube; where it will ſtop, and deſcend no lower, notwithſtanding the weight of the mercury. The reaſon why the mercury falls no lower evidently is, that it is kept up by the weight of the air which preſſes upon the mercury in the baſon. This, not being counterbalanced by any air in the tube, keeps ſuſpended a quantity of mercury equal in weight to itſelf, in order to preſerve an equilibrium. That ſuch is really the caſe, appears by experiment: for the air which preſſes upon the mercury in the baſon, being exhauſted by the air pump, all the mercury in the tube will then fall down into the baſon. Or, if you open the upper end of the tube, which was before cloſed up, or hermetically ſealed, the air ruſhing in, and

and preſſing upon the quickſilver in the tube, it will all fall down into the baſon; becauſe the weight of the air coming into the tube, joined to the weight of the quickſilver, is double the weight of the air which preſſes upon the mercury in the baſon.

Hence it is plain, that a column of air, of the ſame baſe as the tube, viz. one ſquare inch, and which reaches from the earth to the ſky, or the higheſt regions of the air, is equal in weight to twenty-nine ſquare inches of mercury, which is about fourteen pounds. Now, as there is one hundred and forty-four inches in a ſquare foot, conſequently the weight of the air preſſing upon the ſurface of it, or a column of air of the ſame baſe, viz. one ſquare foot, muſt weigh a hundred and forty-four times fourteen pounds, which is two thouſand and ſixteen pounds.

PARMENIO.

I conceive it clearly. Then if we allow fourteen and a half ſquare feet upon the

the ſurface of a middle ſized man, it will follow, that ſuch a man ſuſtains a preſſure of air equal to fourteen times and a half two thouſand and ſixteen pounds, or nearly thirty thouſand pounds.

POLYMETIS.

Your inference is perfectly juſt.

PARMENIO.

The manner in which you have ſhewn the weight of the air, explains likewiſe the principle on which barometers act.

POLYMETIS.

They do act on the ſame principle. And as in the different changes of the weather, the air is ſometimes heavier, ſometimes lighter, conſequently the quick-ſilver in the tube muſt, exactly like a weight in a ſcale, either riſe or fall, or ſometimes be ſtationary. In rainy weather the air is lighteſt, conſequently the quickſilver falls: on the contrary, the air being heavieſt in fair weather, the quickſilver riſes accordingly; ſo that if the

the barometer is well made, it may be depended on for foretelling the changes of weather. Only it muſt be remembered, that the weather-glaſs will riſe or fall ſometimes ſeveral days before there happens any viſible alteration of the weather. High winds will likewiſe make ſome alterations in it.

PARMENIO.

But might not a barometer be conſtructed with any other fluid as well as mercury?

POLYMETIS.

Certainly it is not owing to any peculiar property in the quickſilver that it ſtands in the tube at the height of twenty-nine inches, correſpondent to the weight of the air at the time. The ſame thing will happen with water, with this only difference, that the tube in which we put the water, to try this experiment, muſt be about forty feet long; and the water will ſtand in it at the height of about thirty-

two feet; which is occaſioned by water being ſo much lighter than quickſilver: for it is found, that twenty-nine inches height of mercury in a tube of equal diameter, is equivalent to a column of thirty-two feet of water.

The weight of the air is a property from which we derive ſome of the greateſt advantages in life. Thence, in particular, are deduced the invention and conſtruction of the moſt uſeful engines and machines employed in all kinds of fire and water works. Thence likewiſe ariſes the uſe and power of that moſt commodious engine the pump, which is ſaid to have been invented by Cleſebes, a mathematician of Alexandria, about a hundred and twenty years before Chriſt.

It is by the preſſure of the air, that the water in reſervoirs is impelled into the conduit-pipes, and carried to any houſe, or other place, below the horizontal level of the ſurface of the water in the reſervoir or fountain, be the diſtance what it may.

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The fire rarefying and attenuating the air in the chimneys, cauſes it to aſcend the funnel, while the air in the room, by the preſſure of the atmoſphere, is forced to ſupply the vacancy, ruſhes into the chimney in a conſtant current, excites the fire to burn in the ſtoves, and buoys up the ſmoke aloft in the ſuperior air.

Even that common utenſil the Bellows, acts on no other principle than the preſſure of the air: for the upper part being lifted up, raiſes the column of air off the bottom part, and thus making a vacuum, the air ruſhes in through the hole in the lower part; when being compreſſed by forcing down the upper, it ſhuts cloſe the valve within, and is protruded with great force through the pipe or noſe of the bellows.

But the moſt important of all the effects ariſing from the gravity of the air is yet to be mentioned; and that is, its being the immediate inſtrument of animal life, by the means of inſpiration and expiration. For in the dilatation of the thorax, the air,

by the preſſure of the atmoſphere, is forced into the cavity of the lungs, which it no ſooner diſtends, than it is again expelled by the contraction of the muſcles. —Without the preſſure of the air, this alternate action of the lungs could not be maintained: and hence it is, that on the top of high mountains, where the air is thin, and its preſſure greatly diminiſhed, people experience a difficulty of reſpiration.

It is likewiſe entirely owing to this property of the air, that infants can receive their food from their mother's breaſts. For the child, in ſucking, draws away the air from about the orifices of the nipple, and the air at the ſame time preſſing upon the ſurface of the breaſt, forces the milk to ſpring out plentifully in that part. The caſe is the ſame with all other ſucking creatures.

Many other vaſt benefits do we receive from the air, both as a vehicle and a ſubſtance; but we muſt defer the conſideration of theſe to ſome other opportunity.

DIALOGUE XI.

POLYMETIS.

WE have already conſidered ſome of the moſt amazing wonders of the earth, the waters, and the air: there is ſtill another appendage of our habitation which, I think, you will allow is no leſs common, no leſs unheeded, and yet no leſs uſeful and wonderful than the air itſelf, and that is Light: for without it, what benefit, what comfort, could we have enjoyed from our exiſtence? How could we have provided ourſelves with food and neceſſaries? How could we have gone about the leaſt buſineſs, correſponded with one another, been of any uſe in the world, or other creatures of any to us, without light, and thoſe admirable organs of the

body, which the Great Creator has adapted to the reception of it?

SOPHRONIUS.

And beſides, as the ſame grand luminary which affords us light is likewiſe the diſpenſer of heat, all nature muſt have languiſhed in intolerable cold, as well as darkneſs.

POLYMETIS.

Yes, the world muſt have been made in vain without the appointment of the ſun; and even the ſun created to no purpoſe, without the peculiar laws by which his adminiſtration is regulated. The ſame infinite wiſdom was no leſs neceſſary to endow light with juſt ſuch properties as would render it of uſe to us, than to form the air exactly of ſuch a proper conſiſtence, as ſhould ſerve for the purpoſe of reſpiration. For if we conſider that the ſun, the fountain of light, is near eighty-ſix millions of miles from us, we may well conceive that in vain would it have emitted

ted its light and heat, for any uſe it would have been of to us, had not the wiſdom and hand of God diſpoſed light to paſs or fly with the moſt amazing velocity. We eſteem a ball ſhot out of the mouth of a cannon, to fly with prodigious celerity, but light flies a million of times faſter; and it not only flies thus amazingly ſwift, but reaches to an inconceivable diſtance, even to the fartheſt bounds of the univerſe; which is ſo vaſt as to exceed the comprehenſion of man's underſtanding.

PARMENIO.

In what time is it computed that the light paſſes from the ſun to the earth?

POLYMETIS.

In about ſeven or eight minutes; and that through a ſpace nearly of eighty-ſix millions of miles!

PARMENIO.

Aſtoniſhing! Now that you are ſpeaking of the ſun, what kind of a body do

you really ſuppoſe it to be? Some of the ancient philoſophers entertained whimſical opinions on this ſubject. One of them imagined it to be a great ſtone intenſely heated; and another, that it was a large plate of iron made red hot in the fire.

POLYMETIS.

Such ideas were ſuitable to the infant ſtate of the human mind, when vague conjecture ſupplied the place of inveſtigation. But rational theory aſſures us, that the ſun is a body of fire: and what ſtill further proves, that ſome divine and infinitely wiſe agent formed the light, and endowed it with all ſuch properties as might render it beneficial, and preſerve it from being hurtful, is, that the rays of ſuch a body of intenſe fire, coming down to us as cloſe together as they at firſt iſſue from the ſun, would ſet the whole earth on fire, and melt it with fervent heat. Of this we may be convinced, by the effects which we find ariſe from collecting together

together even ſo few rays as fall within the compaſs of three or four inches: for we ſee that theſe will ſet paper, tobacco, and many other things on fire. What we call burning-glaſſes have no other property to increaſe the heat of the ſun, but only by collecting ſeveral of its rays together: and there are burning-glaſſes of a larger ſize, that will immediately melt lead and pewter of a conſiderable thickneſs, ſet wood on fire in an inſtant, reduce into a ſtate of fuſion in a very ſhort time, braſs, copper, and even iron-plates, which require a great while to be effected in the hotteſt melting furnace.

From this prodigious degree of heat, far exceeding any thing on earth, which is produced by uniting thoſe rays of the ſun only which fall in the compaſs of a few feet, we may judge what terrible effects they would have produced, had they deſcended from the ſun in ſuch a united manner. But the wiſe Creator ordained, that its rays of light and heat, the inſtant they iſſued from its body, ſhould

ſhould ſcatter and diverge from each other, and continually more and more ſo, the farther they proceed in right lines; by which its heat, which would otherwiſe have deſtroyed all things, is rendered of ſo temperate a nature as to cheriſh and nouriſh them. Are theſe things not ſo, Sophronius?

SOPHRONIUS.

Moſt certainly they are. It was neceſſary that light ſhould fly with prodigious ſwiftneſs, otherwiſe its influence would have been of little or no benefit to us. It was neceſſary that its particles ſhould be exceedingly ſmall, otherwiſe it would have broke almoſt every thing in pieces. It was neceſſary that its rays ſhould continually ſeparate and diverge in their paſſage, otherwiſe it would have ſet the whole earth on fire. Light has likewiſe two other properties, which are of the greateſt ſervice to us, viz. that its rays are capable of being refracted or turned out of their courſe, in paſſing from one medium to another, as from air into water

or

or glaſs; and that great part of it likewiſe is reflected back from almoſt all bodies.

PARMENIO.

The body of the ſun muſt be of a prodigious magnitude.

POLYMETIS.

It is computed to contain near ten millions of times a greater quantity of matter than the whole earth! Who can conſider it, and not be aſtoniſhed? But it is not only the immenſe power of God in making the ſun, that we ought to adore and admire, but likewiſe his wiſdom and goodneſs in placing it at juſt ſuch a due diſtance as is ſuitable to the nature of our earth. Had we been placed much nearer the ſun, our world would have been burnt up, the waters would have been turned into vapors, and waſted; vegetation would have ceaſed, and all things would have been conſumed. On the contrary, had we been ſtationed at a much greater diſtance, all things muſt have been frozen up in extreme and perpetual cold. Thus

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it is manifeſt how wiſely and indulgently the great Creator has provided for the good of our earth, by ſo critically adjuſting the diſtance of the ſun to the exigencies and benefit of the various departments of nature.

PARMENIO.

The philoſophical obſervations you have made on light, induce me to requeſt that you would extend them to that admirable organ the eye, with which it is intimately connected. I am not ſo deeply verſed in optics as to be maſter of that ſubject; but I know that both you and Sophronius can develope it with ſcientific preciſion. Fortunately for ſuch as me, there is not over the door of your Library the inſcription which a celebrated ancient placed over the entrance of his ſchool: "Let none enter here who is not initiated in ſcience."

POLYMETIS.

You are always happy in ſuggeſting a ſubject for contemplation. Nothing can more

more properly ſucceed light than the theory of viſion. Let us therefore conſider what for its excellence has been called the miracle of the Creator; who has diſplayed the ſtrongeſt marks of his ſtupendous power and wiſdom in the beautiful ſtructure of the Eye.

As light is deſigned to enter the eye, the formation of that organ is entirely accommodated to the nature of light; and viſion is performed by the rays of light reflected from an object on a fine membrane, called the retina, placed at the bottom of the eye. In order, however, to make light the means of viſion, there was required a moſt wonderful contrivance in the eye: for it being a property of the rays of light, that they ſeparate from each other the moment they come from any body, and diverge ſtill farther and farther, in proportion to their progreſs, they are naturally of no ſervice to enable us to ſee objects: for they muſt be collected again, and brought into one point, before they can form the image of any object. Now,

Now, we know that the humors of the eye are particularly ſuited to this purpoſe of drawing together the rays of light. When theſe firſt enter the eye, they meet with a thin humor, called the aqueous or watery humor, becauſe it is in all reſpects like water, except that it will not freeze in the greateſt cold. In paſſing through this humor, ſuch is the property of it, the rays of light are turned out of the courſe in which they were proceeding, and are brought nearer together, till they come to the ſecond humor of the eye, called the cryſtalline humor, which is a tranſparent ſolid ſubſtance, convex outwards on both ſides, and which unites all the rays in the bottom of the eye.

To illuſtrate the ſubject by a ſimile, we find that a flat piece of glaſs has no power to unite the rays of light; but if the ſame glaſs is ground convex, in the manner of ſpectacles, it will gather them into one certain point, and delineate exactly the images of all objects before it. This may be exemplified by the *camera obſcura*; darkening

darkening any chamber that has a proſpect, and cutting a hole through the window-ſhutter, or whatever ſupplies its place, ſomething ſmaller than the diameter of a ſpectacle-glaſs: then place the glaſs exactly before and cloſe to the hole; taking care that the light has no other paſſage into the room. If you now hang a white cloth or paper at a proper diſtance from the glaſs, ſo that the rays which proceed from every point of the objects may each of them be collected into its correſpondent point, you will perceive that the images of all the objects in the front of the chamber will be painted in the moſt exact manner upon the cloth or paper, according to all its lineaments and colours, eſpecially if the ſun happens to ſhine upon the external objects, and the glaſs be in the ſhade. It will be neceſſary to move the paper nearer to or farther from the window, till it be brought to the exact diſtance where the rays of light meet in a point. This experiment is very eaſy,

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and exactly explains the manner in which viſion is performed.

From this view of the ſubject, we may underſtand how many circumſtances were neceſſary to render the eye capable of ſeeing and diſtinguiſhing objects. Thus we find in the dark chamber, that a flat piece of glaſs will not anſwer the purpoſe, and that the moment the convex or ſpectacle glaſs is removed from the hole, no diſtinct objects appear upon the paper or cloth. In the ſame manner, had the eye been made flat inſtead of convex, or had it not contained that double convex ſubſtance, called the cryſtalline humor, though the eye had remained the ſame in all other reſpects, yet it could not have diſtinguiſhed any object diſtinctly. To preſerve this convexity of the eye, ſo neceſſary to ſight, God not only made the eye of a convex form at firſt, but placed it in that clear tranſparent fluid, called the aqueous or watery humour; which beſides refracting or bringing together the rays of light, protrudes the external

membrane of the eye, and makes it of a convex form. And this humor being ſo indiſpenſible, ſuch a proviſion is made, that if by any accident of a wound or puncture of the eye, it is entirely evacuated, nature gradually ſupplies it again, after an interval of ſome time.

In the decline of life, the aqueous humor is leſs copious, and the eye becomes flattiſh; when having no longer the power to draw the rays of light together, ſufficiently to form a diſtinct and perfect image, it becomes neceſſary to uſe ſpectacles, the convexity of which ſupplies the defect.

It was not only neceſſary that the eye ſhould be convex, but that it ſhould be ſo only to a certain degree: for if it is too convex, it gathers the rays of light together into a point too ſoon, or before they reach the retina, and conſequently can either form no image there, or a very indiſtinct one. This is the caſe with people who are *near ſighted*; a defect which is to be remedied by uſing glaſſes ground con-

cave or hollow on the inſide, ſo as to compenſate the too great convexity of the eye.

It is particularly worthy of remark, that though every other part of the body grows continually and proportionably from infancy to manhood, yet the cryſtalline humor of the eye preſerves the ſame ſize and form both in adults and children.

In the *camera obſcura*, or dark chamber, if the hole we cut for the glaſs is too ſmall to admit a ſufficient number of rays, the images will be repreſented upon the paper very faint and imperfect: on the contrary, if the hole be ſo large as to admit too much light, the images will be ſtill more weak and imperfect. Thus we ſee what a nice and juſt proportion was neceſſary in the formation of the pupil or hole of the eye, which admits the rays of light. Had this only been either a little too large or too ſmall, the defect would have rendered the curious ſtructure of the eye almoſt totally uſeleſs. We find that the pupil of the eye is not only formed of that preciſe dimenſion which is the fitteſt

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for ſight, but, which is matter of ſtill greater admiration, that as we have occaſion to view objects, ſometimes in a greater, ſometimes in a leſſer light, it ſpontaneouſly becomes larger or ſmaller, in order to admit more or fewer rays, according as will beſt ſerve our ſight. If the light is too much, it preſently contracts, to exclude what is ſuperfluous; but if the light is too faint, or the object we look at is diſtant, it dilates, or becomes larger, for the purpoſe of admitting a greater number of rays.

It deſerves our particular notice, that the pupil is of different forms, in different animals, according to their reſpective occaſions. In ſome, as in man, it is round; that being the moſt proper figure for the poſition of our eyes, and the uſe we make of them both by day and night. In ſome other animals it is of a longiſh form; in ſome it is tranſverſe, with a large aperture, ſuch as in cattle, ſheep, horſes, goats, &c. This is an admirable proviſion for thoſe creatures to ſee the better

laterally, and avoid inconveniences, as well as to help them to gather their food on the ground, both by day and night. In other animals, particularly the nocturnal, the fiſſure of the pupil is erect, capable both of opening wide and ſhutting up cloſe: the latter ſerving to exclude the brighter light of day, and the former to take in the more faint rays of the night; thereby enabling them to catch their prey with the greater facility in the dark, to ſee upwards and downwards, to climb, &c. Thus cats, their pupils being erect, and the ſhutting their eye-lids performed tranſverſely, can ſo cloſe the pupil, as to admit of, as it were, only one ſingle ray of light; and by throwing all open, they can take in all the fainteſt rays; an incomparable proviſion for thoſe animals which have occaſion to watch and way-lay their prey both by day and night.

Beſides this large opening of the pupil, there is, in ſome nocturnal animals, another admirable proviſion, which enables them to catch their prey in the dark. It

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is a radiation or ſhining of the retina at the bottom of the eye. This is moſt remarkable in cats, but exiſts not either in man, birds, or fiſhes. To cats it is highly ſerviceable, both for our uſe and their own benefit, by enabling them to catch and deſtroy thoſe animals which are noxious to us, and food to them, and ſeldom ſtir out of their holes till the night-time.

SOPHRONIUS.

The account of viſion with which you have favoured us is extremely diſtinct, but, if I am not miſtaken, you have omitted———

POLYMETIS.

The vitreous humor?

SOPHRONIUS.

That is what I mean.

POLYMETIS.

You are perfectly accurate in obſerving that I have not mentioned that humor;

mor; but I had deferred it, perhaps indeed improperly, till I ſhould advert to the ſhape of the eye. I ſhall now proceed to notice it. But let me firſt obſerve, that to enumerate all the wonders of the eye, would require a large volume; for every part of it bears the mark of amazing wiſdom and contrivance.

The form of the eye is not leſs worthy of attention than any hitherto mentioned: for if, inſtead of being ſpherical or roundiſh, it had been a plain ſuperficies, it could not have received the image of any object larger than itſelf; but by means of its ſphericity or roundiſh figure, the eye, though ſmall, can receive the image of the greateſt bodies, and even of almoſt the fourth part of the heavens at one glance. To preſerve this ſpherical figure of the eye, there is provided another humor, called the vitreous or glaſſy humor: it is very clear and bright, reſembling much the white of an egg, and is in greater abundance than either of the other humors. It is placed behind the cryſtalline

humor, and fills the whole cavity or dark chamber of the eye. To this it is owing, that the eye is of a ſpherical form. It alſo ſerves to keep the cryſtalline humor at a proper diſtance from the retina, which receives the images of objects.

SOPHRONIUS.

Is it not admirable to behold how very fine all the coats or membranes of the eye are, and yet of ſo firm a texture, as to be able to contain ſo many different humors, and to perform ſo many different actions, without ſcarce ever being injured by ſo conſtant uſe?—So careful has the Creator been, that his creatures ſhould enjoy this excellent and uſeful ſenſe, no animal has leſs than two eyes, each of which ſingle can perform all the offices of viſion, that in caſe one is by any accident injured or loſt, the other might ſupply its place. But with regard to the number of our eyes, there is a very wonderful circumſtance, which men the moſt ſkilful in optics are unable to account

for; and it is this, that though the image of every object is actually pictured on the retina of each eye, whilſt we have two, yet we do not ſee the object double, but juſt the ſame as if we were to look at it only with one eye. This a ſtrong proof of the infinite ſkill, and the exquiſite art employed by him that made the eye: for what confuſion ſhould we have been always in, what inconveniences ſhould we have experienced, had all objects been ſeen double?

POLYMETIS.

Another thing obſervable with regard to the eye, beſides its advantageous ſituation in the head, the moſt eminent part of the body, is its being placed in the fore-part, or ſide-part of it, according to the particular occaſions of different animals. In man, and ſome other creatures, it is placed to look directly forward chiefly; but ſo accommodated as to take in the greater part of the hemiſphere before it. In birds, and ſome other creatures, the eyes

are ſeated in ſuch a manner, as to take in almoſt a whole ſphere, that they may be the better enabled to ſeek their food, and eſcape dangers. In ſome creatures they are placed ſo as to ſee beſt behind them, or on each ſide; by which means they may avoid any enemy that purſues that way. Thus, in hares and conies, the eyes are very protuberant, and placed ſo much towards the ſides of their head, that their two eyes take in nearly a whole ſphere; whereas in dogs, that purſue them, the eyes are ſet more forward in the head, to look that way more than backward.

The ſcriptures teach us, that God's care and wiſdom is over all his works, the meaneſt and moſt minute, as well as the greateſt; and the wonderful contrivance which appears in the proviſion made for the ſight of the meaneſt creature, to ſuit its particular circumſtances, may convince us of this truth as much as any thing. Thus ſnails, not being able to turn their head quick from ſide to ſide, their eyes are not placed in their head,

but

but at the end of their long horns, which they twiſt and turn about on every ſide, with great eaſe and agility.

Spiders being to live by catching ſo nimble a prey as a fly is, it was neceſſary that they ſhould ſee every way, and take it by a ſudden ſpring, as they do, without any motion of the head, which would have ſcared away ſo timorous an inſect. Accordingly we find that ſpiders have no neck, ſo that they cannot move their head; but they are furniſhed ſome with four, and others with ſix, ſeven, or eight tranſparent eyes, placed in the front of their head.

SOPHRONIUS.

There ſeems to have been the like conſideration had to the pleaſure and benefit of the mole, in the ſtructure of its eye. For as the habitation of that animal is entirely ſubterraneous, and its lodging, its food, its exerciſes, nay even all its paſtimes and pleaſures, in thoſe ſubterraneous receſſes and paſſages, which its own

own induſtry has made, ſo the ſize of its eye is admirably adapted to anſwer all its occaſions, and at the ſame time to prevent inconveniences. As a little light will ſuffice an animal living always under ground, the ſmalleſt eye will abundantly ſupply its exigence; and a protruberant eye like that of other animals, would much annoy it in its principal buſineſs of digging for its food and paſſage; it is endowed with a very ſmall one, commodiouſly ſeated in the head, and well fenced and guarded againſt the annoyances of the earth.

POLYMETIS.

Indeed we invariably find the eye accommodated to the particular circumſtances of every creature. It is obſerved by anatomiſts, that horſes, cattle, ſheep, and other animals which feed upon graſs and herbs, and are therefore obliged to hang down their heads a great deal in chooſing and gathering their food, have a particular muſcle to ſuſtain the eye, to prevent

prevent it from being hurt by too much ſuſpenſion; which is not to be found either in man or other animals, who have not occaſion to hang down their heads ſo frequently.

SOPHRONIUS.

There is likewiſe a very curious and extraordinary formation of the eye beſtowed on birds and fiſhes, which enables thoſe creatures to ſee at all diſtances, far off or nigh; and this peculiarity, eſpecially in the waters, requires a different conformation of the eye. In birds alſo, this is of a great uſe, to enable them to ſee their food at their bill's end, or to reach the utmoſt diſtances which their high flights enable them to view; as to ſee over great tracts of ſea or land, whither they have occaſion to fly; or to perceive their food or prey, even ſmall fiſhes in the waters, and birds, worms, &c. on the earth, when they ſit upon trees or high rocks, or are hovering high in the air. A ſingular conformation may be obſerved

ſerved in the eye of the cormorant, which is, that the cryſtalline humor is globous, as in fiſhes, to enable it to ſee and purſue its prey under water. It is farther obſervable, that the eyes of birds, quadrupeds, and fiſhes, are defended by a membrane, of the nature and hardneſs of bone or horn, which in man is not to be found; he having little occaſion to thruſt his head into ſuch places of annoyance, as quadrupeds and other animals; or if he has, he can defend his eyes with his hands. Fiſhes are deſtitute of eye-lids, becauſe they have no occaſion for a defenſative againſt duſt and motes, injurious to the eyes of land-animals, nor to moiſten and wipe the eyes, as the eye lids do. The nictitating membrane therefore is a ſufficient proviſion for all their purpoſes, without the addition of the eye-lids. In reſpect of creatures whoſe eyes, like the reſt of their body, are tender, and without the guard of bones, they are endowed with a faculty of withdrawing their eyes into

into their head, and lodging them in the ſame ſafety with the body.

POLYMETIS.

In a word, every particular relative to the eye, announces the workmanſhip of God. In ourſelves, we find this elegant and uſeful organ fenced with ſtrong compact bones, and lodged in a well made ſocket, where it is defended from the ſtroke of any flat or broad bodies, and guarded by the eye-lids, which are admirably fitted for this purpoſe. For they are made of a thin and flexible, but ſtrong ſkin; by which means they not only guard the eye, but wipe and clean it. Their edges are formed of a ſoft cartilage, which enables them not only to perform their office better, but to cloſe more eaſily. Out of theſe cartilages grows a paliſade of ſtiff hairs, of great uſe to warn the eye of the invaſion of dangers, to keep off motes, to exclude too great light, &c. and likewiſe to afford at intervals a ſufficient paſſage for objects

to

to approach the eye. It is remarkable, that thoſe hairs grow only to a certain commodious length, and require no cutting, like many other hairs of the body. Their points likewiſe ſtand out of the way; in the upper lid bending upwards, and in the lower downwards, that they may be the better adapted to their uſe. That the outer coat of the eye, which muſt be pellucid, to tranſmit the light, may not grow dry and ſhrink, and thence loſe its tranſparency, the eye-lids are ſo contrived as often to wink, ſo that they may ſupply it with a moiſture, contained in ſome glands, with which they are furniſhed for that purpoſe. By the ſame means, they likewiſe wipe off whatever duſt may ſtick to the coat of the eye; and this, leſt they ſhould hinder the ſight, they do with the greateſt celerity. Being alſo made very ſoft, there is no danger of their hurting the eye.

SOPHRONIUS.

To the many remarks you have made, I beg leave to add only one. Becauſe for

for the guidance and direction of the body in walking, and any exercise, it is neceſſary that the eye ſhould be expoſed to the air at all times, and in all weathers, the moſt beneficent author of nature has provided for it a hot-bed of fat, which fills up the interſtices of the muſcles, and renders it leſs ſenſible of cold than any other part.

POLYMETIS.

Yes, that is a wonderful advantage: for had the aqueous humor been expoſed to freeze by cold, like other water, it would both have injured the nice arrangement of the eye, and diverted the rays of light from their due courſe, in paſſing through that humor to the pupil.

PARMENIO.

Nothing can be more amazing than the whole ſtructure and economy of the eye.

DIALOGUE XII.

PARMENIO.

AND what moſt excites my aſtoniſhment, is the various modifications in which it exiſts in different creatures.

POLYMETIS.

I preſume you are ſpeaking of inſtinct; a ſubject by many little heeded, but to thoſe who think juſtly, a ſource of rational entertainment, and even of uſeful inſtruction. No inſtinct implanted by the Author of nature can be unworthy of contemplation.

PARMENIO.

That is the ſubject of our converſation. I was juſt obſerving to Sophronius, that it is chiefly conſpicuous in moſt creatures

at the ſeaſon when they bring forth their young. The preſervation of the ſpecies appears to be the ſtrongeſt inſtinct in the animal world; and preparatory to this object, how admirable is the induſtry and ſagacity of birds, in finding out a ſecret, quiet and ſecure place for their neſts! There is a bird in India, which makes its neſt of the fibres of ſome roots, moſt curiouſly interwoven and plaited together, and then hangs it on the ends of twigs of trees, bending over the water, to ſecure their eggs and young from the apes and monkeys of that country, which would otherwiſe deſtroy them.

POLYMETIS.

I have ſeen ſuch a neſt as you deſcribe: it is that of a bird on the Spaniſh main.

PARMENIO.

When the female of the king-fiſher has conceived, ſhe makes her neſt of the prickles of the ſea-needle, weaving them together in the form of a long fiſhing-net, very

very thick and uniform. She then puts it under the daſhing of the waters, that being by degrees beaten upon and milled, it may acquire a ſmooth ſurface; after which it becomes ſo ſolid, that it cannot be eaſily divided by either ſtone or iron. What is yet more wonderful, the mouth of the neſt is ſo exactly fitted to the inhabitant, that neither a greater nor a leſs animal than the king-fiſher can live in it. For when ſhe is in it, as is ſaid, it will not admit the ſea-water.

The neſt of the long-tailed titmouſe likewiſe deſerves obſervation. She builds it moſt artificially with moſſes, hair, and the webs of ſpiders, caſt out from them when they take their flight. She afterwards thatches it upon the top with the muſcus arboreus ramoſus, or ſuch like broad whitiſh moſs, to keep out rain, and to elude the ſuſpicion of any ſpectator. Within, ſhe lines it with ſoft feathers, in ſuch quantity, that it is really ſurpriſing how ſo ſmall an apartment could contain them; eſpecially that they could be laid

ſo cloſe and handſomely together, to afford ſufficient room for a creature with ſo long a tail, and ſo numerous an iſſue as it generally has.

POLYMETIS.

The wonderful inſtinct of incubation, or ſitting on their eggs, in birds, cannot be ſufficiently admired. For when they are engaged in that buſineſs, they will remain in their neſts for ſeveral weeks, deny themſelves the pleaſures, and even the neceſſaries of life: ſome of them even ſtarving themſelves almoſt, rather than hazard their eggs, to get food; and others either performing the office by turns, or elſe one of them kindly ſeeking out, and carrying food to the other, engaged in the office of incubation.

SOPHRONIUS.

It is really a matter of great admiration, to reflect on the wonderful propenſity which all creatures have to bring forth their young in ſafety, the extraordinary pains

pains and toil which the greater part of them take to provide them food, the arts they make uſe of, and the courage they exert to defend them! The love of their young renders the moſt timorous creatures courageous, the moſt ſlothful induſtrious, and the moſt voracious parſimonious. We know that when partridges and their young are purſued, the old ſuffer the young to fly away before, ſo contriving that the fowler may entertain expectations of catching themſelves. Thus they hover about, run forward a little, then turn again, and ſo amuſe the fowler, till the young have made their eſcape.

The bear not only brings forth her young, but finding them ſhapeleſs, ſhe faſhions them with her tongue, by conſtant licking.

POLYMETIS.

And the bitch, if her puppies are kept at a diſtance from the houſe till they are pretty large, will diſgorge for them the food ſhe had picked up in the houſe,

before it has time to digeſt in her own ſtomach.

We daily behold hens, how they cheriſh their chickens, taking ſome of them under their ſpread wings, ſuffering others to mount upon their backs, and taking them in again with a voice expreſſing kindneſs and joy. When themſelves only are concerned, they fly from dogs and other creatures; but to defend their chickens, they will not only attack dogs and other animals, but even dare to fly in the face of a man. On the contrary, the fierceſt animals will become tame, and as it were cajoling, when they find their young involved in the ſame danger with themſelves. Thus, the lioneſs, if, when leading her whelps, ſhe ſhould be met by huntſmen in the wood, ſhe at firſt views them with ſcorn, but immediately her courage fails her; ſhe is enervated with fear leſt her whelps ſhould be wounded, and ſhe drops her head, as it were in intreaty to ſpare them.

There

There is a remarkable particular in birds, with regard to the care of their young; which is, that they never omit inſtructing them to fly: for the young birds dare not truſt themſelves to the air, till they are firſt inſtructed and brought to it by their parents.

SOPHRONIUS.

Innumerable are the inſtances of the great care which even inſects take of their young. Thus, all of them which do not themſelves feed their young, lay their eggs in ſuch places as are moſt convenient for their excluſion, and where, when hatched, their proper food is ready for them. We ſee two ſorts of white butterflies faſtening their eggs to cabbage-leaves, as being fit aliment for the catterpillars that come out of them; whereas, ſhould they affix them to the leaves of a plant improper for their food, thoſe catterpillars muſt needs be loſt, they chooſing rather to die than to taſte of ſuch plants.

POLYMETIS.

I believe ſimilar inſtances might be produced in the other tribes of inſects: it being common to all, if not prevented, to lay their eggs in places where they are ſeldom loſt or miſcarry, and where they may have a ſupply of nouriſhment for their young, as ſoon as they are hatched. Thoſe, in reſpect of whoſe young, nature has not made proviſion for ſufficient maintenance, do themſelves gather it before-hand, and lay it up in ſtore for them. Thus the bee, the proper food of whoſe young in the infant ſtate is honey, or what we call bee-bread, neither of which is any where to be found amaſſed by nature in ſufficient quantity for their maintenance, does herſelf, with unwearied induſtry, fly from flower to flower, collect and hoard them up.

PARMENIO.

In the ſame manner, hornets, waſps, and many kinds of flies, carry maggots, ſpiders,

ſpiders, &c. into their neſts or cells, where they carefully ſeal them up with their eggs, for the future proviſion of their young, in their firſt or maggot-ſtate, when they ſtand in need of food.

POLYMETIS.

When we ſeriouſly conſider theſe, and many other inſtances which might be mentioned, of the ſtrong affection of brutes to their young, and the remarkable care and ſagacity with which they provide every thing neceſſary for them, we are led to the contemplation of the great Creator of all things: for it can only be ſome moſt wiſe and powerful Being, who could teach brutes every thing neceſſary for the propagation and preſervation of their ſpecies. There is ſuch a proviſion made for even the ſmalleſt inſect, that whoever obſerves it, muſt be convinced, that no creature has been produced by chance, but by that wiſe, powerful, and intelligent Being, whom we call God; who perfectly knew the nature and wants of every creature, provided

provided for them accordingly, and determined that each ſpecies ſhould continue till the earth ſhall be no more.

The wonderful ſpeedy growth of birds, which are hatched in neſts, and fed there by the old ones, till they are fledged, and come almoſt to their full ſize, at which they arrive in about a fortnight, ſeems likewiſe an argument of Providence; deſigning by this their ſecurity, that they might not lie long in a condition expoſed to the havoc of any vermin which might diſcover their habitation.

SOPHRONIUS.

Indeed all nature abounds with demonſtration on this ſubject. I ſhall mention only one inſtance of a bird. It being the nature of the Pelican to build her neſt upon high rocks and mountains, in the midſt of deſarts, where there is no water for many miles, it is furniſhed with a large bag, under its bill and throat, capacious enough to contain thirty pints; by which it is enabled to carry water ſufficient, and food

food for its young, from a great diſtance. —In the ſame manner, the heron has much larger wings than are neceſſary for ſo ſmall a body, that it may be enabled to carry the greater load to its neſt at ſeveral miles diſtance, which they frequently do: fiſh ſome inches long being often found under the trees in which they build, though many miles from any water.

POLYMETIS.

In quadrupeds, as well as in man, the faculty of ſuckling the young is an excellent proviſion, which the Creator has made for their ſuſtenance. Milk is not only the moſt ſuitable and agreeable food to young creatures, but they are taught by nature to deſire it as ſoon as they are born; and the moſt ſavage animals, ſo far from withholding it from them, even teach and initiate them in the art of taking it. For ſupplying this wholeſome nutriment, a curious apparatus is provided in the different ſpecies of animals, which have a number of breaſts, proportionable to their reſpective

reſpective occaſions. Thus women have two breaſts and nipples, that the child in ſucking may be laid ſometimes to one, and ſometimes to the other; leſt its body, from being always laid to ſuck on one ſide only, might contract any crookedneſs. In the elephant, the nipples are placed near the breaſt; becauſe the old one is forced to ſuck herſelf, and by the help of her trunk, conveys the milk into the mouth of her young.

Though theſe things are generally taken little notice of, they are highly worthy of attention, and may afford matter of entertainment and uſe, even to the wiſeſt: for to what concluſions do ſuch obſervations conduct us? Certainly at laſt to acknowledge, that the Divine Architect is ſeen as plainly in the lowly moſs, as in the lofty cedar of Lebanon: in the almoſt imperceptible mote as in the huge leviathan; in a grain of ſand as in the higheſt mountain. The Deity may be alike ſeen in every part of his works by an attentive obſerver: but objects that are familiar to

us loſe their force upon the mind, which yet is ſtruck with thoſe that lie remote from obſervation. Some who were blind to all the wonders of nature around them, have been convinced of a firſt cauſe, upon receiving ocular proof of the circulation of the blood.

DIALOGUE XIII.

PARMENIO.

I WISH that a certain Free-thinker had been preſent at our laſt converſation; one whom I have heard ſtrenuouſly arguing in company againſt the exiſtence of a firſt cauſe, and maintaining that every thing in nature was the effect entirely of chance.

POLYMETIS.

Was the man blind, Parmenio?

PARMENIO.

No, he ſeemed to have the uſe of his eyes perfectly.

POLYMETIS.

And how did ſuch diſcourſe appear to be reliſhed by the company?

PARMENIO.

PARMENIO.

They heard him with ſilence, but my back being towards them, I could not perceive whether they liſtened with marks of attention.

POLYMETIS.

You could judge from his manner of ſpeaking, no doubt, whether he diſcovered any ſelf-complacency, any ſigns of vanity or triumph in the ſhrewdneſs of his own underſtanding.

PARMENIO.

He ſeemed indeed to do ſo, and that not a little.

POLYMETIS.

Then I am right in my ſuſpicion; there lay the ſource of his philoſophy.

SOPHRONIUS.

I have always thought that a pride in ſingularity of opinion is generally the motive, more or leſs latent, of men of that diſpoſition.

POLYMETIS.

POLYMETIS.

I believe it very ſeldom happens that the caſe is otherwiſe. I remember two or three men, at different times, who were much addicted to diſcourſe of that kind. That the univerſe had exiſted from eternity, that there was no Providence, that every thing in nature was governed by chance; theſe were conſtantly the topics on which they declaimed. I was at that time very young, but endeavoured the beſt way I could to refute their opinions. I remonſtrated againſt the apparent impoſſibility that any material ſyſtem of bodies could have exiſted from eternity; maintaining that thoſe bodies being of themſelves nothing elſe than inert matter, equally incapable of deſign or action, they muſt have been originally the work of ſome moſt powerful and immaterial Being, who previouſly exiſted, and muſt have exiſted from eternity. That therefore they could not be the production of chance; much leſs could they be preſerved

ſerved in ſyſtematical order by any ſuch fortuitous principle. That the conſtant viciſſitudes of day and night, the regular ſucceſſion of the different ſeaſons, the ſtated changes of the moon, and the periodical revolutions of all the planets, proclaim aloud that thoſe invariable laws can only be enforced by an intelligent Being, whoſe wiſdom is equal to his power, and his goodneſs to either. That if any additional proof was required, to confirm this doctrine, it might be abundantly ſupplied by attentive obſervation to the world we inhabit; where the whole ſyſtem of nature, in its various departments, the earth, the waters, the air, the light, the animal, the vegetable, and even the foſſile kingdoms, all concur in one general declaration, that the Power which made them is divine.

PARMENIO.

Did they make any anſwer to thoſe arguments?

POLYMETIS.

They generally did make ſome reply, but in the form of a queſtion, not of an anſwer; and it amounted to nothing more than a perſeverance in their opinions. After all that I had ſaid, they would aſk, "Why may not the univerſe have exiſted from eternity?"

SOPHRONIUS.

No arguments can ever avail with men, whoſe purpoſe is only contradiction to the general ſentiments of mankind. They are for the moſt part mere Smatterers. I never knew them to draw any argument from their own fund. Having heard of the atheiſtical notions of ſome writers otherwiſe celebrated, or perhaps juſt looked into their writings, they retail the hackneyed jargon with all the confidence of men whoſe opinions are founded upon what they think eminent authority.

POLYMETIS.

And what is not more ſtrange than true, thoſe very men, while they affect to deride

ride the belief of others in the doctrines of the Chriſtian religion, though conſiſtent with reaſon, ſhall perſiſt in maintaining a whimſical creed of their own, in direct oppoſition, not only to the concluſions of reaſon, but even of common ſenſe.

PARMENIO.

Such men are diſturbers of ſociety, and ſeem as much objects of public cognizance as rioters, who are committed to cloſe cuſtody, or the felons who are ſent into baniſhment.

POLYMETIS.

They are indeed objects of reprobation, if not more properly of contempt: but beware of calling them diſturbers of ſociety, in their own hearing.

PARMENIO.

Do you imagine that they are extremely ſuſceptible of ſuch reproach?

POLYMETIS.

By no means: but it would gratify them with a notion of their own impor-

tance, which is the object they have principally in view. Call them rather a nuiſance to ſociety: ſuch an appellation, by mortifying their pride, may ſerve to reclaim them from abſurdity. It was the opinion of Ariſtotle, that ſuch men ought to be treated not with arguments, but puniſhments.

DIALOGUE XIV.

POLYMETIS.

WE have taken a curſory view of the wonders of the earth; ſhall we indulge ſpeculation a little on thoſe of the firmament?

SOPHRONIUS.

Nothing can be more agreeable to me, and I am perſuaded, to Parmenio likewiſe.

PARMENIO.

So agreeable indeed, that had I been to propoſe a ſubject, I ſhould have preferred that to every other.

POLYMETIS.

But to conceive a juſt notion of them, we muſt diveſt ourſelves of all thoſe little

ideas we have been uſed to form of things, and ſtretch our imagination to the utmoſt. How aſtoniſhing muſt be the ſpace which affords room for an innumerable multitude of ſtars, many of them more than a hundred thouſand miles in breadth, to perform vaſt circuits even of ſeveral hundred millions of miles! But to form the better judgment of this inconceivable ſpace, let us conſider particulars, according to the obſervations of the moſt approved aſtronomers.

It is found that the Moon, though only a ſatellite of the earth, and her circuit the leaſt of all the celeſtial bodies, takes up a ſpace of near four hundred and eighty thouſand miles in breadth, in which to perform her monthly revolution. As to the Earth where we live, the circuit in which it moves round the Sun every year, is above five hundred millions of miles in circumference. Much larger ſtill is the circuit which ſome of the ſtars move through. The planet or ſtar called Saturn moves in a circle, the breadth only of

of which is a ſpace of more than one thouſand five hundred millions of miles. The ſtar called Jupiter moves in another circle, the breadth of which is above eight hundred and forty-eight millions of miles. The ſtar Mars, in one of two hundred and forty-ſix millions broad. That called Venus, in a circle, the diameter of which is one hundred and eighteen millions. And that of Mercury, in one the breadth of which is ſixty-four millions of miles.

SOPHRONIUS.

How aſtoniſhing ſuch circuits! and likewiſe the magnitude of the bodies!

POLYMETIS.

Yes, the circumference of the body of Saturn, is above two hundred and thirteen thouſand miles; and that of Jupiter, two hundred and fifty-four thouſand. The others of inferior dimenſions: but that of the Earth is above twenty-five thouſand; of Venus, more than twenty-four thouſand; of Mars, above thirteen thouſand; and of Mercury, ſeven thou-

ſand ſeven hundred and twenty-four miles.

SOPHRONIUS.

Such are theſe bodies, which the darkneſs of ignorance repreſented to us as no larger than lighted torches! What vaſt diſcoveries has knowledge diſcloſed to the world!

POLYMETIS.

But we have yet conſidered only a very ſmall part of the heavens. Though the planets or ſtars we have mentioned are of ſuch vaſt bulk, and each of them takes ſuch a prodigious circuit in its courſe, ſtill this appears nothing in compariſon of the great whole. Theſe all belong, as it were, only to one diviſion, and receive all their light from the ſame ſun which gives it to us; though the planet Saturn is placed ſeven hundred and ſeventy-ſeven millions of miles diſtant from the Sun; Jupiter four hundred and twenty-four millions; Mars one hundred and twenty-three millions. Our Earth is nearer it, being

being eighty-one millions of miles diſtant; Venus fifty-nine millions; and Mercury thirty-two millions diſtant.

But far beyond all theſe, are what are called the fixed ſtars; ſo named, becauſe for many years together they ſeemed not to move. According to the obſervations of the moſt eminent aſtronomers, the Dog-ſtar, ſuppoſed to be neareſt of all the fixed ſtars, is diſtant from us about two millions of millions of Engliſh miles. And it is very probable that all the fixed ſtars are diſtant from each other in proportion to the diſtance of the neareſt of them from our Sun. So great is the number of them, that they are beyond all computation. For when obſerved with a good teleſcope, they appear millions beyond millions, till by their immenſe diſtance they evade the ſight, though aſſiſted by the beſt inſtruments.

SOPHRONIUS.

I believe the conſtellation called the Seven Stars, as appearing no more to the naked

naked eye, contains no leſs than ſeventy or eighty ſtars, which may be diſtinguiſhed by a teleſcope. We admired, and were aſtoniſhed at the wonders of the earth where we dwell, the vaſt and profound ſea, the wide-ſpread land, the rolling rivers, and lofty mountains! But what are thoſe but points and atoms, when compared to the inconceivably immenſe firmament of heaven, and thoſe vaſt bodies or worlds beyond worlds, with which it is ſtored!

PARMENIO.

I am loſt in admiration at the thought.

POLYMETIS.

There is great reaſon to think that each of the fixed ſtars is a ſun like ours, which affords light and heat to a certain number of inhabited planets or worlds, in the ſame manner as the Sun does to the Earth, and the inhabited planets Saturn, Jupiter, Mars, Venus, and Mercury. For it is certain beyond contradiction, that all theſe,

theſe, though they appear to us to ſhine, are in reality dark bodies, like this Earth, and receive all their light and heat from the ſame Sun which enlightens and warms us; and that it is only from the reflection of that light back again, that they appear luminous bodies to our eyes. But as Jupiter and Saturn are placed at a vaſt diſtance from the Sun, they have each of them ſeveral ſatellites or moons moving round them in various circuits, to augment their light. Of theſe Jupiter has four: the firſt or neareſt of which moves round him in one day eighteen hours and a half; the ſecond, in three days thirteen hours and a half; the third, in ſeven days three hours and three quarters; the fourth in ſixteen days ſixteen hours and a half. —Saturn has no leſs than five moons attendant on him: the firſt moves round him in one day twenty-one hours; the ſecond, in two days ſeventeen hours; the third, in four days twelve hours and a half; the fourth in fifteen days twenty-two hours; the fifth in ſeventy-nine days

ſeven

ſeven hours.—Now, as we know that our Moon moves round the Earth in twenty-ſeven days and ſeven hours, and is of particular ſervice to us in affording us light by reflection during the Sun's abſence, ſo it is natural to think, that thoſe ſatellites or moons moving round Jupiter and Saturn in the ſame conſtant revolution, are intended for the ſame purpoſe as our Moon; and that therefore there are inhabitants in thoſe planets, which ſtand in need of a regular ſupply of light as much as we do.

SOPHRONIUS.

The idea is ſo extremely probable that it admits of no doubt. But you will pleaſe to remember, that Dr. Herſchell has diſcovered ſome other ſatellites, beſides a new planet, the Georgium Sidus, accompanied with two ſatellites.

POLYMETIS.

I had indeed omitted to mention them.

PARMENIO.

PARMENIO.

But is it a fact, that dark bodies, when enlightened by the Sun, may appear luminous to the eye?

POLYMETIS.

The fact is plain beyond all queſtion, from the appearance of our Moon: which, of itſelf, is moſt certainly a dark body, like this Earth, and has no other light but what it receives from the Sun: it is only the reflection of that light back again, which makes the Moon appear to us as a body of light.

SOPHRONIUS.

Undoubtedly. Unleſs this was really the caſe, that the Moon is a dark ſolid body, there could no ſuch thing happen as an eclipſe of the Moon, nor what we call an eclipſe of the Sun. For it is well known to aſtronomers, that an eclipſe of the Moon proceeds from no other cauſe, than that the Earth, in its circuit round the Sun, coming between the Moon and

the

the Sun, the light of the Sun is prevented from falling on the Moon, and conſequently the latter appears, as it really is, a dark body.

POLYMETIS.

Preciſely ſo: and in the ſame manner, what we call an eclipſe of the Sun, is in reality, an eclipſe of the Earth: for it is occaſioned by the Moon's coming between the Sun and the Earth: and whenever this happens, the Moon, as being a dark ſolid body, intercepts the rays of the Sun from falling on that part of the Earth which it covers, and conſequently darkneſs overſhadows it.

PARMENIO.

It was, I think, Copernicus who firſt made the diſcovery that the Sun ſtands ſtill. The fact is now ſcarcely queſtioned: but whence comes it then, that in the Sacred Scriptures, the Sun is mentioned as moving round the Earth?

POLYMETIS.

POLYMETIS.

That the Sun actually moves round the earth, was maintained by the ancient aſtronomers, and had always been the popular opinion: the ſame mode of ſpeaking therefore was adopted in the Scriptures, leſt the belief of men might have been ſhocked by an aſſertion ſo repugnant to common ſentiment. It is now certain, that the ſun remains always in one place, in the midſt of the ſix planets or worlds formerly mentioned, and which all move round him as their centre, in different circles. Firſt Mercury (which is ſo near the Sun, that its light and heat is ſeven times as great as the greateſt with us, ſo that our water there would be for ever boiling hot) performs its circuit round the Sun in eighty-eight days. Its ſurface is about ſixty-two millions of ſquare miles: it has another motion round its own axis, like the Earth; but in what time it performs this, cannot be determined. In the next circle moves Venus, whoſe ſurface

ſurface is above a hundred and ninety-ſix millions of ſquare miles. It moves round the Sun in two hundred and twenty-four days twelve hours, and turns round itſelf in twenty-three hours. In the next circle, moves the Earth, attended by the Moon. The Earth performs its circuit round the Sun in three hundred and ſixty-five days five hours and forty-nine minutes: its ſurface contains about a hundred and ninety-nine millions of ſquare miles. The Moon goes the circuit round the Earth in twenty-ſeven days and ſeven hours, and turns round her own axis in the ſame time. Her ſurface is above one million four hundred thouſand ſquare miles; and ſhe is diſtant from the Earth about two hundred and forty thouſand miles. Mars moves round in the next circle, which it goes through in one year three hundred and twenty-two days, and moves round its own axis in twenty-four hours forty minutes. Its ſurface is above ſixty-two millions of ſquare miles. In the next circle moves the planet Ju-

piter, which is eleven years three hundred and fifteen days in going round the Sun, but turns upon its own axis in nine hours and fifty-ſix minutes. Its ſurface greatly exceeds twenty thouſand millions of ſquare miles. Its Satellites, as was before obſerved, are continually revolving round it. In the laſt circle moves the planet Saturn, which is twenty-nine years one hundred and ſixty-ſix days in going round the Sun. Its ſurface is above fourteen thouſand millions of ſquare miles.

Now, as we know that all thoſe planets have the very ſame motions as the Earth, and that the deſign of the Earth's motions is to produce the changes of day and night, of ſummer and winter, for the convenience of its inhabitants; is it not reaſonable to conclude, as God ordains nothing in vain, that the motions of the other planets are intended for the ſame end, viz. change of day and night, ſummer and winter, for the uſe and benefit of the inhabitants of each planet?

O SOPHRONIUS.

SOPHRONIUS.

Reaſon ſtrongly authoriſes ſuch a concluſion. And the Moons of Jupiter and Saturn, which are never perceptible to our naked eye, ſeem to confirm theſe ſentiments: for it will be readily granted, that the Earth's, or our Moon, is deſigned to give light to the Earth in the abſence of the Sun. Is it not probable therefore, that the Moons of Jupiter and Saturn are deſigned for a ſimilar purpoſe. Jupiter and Saturn have each ſeveral Moons, and the latter likewiſe a Ring, all probably intended to ſupply the light, and perhaps to increaſe the heat received from the Sun. Now, if Jupiter and Saturn be not inhabited, to what end is all this care, all theſe wonderful contrivances to ſupply them with light and heat?

POLYMETIS.

What grand and magnificent ideas does it give us of the great Creator, to ſuppoſe that all theſe planets are full of life, each furniſhed

furniſhed with its reſpective inhabitants, perhaps of different natures and degrees, but all enjoying the pleaſure of exiſtence? Is not this a more rational opinion than to ſuppoſe them made to twinkle in the firmament, only for us to look at? But ſtill more grand are the ideas which learned men entertain of the creation. For they not only ſuppoſe that the planets now mentioned are inhabited, but that each fixed ſtar is a Sun like ours, which heats and enlightens a certain number of planets, or habitable worlds, all revolving round it, as the Earth and the other planets belonging to our ſyſtem do about the Sun.

SOPHRONIUS.

There are indeed many reaſons for believing that all the fixed ſtars are Suns, which enlighten other worlds. For as our Sun ſhines by its own native light, ſo do the Stars alſo; ſince it is not poſſible that the light of the Sun ſhould be ſent to them, and again tranſmitted to us.

We may therefore conclude that they are Suns. The Sun, at the diſtance of a fixed ſtar, would appear no larger than a ſtar: for were we removed as far from the ſun as we are from the fixed ſtars, the ſun and the ſtars would ſeem alike. A fixed ſtar therefore may be as large as the ſun. None of our planets could at that diſtance be ſeen at all. Therefore each ſtar may have a ſyſtem of planets, though not ſeen by us.

PARMENIO.

But may it not be ſaid, that the planets, and all the hoſts of heaven were created to manifeſt the power of the Creator to man?

POLYMETIS.

That is doubtleſs one effect of this grand fabric; and it calls for the praiſe and admiration of man, to have ſo glorious a canopy ſpread over his dwelling: but ſurely it would be no leſs abſurd than arrogant to imagine that this was the ſole

end of the creation of ſuch vaſt bodies, eſpecially as the far greater number of them are not viſible to our ſight.

SOPHRONIUS.

I remember a beautiful paſſage to this purpoſe in the Spectator, where he treats of the immenſity of the univerſe, and the numberleſs worlds that are ſpread throughout it. If you will give me leave, I ſhall take the book down from the ſhelf, and read the paſſage.

POLYMETIS.

I have a recollection of the paper you ſpeak of, though I ſhould be glad that you read it.

SOPHRONIUS reads.

"Were the Sun, which enlightens this part of the creation, with all the hoſt of planetary worlds that move about him, utterly extinguiſhed and annihilated, they would not be miſſed more than a grain of ſand upon the ſea ſhore. The ſpace they poſſeſs is ſo exceedingly little in compa-

riſon to the whole, that it would ſcarce make a blank in the creation. The chaſm would be imperceptible to an eye that could take in the whole compaſs of nature, and paſs from one end of the creation to the other; as it is poſſible there may be ſuch a ſenſe in ourſelves hereafter, or in creatures which are at preſent more exalted than ourſelves. We ſee many ſtars by the help of glaſſes, which we do not diſcover with our naked eyes; and the finer our teleſcopes are, the more ſtill are our diſcoveries. Huygen carries the thought ſo far, that he does not think it impoſſible there may be ſtars whoſe light is not yet travelled down to us, ſince their firſt creation. There is no queſtion but the univerſe has certain bounds ſet to it; but when we conſider that it is the work of *infinite Power*, prompted by *infinite Goodneſs*, with an infinite ſpace to exert itſelf in, how can our imagination ſet any bounds to it?"

POLYMETIS.

POLYMETIS.

That paſſage is highly applicable to our ſubject, which it illuſtrates in a beautiful ſtrain of ſentiment, ſuggeſted by an ingenious imagination. The author likewiſe ſeems to have entertained an opinion which appears to me highly probable: it is, that thoſe glorious orbs are inhabited by numberleſs orders of more glorious Beings, which are betwixt us and our Creator. For is there not reaſon to conclude, that there are more ranks of beings betwixt God and us, than there are between us and the meaneſt inſects? I think this idea might be improved into a noble emulation for the aggrandiſement of human nature.

SOPHRONIUS.

O that the whole ſpecies were animated with ſo exalted a ſentiment!

DIALOGUE XV.

PARMENIO.

HOW much do the Moderns ſurpaſs the Ancients in the knowledge of nature!

POLYMETIS.

Yes, Parmenio, and ought they not to ſurpaſs them proportionably in all the duties and exerciſes of natural religion, as the reſult of ſuch knowledge?

PARMENIO.

You have anticipated what I was going to infer. Yes, the wiſdom of God appears ſo wonderful in the creation, and his goodneſs ſo evident, that it is aſtoniſhing how man can conſider the former without admiration, or the latter without ſentiments of the moſt ardent gratitude and affection.

POLYMETIS.

POLYMETIS.

Nothing ſo much degrades our nature as ignorance and inſenſibility; for the uſual concomitants of theſe are indolence and vice. Many indulge themſelves in the idea that they can very well paſs through life, without any ſuch improvement of their faculties in knowledge, as we formerly had occaſion to mention; and that therefore they need not trouble themſelves to take any pains about it. But ſurely to increaſe in knowledge, and to enlarge the capacity of our mind, ſo as to range over the univerſe, and examine the nature of things; to diſcover the wonders that are every where about us, to diſcern what is beautiful, fit, and honeſt, in the conduct of our life, and to ſoar up even to the throne of God by meditation, muſt certainly afford a higher pleaſure, than to paſs our lives in the dull inſenſibility of brutes, without knowledge, and without underſtanding. But ſhould we even be content with this ourſelves, is it

to

to be ſuppoſed, that ſuch conduct can pleaſe our Creator? Can we think he takes no delight to ſee his creatures, whom he has endowed with the faculty of reaſon, improved to the higheſt degree of perfection of which they are capable? And that he is not diſpleaſed when he ſees them debaſe themſelves, and diſhonour their high original by indolence and inconſideration? But to fill our heads with ſeveral particulars of nature, without directing our thoughts and enquiries to the author of it, or to be ſenſible of all his favors and bleſſings, without becoming more religious and more grateful, is only a criminal abuſe of our faculties, and an aggravation of our folly.

The proſpect of nature was laid open to us for more noble purpoſes, to make us better men, and to inſpire us with the moſt exalted ſentiments of love and gratitude towards Him who is the author and giver of all good things. It was doubtleſs the deſign of God, in that beauty and order which he has diſplayed in every part

part of the creation, to attract our eyes, and invite our attention. The knowledge of the wonderful things of nature is not only pleaſing to the imagination, but to the underſtanding. It heightens the joys of every ſenſe, and raiſes ſuch a rational admiration in the ſoul as is little inferior to devotion.

Sophronius, you enter juſt as I was going to copy the example you gave us yeſterday, of illuſtrating our ſubject by quotation. Parmenio and I have been diſcourſing of the proper uſe of knowledge, eſpecially that of the works of nature.

SOPHRONIUS.

I well know your ſentiments on that ſubject; they are likewiſe my own.

POLYMETIS.

I am not ignorant of your moral opinions; and it is a great encouragement to be ſeconded by thoſe whom we eſteem. Here is the author I wanted; the admirable

rable Epictetus. Let us attend to him for a moment. " If man, ſays he, had any ſenſe of honor and gratitude, all that he ſees in nature, all that he experiences in himſelf, would be to him a continual ſubject of gratitude, praiſe, and thankſgiving. The graſs of the field, which ſupplies the animals with milk for his nouriſhment, the wool of thoſe animals, which furniſhes him with cloaths, ought to fill him with admiration. When he ſees the clods of earth cruſhed and broken to pieces by the plough-ſhare, and a long ridge thrown up for the reception of the ſeed, he ought to cry out, how great is God! how good, in having procured for us all the inſtruments proper for tillage! When he ſits down to table to eat, every thing ſhould recall God to his mind, and renew his gratitude. 'Tis He, he ſhould ſay, who has given me hands to take up my food, teeth to break and grind it, a ſtomach to digeſt it; and what is the ſubject of praiſes which more nearly concern me, it is He who, to all the benefits he

he confers upon me, adds the ineſtimable advantage of knowing the author of them, and making ſuch uſe of them as is conformable to his will. As then, continues the ſame Epictetus, all mankind are plunged into a deep lethargy concerning Providence, is it not juſt that ſome one, in the name of all the reſt, ſhould publicly ſing hymns and ſongs to his name? What elſe can ſuch a weak and lame old man, as I am, do, than celebrate the divine praiſes? Were I a ſwan or a nightingale, I would ſing, becauſe that would be the end for which I was created. But as reaſon has fallen to my lot, I ought to employ myſelf in praiſing God. 'Tis my proper function and buſineſs, which I will regularly diſcharge, and never ceaſe to diſcharge, to my lateſt breath; and I would adviſe you to do ſo likewiſe." So far Epictetus: Could the moſt devout Chriſtian ſay more?

SOPHRONIUS.

It fills me with admiration. Xenophon has preſerved ſome beautiful obſervations made

made by Socrates, to the ſame purpoſe, in a converſation with Euthydemus.

POLYMETIS.

I remember it, and we ſhall read it likewiſe. Here is the repoſitory of my claſſics, and the buſt of Socrates makes one of its ornaments. I have found the book. The paſſage runs thus:—

"Have you never reflected, Euthydemus, on the great goodneſs of the gods, in giving to men whatever they want? He anſwered, Indeed I never have. You ſee, replied Socrates, how very neceſſary light is for us, and how the gods give it us. You ſay true, anſwered Euthydemus. And without light, ſaid Socrates, we ſhould be like the blind; but becauſe we have need of repoſe, they have given us the night to reſt in. You are in the right, ſaid Euthydemus, and we ought to render them many praiſes for it. Moreover, continued Socrates, as the ſun is a luminous body, and by the brightneſs of its beams, diſcovers to us all viſible

viſible things, and ſhows us the hours of the day; and as, on the contrary, the night is duſky and obſcure, they have made the ſtars appear, which, during the abſence of the day, mark the hours to us. They have likewiſe made the moon to ſhine, which not only ſhews us the hours of the night, but teaches us to know the time of the month. All this is true, ſaid Euthydemus. Have you taken notice likewiſe, that having need of nouriſhment, they ſupply us with it by means of the earth! How excellently are the ſeaſons ordered for the fruits of the earth; of which we have ſuch an abundance, and ſo great a variety, that we find not only wherewith to repel indigence, but to ſatisfy even luxury itſelf? This goodneſs of the gods, cried Euthydemus, is an evidence of the great love they bear to man. What ſay you, continued Socrates, to their having given us water, which is ſo neceſſary for all things? For it is that which aſſiſts the earth to produce the fruits, and that contributes, with the in-

fluences from above, to bring them to maturity. It helps to nouriſh us, and by being mingled with what we eat, makes it the more eaſily got ready, more uſeful, and more agreeable. In ſhort, being of ſo univerſal uſe, is it not an admirable Providence that has made it ſo common? What ſay you to their having given us fire, which defends us from cold, which lights us when it is dark, which is neceſſary to us in all trades, and which we cannot be without in the moſt excellent and uſeful inventions of men? Without exaggeration, ſaid Euthydemus, this goodneſs is immenſe. What ſay you beſides, purſued Socrates, to ſee that after the winter, the ſun comes back to us, and that proportionably as he brings the new fruits to maturity, he withers and dries thoſe the ſeaſon of which is going over? That after having done us this ſervice, he retires, that his heat may not incommode us, and then when he is gone back to a certain point (which he cannot exceed, without putting us in danger of dying with cold)

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he returns again, to reſume his place in that part of the heavens, where his preſence is moſt advantageous to us: and becauſe we ſhould not be able to ſupport either, if we paſſed in an inſtant from one extreme to the other, do you not admire that this planet approaches us, and withdraws himſelf from us by ſo juſt and ſlow degrees, that we arrive at the two extremes almoſt without perceiving the change? All theſe things, ſaid Euthydemus, make me doubt whether the gods have any thing to do but to ſerve mankind: one thing puts me to a ſtand, which is, that the irrational animals participate of all theſe advantages with us. How! ſaid Socrates, and do you then doubt whether the animals themſelves are in the world for any other end than for the ſervice of man? What other animals do, like us, make uſe of horſes, of oxen, of dogs, of goats, and of all the reſt? Nay, I am of opinion that man receives not ſo much advantage and convenience from the earth, as from the animals: for the

greater part of mankind live not on the fruits of the earth, but nouriſh themſelves with milk, cheeſe, and the fleſh of beaſts; they get the maſtery over them, they make them tame, and uſe them to their advantage, in war, and for the other neceſſities of life. I own it, ſaid Euthydemus: for ſome of them are much ſtronger than man, and yet are ſo obedient to him, that he does with them whatever he pleaſes. Admire yet farther the goodneſs of the gods, ſaid Socrates, and conſider that as there is in the world an infinite number of excellent things, but of very different natures, they have given ſenſes that anſwer to each, and by means of which we enjoy all of them. They have endowed us with underſtanding, which makes us enquire into, and retain the things which the ſenſes diſcover to us, and teaches us for what they are proper; which enables us to find ſo many admirable inventions, to put us at our eaſe, and to protect us from inconveniences. They have likewiſe given us ſpeech, which

ſerves

ſerves us to communicate reciprocally all ſorts of good things, and by which we publiſh laws, and govern our ſtates and kingdoms."

POLYMETIS.

How juſt is this method of reaſoning! how full of diſcernment! and yet how ſimple!

SOPHRONIUS.

Yes, in this inſtructive manner did Socrates uſe to diſcourſe with his friends, thereby raiſing their minds from a thoughtleſs inattention, to contemplate and reflect on the glorious works of the creation, ſo admirably contrived for the ſervice and delight of man; and thence ſtirring up in their breaſts a ſpirit of piety and gratitude towards the great and beneficent Creator of the univerſe.

POLYMETIS.

I rejoice that we are enabled to confirm our own ſentiments, by two examples which redound ſo much to the honor of

Greek philoſophy, and we might likewiſe adduce the authority of Cicero to the ſame purpoſe; but that we may have the additional ſupport of one modern writer, I ſhall read the paragraph with which the pious Archbiſhop of Cambray concludes his Survey of the Works of the Creation.

"O my God! if the greater number of mankind do not diſcover Thee in that glorious ſhew of nature, which thou haſt placed before our eyes, it is not becauſe thou art far from every one of us. Thou art preſent to us more than any object which we touch with our hands; but our ſenſes, and the paſſions which they produce in us, turn our attention from thee. Thy light ſhines in the midſt of darkneſs, but the darkneſs comprehends it not. Thou, O Lord, doſt every where diſplay thyſelf; thou ſhineſt in all thy works, but art not regarded by heedleſs and unthinking man. The whole creation ſpeaks aloud of thee, and echoes with the repetitions of thy holy name, but ſuch is our inſenſibility,

ſenſibility, that we are deaf to the great and univerſal voice of nature."

PARMENIO.

I know nothing on the ſubject more beautiful than the hymn at the concluſion of THE SEASONS.

POLYMETIS.

It is admirable. 'Tis a favorite production both with Sophronius and me; and, Parmenio, you ſhall read it to us all after ſupper.

DIALOGUE XVI.

PARMENIO.

WHEN I caſt my eyes around a Library, ſuch as yours, Polymetis, I think I ſee a number of Sages, pointing out to me the fields of knowledge, and directing me how to trace the paths which lead to virtue and happineſs.

POLYMETIS.

The idea may ſeem a little fantaſtical, Parmenio, though ſo far from being an object of ridicule, it merits approbation. But is there none amongſt all thoſe Sages, that appears to have miſtaken the road which leads to the goal of happineſs?

PARMENIO.

I ſuſpect indeed that there are ſeveral: but I carry with me a clue, by means of which

which I am enabled to extricate myſelf, when I think they have led me into error.

POLYMETIS.

An excellent contrivance! But where have you found this invaluable clue, which may not improperly be named, the Knowledge of Good and Evil?

PARMENIO.

It was given me when a child, by a perſon of great piety and virtue, on whoſe judgment and ſincerity I might implicitly rely; who aſſured me, that I ſhould ever find it a faithful guide, amidſt every perplexity and temptation that I might meet with, in my progreſs through life.

POLYMETIS.

A more admirable taliſman never was beſtowed upon mortal. But amidſt the cloud of metaphor in which you envelop yourſelf this morning, methinks I can penetrate the veil. The clue which you have ſo ingeniouſly fabricated, is no other than the Precepts of Scripture.

PARMENIO.

Were I now the Sphinx of antiquity, my doom would be determined: for you have explained my enigma.

POLYMETIS.

I triumph far leſs in my own diſcernment, than I rejoice at your prudence. You have choſen an infallible guide through all the intricacies of human ſpeculation on the ſubjects of philoſophy; and to attain to happineſs, have only to perſevere in reſolution. The Το Καλον of the Greeks, and the *Summum Bonum* of the Latins, which compriſed reſpectively the objects of philoſophical reſearch, appeared not the ſame in the eyes of every inquirer; and therefore implicitly to adopt any of their ſyſtems, would, if not productive of ſome fatal error, prove at leaſt the cauſe of a ſuſpenſion of judgment, which, in a matter of great importance to our intereſts, can never be unaccompanied with anxiety. There can be no better rule to determine the merits of any ſyſtem of philoſophy,

philoſophy, than by collating its moral principles with thoſe of revealed religion.

PARMENIO.

That indeed is now likewiſe my own opinion.

POLYMETIS.

When I read the doctrines of Epicurus, which recommend an indolent and improvident regard to preſent tranquillity; or thoſe of the Stoics, who maintained a fatal neceſſity in human events, as well as an unnatural apathy; I neither can, on one hand, find any ſecurity for temporal happineſs, nor on the other, be able to conceive, what certainly is inviolable, the juſtice of Providence in the rewards and puniſhments of a future ſtate. If, deſirous of farther inſtruction, I have recourſe to the three celebrated academies of ancient times, I am bewildered amidſt the effuſions of ingenious diſcuſſion; one deciding what is truth; another determining in the negation of the

ſame

ſame ſubject; and a third, which diſſents from both, equipoiſing the dictates of the human underſtanding in the ſcales of uncomfortable doubt. Should I ſeek for refuge amongſt the Cynic philoſophers, I am not more offended with their principles, than ſhocked with the indelicacy of their practice. Should I have recourſe to the peaceful Bramins of India, I find the ſimplicity of their life debaſed by the ſingularity of their tenets. The Koran beſpeaks the extravagance of an enthuſiaſtic impoſtor; the Shaſtah of the Gentoos, the moſt whimſical credulity. In a word, after making the circuit of human ſuperſtition, I can find no reſting place for the mind, but in the regions of Theology.

PARMENIO.

You deſcribe the cauſe of your perplexity in a manner equally animated and juſt; but have you found nothing to excite heſitation or miſtruſt, in the happy retreat you have choſen.

POLYMETIS.

I have indeed found, to my great regret, a variety of opinions even there; but I endeavour to aſcertain the truth, to the beſt of my underſtanding.

PARMENIO.

With a mind ſo rationally inquiſitive as yours, had it been your lot to have been born within the precincts of Mahometan ſuperſtition, or even that of the Lama of Tartary, you muſt, by your own induſtry and invincible thirſt of knowledge, have become a ſelf-converted proſelyte to the Chriſtian religion.

POLYMETIS.

I own that I have always had a ſtrong propenſity to the acquiſition of uſeful knowledge, at the head of which department, above all competition for precedency, ſtands that of religion. On that alone can be founded tranquillity of mind in this world, and the aſſurance of hap-

happineſs in the next. But along with this eſſential knowledge, I ſhould likewiſe wiſh to cultivate thoſe parts of ſcience, which have even no other claim to regard than as being ornamental; though what rationally amuſes the mind, muſt ever be juſtly entitled to a higher degree of privilege than mere toleration.

PARMENIO.

Undoubtedly: and we ſhould greatly reduce the ſphere of intellectual enjoyment, did we confine the excurſions of genius to what is ſtrictly uſeful.

POLYMETIS.

Yes, literature affords elegant recreation, as well as valuable knowledge; and theſe ought to have their due alternations, in a well regulated economy of our time. Imagination, no more than reaſon, was not given us never to be exerted; only let us employ it in the embelliſhment of virtue, not the decoration of vice. Upon

this principle, can any thing afford more elegant entertainment than excellent productions of poetry, eſpecially thoſe of the epic kind? Did you ever read the Iliad or Odyſſey of Homer, without a high reliſh of their beauties? But their merits conſiſt not alone in the force of deſcription, or the variety of poetical images which they preſent to the fancy: for amidſt thoſe ſtrong recommendations to our taſte, they abound with moral inſtruction, conveyed indeed indirectly, but on that very account more inſinuating.

PARMENIO.

You are then of the ſame opinion with Horace. I remember that in one of his Epiſtles, ſpeaking of the Grecian bard, he heſitates not to give him the preference, in point of moral edification, to two great philoſophers of that country, Chryſippus and Crantor.

POLYMETIS.

POLYMETIS.

Yes, in one of his Epiſtles to Lollius, he does give the preference to Homer.

Qui, quid ſit pulchrum, quid turpe, quid utile, quid non,
Plenius ac melius Chryſippo & Crantore dicit.

And however great may have been the merits of thoſe philoſophers, the opinion of Horace, conſidering the principle on which it is founded, is undoubtedly juſt. He means that Homer, by judiciouſly exemplifying different characters in the conduct of life, has done more to promote the cauſe of wiſdom and virtue, than either the moral diſcuſſions or precepts of the moſt eminent philoſophers. For though theſe may be approved by the underſtanding, it is the former only that ſeize the affections, and make a laſting impreſſion upon the mind; to which effect the decorations of poetry not a little contribute.

PARMENIO.

I perfectly conceive the diſtinction: and it is beyond a doubt, that ſtriking examples

amples operate far more powerfully than precepts. But is it not ſurpriſing, that amidſt the multitude of thoſe who have cultivated a taſte for the Muſes, ſo few have attempted, and ſtill fewer ſucceeded in their efforts, to obtain immortal renown in this ſpecies of poetry?

POLYMETIS.

The laurel crown is indeed ſuch a prize, as might ſtimulate to the greateſt exertions; but beſides the vaſt ſtrength of genius required for an epic poem, hiſtory ſupplies few incidents ſuitable to form the ſubject of that production; and religion has aboliſhed the mythology from which it derived ſo eſſential a part of its ſupport.

PARMENIO.

As you are ſo converſant with the various productions of the Ancients, permit me to aſk you, whether you give the preference to Greek or Roman literature?

POLYMETIS.

POLYMETIS.

Your queſtion, Parmenio, compriſes ſo many conſiderations, that it ſcarcely admits of a ſatisfactory anſwer in general terms; and to deſcend to particulars, would lead us into a wider field of inveſtigation than, at preſent, we have leiſure to enter upon. But tell me what province of literature you wiſh to make chiefly the ſubject of compariſon.

PARMENIO.

Poetry being the department which I think diſplays genius the moſt, and is likewiſe the fitteſt for rivalſhip, I ſhould wiſh to be favoured with your ſentiments on that intereſting ſubject.

POLYMETIS.

If we conſider poetry in its various kinds collectively, there is no ſubject on which the Greeks are more entitled to praiſe and admiration. They appear to have been for ſeveral ages the peculiar favorites of the Muſes.

PARMENIO.

And what, do you imagine, could have led them to ſuch eminence in poetry?

POLYMETIS.

It is probable that the freedom of their governments firſt laid the foundation of their fame. It opened their minds to the flow of ſentiment, and gave boldneſs and vigor to the exerciſe of the imagination. But I think there muſt have been ſomething in the climate of Greece, which influenced in a particular manner their diſpoſition to poetry: and even the natural melody of their language may have contributed to promote, as much as it adorned thoſe kinds of compoſition which derive a great part of their excellence from richneſs and variety of modulation.

PARMENIO.

It is indeed a general opinion, that climate has a powerful influence on the genius and diſpoſitions of people: but if this be really the caſe, whence comes it

that the preſent inhabitants of Greece diſcover no taſte for thoſe compoſitions which were the glory and delight of their anceſtors? Not a ſingle Grecian, ſo far as we know, has aſcended Parnaſſus for many ages; and the vocal hills of Arcadia no more reſound to the Doric reed, or the amorous ſong of the ſhepherd.

POLYMETIS.

Though no change can have taken place in the climate of the country, there has happened a great alteration in the two other circumſtances which I mentioned: the government, inſtead of being free, is now become a military deſpotiſm; and the language of the ancient Greeks, which charmed the ear with the ſoftneſs of its modulation, now offends it with the harſh intermixture of the guttural and unpoliſhed language of Tartary. The race of the people is doubly debaſed by ſlavery and the phlegmatic temperament of their conquerors. Polygamy ſupports a conſtant languor, which is farther increaſed by the

the habitual luxuries of coffee, tobacco, and opium. From all theſe cauſes, the mind being enervated with the body, emulation, the thirſt of fame, and every ſprightly idea are extinguiſhed. I might add, that the ſtate of barbariſm into which that nation is now ſunk, completes the diſcouragement of literature amongſt the Greeks, or rather the total ignorance of it.

PARMENIO.

The circumſtances you mention muſt be powerful cauſes of degeneracy; and perhaps the prohibition of wine may not be without its effect, on the proſecution of thoſe purſuits which require a livelineſs of fancy.

POLYMETIS.

The conjecture is highly probable. Had ſuch a prohibition been ſtrictly enforced in the days of Anacreon, I queſtion whether the ſprings of Caſtalia would have proved alone ſufficient to inſpire ſome of his productions.

PARMENIO.

Did not the prophet of the Muſſulmen encroach upon the principles of natural religion, when he prohibited even the moderate uſe of a bleſſing beſtowed by Providence upon the country, and which, by its enlivening quality, tended to excite ſentiments of gratitude towards the beneficent Creator?

POLYMETIS.

His conduct in this reſpect was of a piece with the tenor of his motley inſtitutions in general. His hypocritical policy trampled upon the barriers both of natural and revealed religion, as ſuited the ſecret objects which he always had in view. It was leſs his intention to reſtrain voluptuouſneſs among the people, than to direct the purſuit of it into ſuch a channel as might co-operate towards the eſtabliſhment of his ambitious purpoſes.

PARMENIO.

PARMENIO.

I find that I have unintentionally deviated, in ſome meaſure, into the practice of that impoſtor: for while I expreſſed a deſire of knowing your ſentiments reſpecting literature, I have drawn the converſation from the ſeats of polite learning in Greece, to the barbarous regions of Arabia. But to return from the digreſſion: I believe you will readily admit, that the only Roman who can diſpute with Homer the palm of epic poetry, is Virgil. They have each of them repreſented Jupiter as weighing in the ſcales of fate the fortunes of their principal heroes: will you, aſſuming the balance of the God, put themſelves into the ſcales of criticiſm, and determine with ſtrict poetical juſtice which of the two is ſuperior?

POLYMETIS.

You appeal to me, Parmenio, for the deciſion of a point which has baffled the

penetration, or damped the inquiry of a number of intelligent critics; and to attempt a final ſolution of the problem, might ſavour more of preſumption than judgment. There will however be no danger of violating equity, if we allow to Homer the merit of extraordinary invention, and to Virgil, of ſucceſsful imitation. If the Greek bard ſometimes ſoars higher than the Roman, perhaps the latter compenſates by a more ſtationary elevation in the tracts of ſublimity. Should we take into conſideration the characters of their heroes, our affections are more intereſted in the progreſs of the pious Æneas, than of the ſtern and inexorable Achilles. As poems conſecrated to national glory, the Iliad, by the rivalſhip of Greek and Trojan characters, ſeems to reflect leſs luſtre upon the ſtates of Greece than the Æneid upon the empire of Auguſtus.

PARMENIO.

I know not whether my idea on the ſubject be juſt, but I think the grandeur

of

of Homer is more awful, and that of Virgil more majeſtic.

POLYMETIS.

In my opinion the diſcrimination is well founded. I would only add, with regard to the compariſon, as a circumſtance advantageous to the Æneid, that it happily unites in its fable both the narrative and deſcriptive beauties of compoſition, which are ſeparated in the poems of Homer.

PARMENIO.

Did the productions of the Grecian lyric poets remain equally entire with thoſe of Homer, they would furniſh another glorious monument of the genius of their country.

POLYMETIS.

Beyond all doubt: the poetry which, in ſpite of its extinction, has rendered immortal the names of its authors, muſt itſelf have merited immortality. The few lyric productions that have ſurvived

the ravages of time and barbarians, excite our admiration; and of the excellence of thoſe which are now loſt, we may reſt aſſured upon the commendations of Horace. For faſcinating ſoftneſs the Odes of Sappho, and for vigor and animation, thoſe of Alcæus, were probably never ſurpaſſed by any poetical compoſitions. The boldneſs, the rapidity, and the ſublimity of Pindar, have bid defiance to all imitation. The Latin elegiac productions are ſome of the moſt pleaſing in that language, but I am perſuaded they are greatly inferior to thoſe of the Greeks.

PARMENIO.

I perceive that your opinion tends in general to eſtabliſh the ſuperiority of Grecian genius.

POLYMETIS.

We muſt neceſſarily allow the Greeks the merit of originality; and that being granted, it would be difficult to diſprove their title to ſuperiority of fame. The Auguſtan

Auguſtan Age however exhibits a glorious contention of rivalſhip in a different language. But there ſeems to be a more evident diſtinction of Greek and Roman genius in dramatic poetry than in any other ſpecies of compoſition. The Comedies of Terence, with all their elegance and purity, are greatly inferior in point of the *vis comica*, to the numerous productions of Menander. In the opinion of Julius Cæſar, no incompetent judge of literature, their excellence reached only to the middle of the Grecian ſtandard: "*O dimidiate* Menander." And if this was the caſe in comedy, the difference is ſtill more conſpicuous in the other department of the drama; where we meet with nothing that can rival the beautiful tragedies of Sophocles and Euripides, either in character, ſentiment, or pathos; though according to Quintilian a few excellent compoſitions of this kind were produced by Roman poets.

DIALOGUE XVII.

PARMENIO.

HAVING been favored with your ſentiments relative to the poetry of the ancients, I now wiſh to have your opinion on another department of genius. It has been ſaid, *Fimus oratores, naſcimur poetæ*; we may become orators by application, but we muſt be born poets. What think you of the moſt diſtinguiſhed orators of the Greeks and Romans, Demoſthenes and Cicero? Do you judge of them as ſtanding upon the ſame level with the poets of their reſpective nations?

POLYMETIS.

I think we may admit that a genius for oratory is not neceſſary in ſo great a degree as for poetry; and without doubt, the

the former may be improved by application more than the latter: as was indeed the caſe with Demoſthenes, who, to correct a vicious habit of pronunciation, is ſaid to have practiſed a method of ſpeaking with pebbles in his mouth. With regard to thoſe two orators, however, there are a few circumſtances which ſeem to diverſify their characters as objects of compariſon. In fluency, propriety, and warmth of expreſſion, they are equally conſpicuous, and with action perhaps they likewiſe equally affected their audience: but the eloquence of Demoſthenes is more rapid, vehement, impaſſioned; that of Cicero more diffuſe, ſplendid, and attracting. The Greek appears impetuous with ardor, the Roman impreſſive with addreſs. The eloquence of the former may have been better accommodated to the fickle and turbulent diſpoſitions of a democratical republic; that of the latter, to a mixed conſtitution, more reſpectable by the dignity of the ſenate. I believe, that changing their ſituations, Cicero

would have ſpoken with more effect in an aſſembly at Athens, than Demoſthenes in the Capitol at Rome, or even in the Forum: for I ſuſpect that the fame of the Greek was greatly favored by the ſuperior ſenſibility of his countrymen.

PARMENIO.

That was doubtleſs a circumſtance highly favorable to the ſucceſsful exertion of genius, and it ſeems to have had an auſpicious influence on the cultivation even of thoſe literary purſuits which agitate the affections far leſs than poetry or eloquence; I mean hiſtory. The compoſition of Herodotus, when recited by himſelf at the Olympic Games, was honored with public commendation, to which perhaps the world was afterwards indebted for thoſe of Xenophon and Thucydides. Do you think that the Romans have equalled the Greeks in hiſtorical narrative.

POLYMETIS.

I think, in the field of hiſtory, they have even ſurpaſſed them. With elegance

gance and purity of ſtyle, they have interwoven philoſophical reflection; and beſides a lively deſcription of characters, they frequently embelliſh their narratives with compoſitions of eloquence. I allude chiefly to Livy and Salluſt.

PARMENIO.

In the department of philoſophy, I imagine you will allow the Greeks to have excelled? for———

POLYMETIS.

Good morning, Sophronius! While we have been talking of Greek and Roman writers, you poſſibly have been enjoying the luxury of ſome of their beſt compoſitions.

SOPHRONIUS.

I have indeed been employed upon the two volumes which I carried laſt night into my apartment.

POLYMETIS.

They were, I think, Plato and Cicero?

SOPHRONIUS.

SOPHRONIUS.

They were.

POLYMETIS.

Then we could not have been favoured with your company at a more ſeaſonable time: for you come at the very moment when Parmenio had aſked my opinion of Greek and Roman philoſophy. Give me leave to refer the queſtion for your anſwer.

SOPHRONIUS.

Where taſte and learning are concerned, I ſhall ever entertain the moſt reſpectful deference for the ſentiments of Polymetis: I therefore beg leave to decline the polite requiſition.

POLYMETIS.

You almoſt make me imagine that I hear Plato at the Court of Dionyſius: but you will oblige me more by acquieſcence than evaſive compliment.

In

In the mean time, let me obſerve, what may appear not a little extraordinary, that in ſurveying the literature of the ancients, when we paſs from the productions of the imagination to thoſe of the underſtanding, we diſcover a remarkable difference in the capacity of thoſe two faculties of the mind. After being delighted with the richneſs and grandeur of the former, we are ſurpriſed at the uncertainty, the extravagance, and ſometimes even the imbecility of the latter. To what principle in human nature can we aſcribe this unfortunate defect? Is the light of Reaſon not clear of itſelf, or is it obſcured and miſguided by the prejudices, the paſſions, and the caprices of men?

SOPHRONIUS.

It ſeems indeed to be often influenced by the cauſes you mention. We cannot otherwiſe account for the extreme diverſity of opinion amongſt the various ſects of philoſophers.

POLYMETIS.

POLYMETIS.

That circumſtance has often excited my aſtoniſhment. The road which leads to virtue and happineſs, though narrow and beſet with temptations, ſeems however to be not only direct but void of perplexity: yet how much has it been miſtaken or miſrepreſented by moraliſts! The profeſſed object of them all is, to aſcertain truth with preciſion: yet in the proſecution of this purpoſe, how inconſiſtent, and even ridiculous, is their conduct! While they tell us that Truth is hidden at the bottom of a well, they nevertheleſs affect to ſearch for her in every region of nature, the air itſelf not excepted. At laſt, when they conclude that they have diſcovered her, they will yet ſooner queſtion the evidence of their ſenſes than admit her reality; and through a ſeries of arguments, avowedly conducted by reaſon, will labor to annihilate the ſacred authority of reaſon itſelf. Can even madneſs produce more flagrant inconſiſtencies

conſiſtencies than we find in the diſcordant ſentiments of thoſe who have devoted themſelves to the cultivation of wiſdom?

SOPHRONIUS.

I am convinced, that a great part of what is dignified with the name of philoſophy is not the genuine offspring of the underſtanding, but a ſuppoſititious production, engendered in the receſſes of the heart, and, like moſt of the phantoms which iſſue from that ſource, derives its origin in vanity.

POLYMETIS.

We both coincide in opinion. Were it poſſible to penetrate into the hearts of thoſe who have been induſtrious to ſignalize themſelves as founders of ſects in philoſophy, I am perſuaded we ſhould diſcover that the motive you mention was, at leaſt with many of them, the predominant principle which gave riſe to their ſyſtems. Philoſophers, as well as poets and orators, have been ſenſible to

the allurements of fame; and where this could not be obtained by purſuing the tracks of their predeceſſors, they felt little ſcruple of deviating into bold and plauſible innovation. The new and the middle academies ſeem both to have been influenced by this cauſe. For, with reſpect to the old academy, eſtabliſhed by Plato, it was founded upon the ruins of no preceding ſect.

Were we to trace philoſophy through the hiſtory of its various profeſſors, we ſhould find, that it has frequently had its empirics, as well as medicine. There has likewiſe been, at different periods, a temporary faſhion in each of theſe provinces, according to the influence of the perſon who happened to have the aſcendancy in the realms of ſcience. Did not philoſophy fluctuate in Athens from principle to principle, amidſt the fortuitous ſucceſſion of academic teachers, who were emulous of diſtinction? And was not all Rome repeatedly put into motion by ſome adventurous declaimer, whom ambition or avarice,

rice, and the incidental tide of novelty, had imported amongſt them from Greece?

Of the various revolutions which have happened in the profeſſion of phyſic, I ſhall give you a ſhort account.

In the ſixteenth century, when the reputation of amulets, enchantments, and the like, began to decline among the people, a new theory was introduced, which might lay the foundation of ſuch practice in phyſic, as would be apparently more ſolid, and amuſe mankind with a ſhew of learning and philoſophy. This doctrine was that of Fermentation, begun in the head of Sylvius, a profeſſor of medicine at Paris.

In order to propagate his ſyſtem the more effectually, he ſupported it with ſuch ſpecious arguments as his ingenuity could invent. And phyſiological reaſoning being then but little known in the profeſſion, his ſtrongeſt proofs were drawn from analogy only. He inſiſted that all diſeaſes proceeded from a fermentation, which was the means made uſe of by na-

ture to throw off whatever is injurious to the conſtitution. That it was with the humors of the human body as with thoſe of a political government, which, on any extraordinary emergency, are thrown into violent agitations. That the truth of this opinion needed no other confirmation than that, by ſuch a proceſs chiefly, every liquor is purified.

Theſe ſentiments were ſo conformable to the manner of thinking which prevailed at that time, and ſo ſeaſonable for the exigencies of the faculty, which was evidently falling into contempt, that they were immediately adopted. The youth from every quarter now flocked to Paris, to be inſtructed how to excite and regulate an inteſtine motion in the fluids of their patients. In this way they fermented for near a hundred years, when Bellini, an Italian phyſician, endeavored to introduce into phyſic the uſe of mathematical knowledge.

He taught, that as the human body was a machine, conſiſting of ſolids and fluids, its

its economy and diſeaſes ought both to be inveſtigated by the principles of mechanics. But a theory which depended ſo much upon experiment, and which muſt have ſubjected its profeſſors to the rigid laws of ſcience, could not be tolerated by an order of men, who had always been accuſtomed to the utmoſt licentiouſneſs of opinion. They determined therefore to oppoſe this innovation; and for that purpoſe a ſpirit was called up to their aſſiſtance. Their notions were now ſo much refined and ſubtilized, that not content with accounting for diſeaſes by the action of air upon the fluids, it was maintained that they were produced by an intelligent agent within us, who preſided over the economy of the body, and directed its operations. The author of this opinion was Dr. Stahl. He had no doubt taken the hint from Van Helmont, who, about a century before, aſſerted the exiſtence of an Archeus, or little inviſible being, which conducted the digeſtion of our food, and had its reſidence in the ſtomach.

The extravagant jargon of the faculty now ſurpaſſed all human comprehenſion. And it is probable that the theory they now maintained would have utterly ruined the profeſſion, had not Hoffman invented a new doctrine, or rather only an improvement on the old. He inſiſted that acute diſeaſes were not produced by an Archeus, or ſpirit, but that they were owing to a ſenſibility of the ſolid parts of the body, which, upon feeling any thing hurtful to the conſtitution, preſently contracted all its fibres, to expel the enemy. It was no hindrance to the ſucceſs of this opinion, that they were not conſcious of any ſuch ſpaſm as the author endeavoured to eſtabliſh. They embraced therefore this new doctrine, and their notions were again contracted within the limits of matter.

Thus was their fluctuating humor reſtrained for ſome time; 'till Boerhaave, ſeized with the ambition of being eſteemed wiſer than all who had gone before him, became the author of a freſh innovation.

vation. As the ſoul and fibrous parts of the body had both been occupied by former theoriſts, he reſolved to build his ſyſtem upon the fluids; and to a thickneſs in theſe, he attributed the cauſe of all diſeaſes. At once the ſpaſms univerſally relaxed, and all Europe laboured under diſorders peculiar to the conſtitution of the Dutch.

For many years the ſyſtem of Boerhaave was held in great reputation; but it has been diſplaced in its turn; and acute diſeaſes are again aſcribed not only to an inviſible, but, amidſt the ſubterfuges of chimerical opinion, an inexplicable cauſe.

PARMENIO.

What a ſeries of ridiculous and extravagant notions!

POLYMETIS.

It muſt be confeſſed, that ſome of them are the moſt abſurd, and all the moſt contradictory; that could poſſibly be

invented by the human mind. And yet upon theſe opinions, and the different practices reſulting from them, the health and lives of mankind depended, and have been determined. The philoſophy of Ariſtotle was never more perverted in the ſchools than the ſimple laws of nature have been by thoſe men, who have probably done more miſchief in the world, than all the non-naturals put together.

DIALOGUE XVIII.

POLYMETIS.

WITH regard to the antiquity of the world, there are indeed different opinions: but I am glad to find that you do not join with thoſe who believe, or affect to believe, that it has exiſted from eternity. As there is no other record of the earlieſt ages but the account delivered by Moſes, it is only from his writings, with the additional evidence of ancient hiſtorians, in ſubſequent ſtages of chronology, that the point can be determined. But by combining thoſe different authorities, we are enabled to ſolve the problem, if not with perfect accuracy, at leaſt with ſuch a degree of exactneſs as comes near to the truth.

PARMENIO.

Amongſt the hiſtorical authorities to which you allude, do you admit thoſe of the

the ancient Egyptians, and the Chineſe; the former of whom, if I am not miſtaken, were of opinion that the world had ſubſiſted upwards of thirty thouſand years; and the latter, we have been told, aſcribe to it a greater, and even an indefinite duration.

POLYMETIS.

I ſhould pay no regard to opinions or conjectures unſupported by any evidence, and which contradict the teſtimony of writers who are entitled to credit.

SOPHRONIUS.

It ſeems to me, that on ſuch a ſubject the opinion of the ancient Egyptians is more to be queſtioned than that of any other nation.

PARMENIO.

Were not the arts and ſciences cultivated amongſt them at an early period? I ſhould therefore think, that in a matter of ſpeculative inquiry, their opinions were reſpectable.

SOPHRONIUS.

SOPHRONIUS.

Some of the arts and ſciences were doubtleſs cultivated in Egypt: but in point of hiſtorical knowledge, reſpecting even their own country, they appear to have been greatly deficient.- Of this, their fabulous account, relative to Seſoſtris, Iſis, Oſiris, and other perſonages, affords ſufficient confirmation.

POLYMETIS.

In whatever degree ſome of the arts and ſciences may have been cultivated in Egypt, there cannot, in my opinion, be a ſtronger proof of the general ignorance of the people, than the Deification of their Princes, and ſtill more of the numerous animals, which they worſhipped with a ſuperſtition the moſt degrading to human nature. But there is another circumſtance from which we may likewiſe infer an uncommon degree of ignorance with reſpect to hiſtorical tranſactions; and it is this, that all their knowledge was tranſmitted in hieróglyphical characters,

racters, the ſignification of which was known only to the prieſts, and to many even of theſe, but imperfectly. This claſs of men, therefore, might, under the imputed ſanction of myſterious learning, impoſe upon the people whatever falſehoods they pleaſed. The moſt popular oral traditions are expoſed to great corruption, when tranſmitted through a ſeries of many ages; and we cannot admit thoſe to have been leſs corrupted, which being ſecluded from public inſpection, behind the veils of the temples, might be invented, altered, or obliterated, according as it ſuited the inclination, the policy, or even the caprices of the prieſthood. For theſe reaſons, I own I ſhould give very little credit to hieroglyphical authority.

SOPHRONIUS.

I am entirely of your opinion; and I think it is fully juſtified by the nature of hieroglyphical compoſition. From all that we learn reſpecting that ſubject, the hieroglyphical characters were repreſentatives

tatives only of the principal parts of ſpeech, ſuch as nouns, verbs, and adjectives, without any ſigns to expreſs adverbs, prepoſitions, or conjunctions: on which account any narrative ſo conveyed muſt have been extremely deficient in point of preciſion. With reſpect to the interpretation of the object or end of various ſentences, a thouſand errors might be committed, for the want of ſuch particles as were neceſſary to denote the numberleſs relations in which one word may ſtand to another, in grammatical arrangement. In ſupport of this obſervation, let me mention one hieroglyphical ſentence. It conſiſts of the figures of an infant, an old man, a hawk, a hyppo-potamos, and a crocodile; the meaning of which is ſaid to be, "O ye of little faith, God hates impudence."

PARMENIO.

Such a mode of preſerving records muſt have been extremely vague and uncertain. Perhaps you will conſider the Chineſe language as liable to the ſame impreciſion!

POLYMETIS.

We are told that the alphabet of the Chineſe conſiſts of a prodigious number of characters; and from that circumſtance alone, there is reaſon to queſtion, if not its impreciſion, at leaſt the poſſibility of its being univerſally underſtood, in a degree ſufficient to render it the means of accurate and infallible communication. Beſides, from the ſequeſtered ſituation of the Chineſe, and their averſion to any but commercial intercourſe with other nations, it is ſcarcely to be ſuppoſed, that they can have made any extraordinary progreſs in ſcience. True knowledge is of a communicative nature, and rather courts than avoids inveſtigation. The polity of thoſe amongſt whom it flouriſhes is likewiſe liberal, and remote from the mean jealouſies of an ignorant people. But viewing the conduct of the Chineſe in theſe reſpects, our opinion of them muſt be unfavorable. That they are extremely obedient to their own form of government,

vernment, is generally admitted; but whether this ariſes from any peculiar excellence in itſelf, or from the myſterious veneration in which they hold both the perſon and authority of their prince, it may be difficult to determine with certainty: though judging from their apparent character, we might aſcribe it to their habits of induſtry, and their quiet diſpoſitions, rather than to any enlightened attachment to their conſtitution, upon enlarged and determinate principles of political enquiry. That amongſt a people living perpetually undiſturbed by foreign wars or civil commotions, the unintereſting annals of paſt ages ſhould be carefully preſerved, in any form, either of written records or oral tradition, ſeems repugnant to probability.

SOPHRONIUS.

The polity of the Chineſe, perhaps, may be regulated by ſalutary laws and cuſtoms, well adapted to the preſervation of public tranquillity, and they may boaſt

of

of a Confucius, who is ſaid to have irradiated their empire with the light of moral ſcience, but we cannot reaſonably entertain any high opinion of their literary acquiſitions. Totally unacquainted with the writers of other nations, their reſearches into antiquity can aſcend no higher than the fabulous hiſtory of their own; and perhaps their legitimate chronology is reſtricted to the memorable, but not remote epoch, which fixed the boundaries of their empire. Their opinion, therefore, reſpecting the age of the world, is entitled to very little attention.

PARMENIO.

I am fully convinced, from the obſervations which each of you has made, that neither the opinion of the Egyptians nor the Chineſe can juſtly be regarded as of any validity in determining the queſtion. But a whimſical idea now ſtrikes me: give me leave to indulge it one moment. I would not be underſtood as if I thought, with ſome ancient philoſophers, that the world is a huge animal; but admitting it

to

to be totally inert, may it not, however, like animal bodies, diſcover upon its ſurface, or within its bowels, ſome traces of longevity, by which its age might be determined?

POLYMETIS.

Your queſtion, Parmenio, is at leaſt ingenious; and perhaps Sophronius may be of opinion with me, that it is not ſo whimſical as may at firſt ſight appear. But let us diſtinguiſh between the age of the world and its old age. That it betrays no ſymptoms of effeteneſs, I think, is evident; unleſs indeed in ſtones and rocks, from their long expoſure to the air. If we except the garden of Eden, the world, I doubt not, has at the preſent moment all the vigor and luxuriance which it poſſeſſed when it came from the hand of the Creator. Though in particular parts, its richneſs may be exhauſted by repeated production, it yet contains within itſelf thoſe vivifying principles, which, nouriſhed by manure, and actuated

by the heat of the Sun, renews all its former fertility. In winter it is liable to a chillneſs and torpor, not unlike the period of old age in the animal kingdom; but no ſooner does the Spring return, than it reſumes the bloom of youth, and proceeds to pour forth its various and exuberant flores in a plentiful harveſt.

Such is the ſtate and appearance of the ſurface or face of the Earth: but thoſe who have examined its bowels, in ſome parts of the globe, particularly in the neighbourhood of Mount Veſuvius, make ſome obſervations which would ſeem to juſtify an opinion that the world is of much greater antiquity than is generally imagined. There is in ſuch conjectures a degree of plauſibility, but the arguments by which they are ſupported ſeem not to be deciſive upon phyſical principles; becauſe fortuitous circumſtances may concur at one time to accelerate a proceſs in nature, which at another may be retarded from accidents of different efficacy.

SOPHRONIUS.

SOPHRONIUS.

A few ſuggeſtions to the ſame purpoſe have lately been made by ſome inquirers in the province of chemiſtry; but I think we ought to be cautious in admitting theoretic concluſions, in oppoſition to probability, particularly againſt the evidence of Sacred Hiſtory.

POLYMETIS.

Without doubt, Sophronius; and it is conſiſtent with your uſual judgment, that you have introduced probability into the argument. I think probability ſtrongly favors the Moſaic account of the firſt ages of the world: for, were any credit due to the opinion of the ancient Egyptians, or Chineſe, can we ſuppoſe that the arts and ſciences would not have begun to flouriſh at a much earlier period? That geography in particular would have remained ſo long unimproved? That civilization would have been ſo late in extending to the regions which at length it has reached? And can we ſuppoſe that Hiſtory

would not have commenced its narrative from an epoch far more remote than the origin of the Aſſyrian empire?

SOPHRONIUS.

Not to mention the uncertainty whether the calculation of the Egyptians relates to lunar or ſolar years, all theſe conſiderations are forcible arguments in favor of the generally received opinion of the antiquity of the world.

PARMENIO.

I acknowledge it: but what are the objects which mark the different ſpaces of duration in extreme remote times?

POLYMETIS.

Thoſe objects are, in the firſt place, the creation of the world, of which the only account is that delivered by Moſes; and in the next, the deluge, tranſmitted by the ſame writer: to whom we are alſo indebted for the continuation of chronology, until the profane hiſtorians commence their detail; from which epoch, the

the progreſs of time may be calculated through its ſubſequent periods.

PARMENIO.

With reſpect to the preceding hiſtory of the world, there ſeems then to be ſufficient ground for our reſting aſſured; but of its future duration, I believe neither reaſon nor revealed religion can authorize the ſmalleſt conjecture.

POLYMETIS.

There are however ſome writers who have attempted the ſolution of that problem; but on ſuch a ſubject, the conjectures of theologiſts deſerve no more attention than the predictions of viſionary prophets.

SOPHRONIUS.

Moſt certainly not.

DIALOGUE XIX.

PARMENIO.

THE Deluge having been mentioned in our laſt converſation, I am extremely deſirous of knowing the ſentiments both of Polymetis and Sophronius reſpecting that extraordinary event. Was it, in your opinion, really a univerſal deluge, or did it extend only over the part of the world then inhabited, as ſome have imagined?

POLYMETIS.

I am inclined to adopt the account of it delivered by Moſes.

PARMENIO.

And you Sophronius?

SOPHRONIUS.

To ſome, a partial deluge may ſeem more probable; but I am likewiſe a believer in the Moſaic account.

PARMENIO.

PARMENIO.

There are two arguments advanced againſt the probability of a univerſal deluge, which ſtrike my mind with ſome force: One is, that the dimenſions of the ark were not ſufficient to accommodate ſo great a number of creatures both with room and proviſions; and the other, that it is difficult to conceive, how the ſmaller cattle in particular, and the ravenous animals, could not only voluntarily aſſemble, but even ſubſiſt together without depredation; as it is doubtful whether the latter, in any circumſtances, will ever eat of vegetable food.

POLYMETIS.

In reſpect of the firſt argument, perhaps thoſe who advance it form their calculation upon a ſuppoſition, that the animals admitted into the ark were arrived at their full growth. But there is reaſon to conclude, from the wiſdom of Providence, which we have lately aſcertained in ſo great a number of inſtances, that thoſe

animals were all taken from among the youngeſt of every ſpecies; and upon that principle, it is not evident to me that the ark was inſufficient to accommodate them.

SOPHRONIUS.

That the animals were of the youngeſt of their different kinds, I think there cannot be any doubt. The moſt bulky of the animal tribe, are Quadrupeds, of which it is ſaid there are about a hundred and fifty different ſpecies: now, ſuppoſing them to have been all amongſt the youngeſt of their kinds, there ſeems to have been room ſufficient in the ark for the accommodation of all. That ſtructure, we are told, conſiſted of three ſtories; the length of it was three hundred cubits, the breadth fifty, and the height thirty.

PARMENIO.

But do you make allowance for the ſtowage of proviſions?

SOPHRONIUS.

Proviſions? Yes, in quantity ſufficient to preſerve in life the whole inhabitants of the Ark, during the continuance of the deluge. We may well ſuppoſe, that Noah diſtributed to the different animals their rations of proviſion with a frugal hand, and not by the common eſtimate of the commiſſary of an army.

PARMENIO.

But why ſhould the deluge extend over the whole earth, when probably the greater part of it was then uninhabited?

SOPHRONIUS.

That is a queſtion which relates entirely to the will of God, and therefore not an object of enquiry.

POLYMETIS.

We have admitted the univerſality of the deluge only upon the authority of the Scriptures, but it ſeems to be likewiſe confirmed by ſome phyſical obſervations.

Towards

Towards the tops even of the higheſt mountains, there have been found in the earth marine ſhells, which could never have been ſo depoſited but by means of a general deluge.

SOPHRONIUS.

Yes, that I think is an unanſwerable argument in favour of its univerſality.

PARMENIO.

Is it not ſurpriſing, however, that the memory of ſo extraordinary an event ſhould not have been preſerved to the preſent time, by uninterrupted and univerſal tradition?

PARMENIO.

It is the nature of oral tradition to become gradually more faint, after a long ſucceſſion of ages, until at laſt it is extinguiſhed among the dubious events of remote times. But that the tradition of it ſubſiſted through many centuries, no doubt can be entertained: and upon this baſis, we may reaſonably ſuppoſe it

was,

was, that Ovid founded his deſcription of the deluge in Greece, ſo much embelliſhed with poetical beauties.

SOPHRONIUS.

It is obſervable, that even according to the ſyſtem of Ovid, the wickedneſs of the Antediluvians was the occaſional cauſe of the deluge.

POLYMETIS.

Their wickedneſs ſeems to have been in proportion to their longevity.

SOPHRONIUS.

And was perhaps a natural conſequence of it.

POLYMETIS.

It is not improbable. For by placing the proſpect of death and judgment at a great diſtance, it weakened the reſtraint of conſcience and religion upon the gratification of their paſſions. A certain reprobate, of whom you have heard, is ſaid to have declared, that upon condition

tion of enjoying every ſenſual pleaſure, without interruption, during a period of one hundred years, he would not ſcruple to endure the torments of hell to eternity. —What a wretched mortal, Sophronius! Yet the wiſhed-for tenure of this man's enjoyment was much ſhorter than that of the Antediluvians.

SOPHRONIUS.

Moſt men, till they arrive at a certain age, ſeem to judge like children of the future duration of time. A few years appear to them as a period of great extent; and with all their experience of the quick ſucceſſion of the paſt, they ſtill, in looking forward, indulge themſelves in the deluſion.

POLYMETIS.

It is perhaps one of the moſt fatal weakneſſes in human nature.

PARMENIO.

And as fifty or ſixty years of probation are now ſo much miſpent, what muſt have

have been the abuſe of time comparatively, when the life of man extended to ſeveral centuries?

POLYMETIS.

We owe it more to the mercy than indignation of God, that he contracted the ſpan of life after the deluge.

SOPHRONIUS.

As a ſtate of probation, it is ſtill ſufficiently long. We have only to employ it according to the dictates of religion and virtue.

DIALOGUE XX.

PARMENIO.

DO you think that there were no great atchievements performed in the world, before the Aſſyrian empire was founded by Ninus?

POLYMETIS.

Undoubtedly there were. Seſoſtris, king of Egypt, and Tanaus, king of Scythia, are ſaid to have made numerous conqueſts, though their exploits are ſo imperfectly related, and disfigured with fable, that they cannot now be exactly aſcertained. And as, according to Juſtin, they fought not for the acquiſition of territory, but of glory to their reſpective nations, it is reaſonable to ſuppoſe, that they exerted their force in acts of valor, correſpondent to the motive which animated them.

PARMENIO.

PARMENIO.

I cannot eaſily comprehend what has been the pretext of war in thoſe times, when the extenſion of territory was not the object of princes.

POLYMETIS.

If you will not allow their motive to have been entirely the thirſt of vain glory, we may perhaps find a more ſubſtantial cauſe in the allurements of Aſiatic plunder: but in fact, the ambitious princes of thoſe times appear to have been actuated, in ſome degree, with a ſpirit of romantic enterpriſe, not unlike that of chivalry, which prevailed ſo much in Europe during the fifteenth and ſixteenth centuries.

SOPHRONIUS.

Their expeditions, we are informed, were always againſt diſtant nations; which is more ſurpriſing, as there ſcarcely ſeems to have exiſted any kind of

commerce between them. Does not this circumſtance give room for ſuſpicion that the tranſactions of remote hiſtory are greatly miſrepreſented?

POLYMETIS.

Yes, I think your obſervation may be confirmed even by the hiſtory of Semiramis, who lived ſome ages later than the princes juſt now mentioned. We are told, that after the death of her huſband Ninus, being apprehenſive leſt the people would not ſubmit to the government of a woman, ſhe perſonated her own ſon, then a boy, aſſuming a mode of dreſs convenient for the impoſture; and not content with preſerving the extenſive dominions left by Ninus, carried her arms into Æthiopia, and afterwards into India, which ſhe conquered. That ſhe really adopted ſuch a ſtratagem, appears to me highly improbable; becauſe, if her ſon was, as is ſaid, a young boy, ſhe neither could well conceal the artifice, nor avail herſelf much of his authority. But it is ſtill more improbable that ſhe was murdered

dered by her ſon, for making the unnatural requiſition of partaking of his bed; eſpecially as this event is ſaid not to have taken place till forty-two years after the death of Ninus.

SOPHRONIUS.

The whole hiſtory of the Aſſyrian monarchy is involved in great obſcurity: for though that government is ſaid to have exiſted one thouſand three hundred years, we know not ſo much as the names of any of the princes from Ninya, the ſon of Semiramis, to Sardanapalus, the laſt of the Aſſyrian line of kings.

POLYMETIS.

The monarchy of the Medes, which immediately ſucceeded the Aſſyrian, is equally imperfect in its hiſtory: for the names of only the firſt and the laſt of the kings, Arbactus and Aſtyages, have been preſerved from oblivion.

PARMENIO.

What is your opinion of the birth of Cyrus, by whom the imperial government

was transferred from the Medes to the Perſians? The dream of his grandfather, the expoſure of the young prince, and his being ſuckled by a bitch; do not all theſe circumſtances bear a ſtrong appearance of fiction?

POLYMETIS.

I have not a doubt but they are fabulous; and they ſo much reſemble thoſe which relate to the founder of the Roman government, that one of the narratives may be conſidered as a counter-part of the other. We behold, however, in Cyrus, as he is repreſented in hiſtory, the moſt accompliſhed and amiable prince of any that exiſted in the ancient world.

SOPHRONIUS.

His extraordinary character, it muſt be owned, gives a luſtre to monarchy. But I ſuſpect that its features are greatly improved by the pleaſing embelliſhment of Xenophon. It ſeems to be rather an ingenious Romance, than a true biographical narrative.

POLYMETIS.

POLYMETIS.

I am indeed of the ſame opinion. The deſcription might ſuit the character of a a young Ulyſſes; and Cyrus, like the ſon of that celebrated Grecian, would appear to have been accompanied by a Mentor, though inviſible to the prince. How fortunate would it be for mankind, did thoſe who rule over the kingdoms of the earth endeavor to conduct their adminiſtration by the model of Cyrus! When Xenophon wrote the Cyropaideia, I ſhould be inclined to think that he preferred a monarchical government, under the direction of a wiſe prince, to the free but turbulent conſtitution of the Athenian republic.

SOPHRONIUS.

The idea ſeems highly probable: for annexing the moſt amiable qualities to the object of his deſcription, he infuſes indirectly into the minds of his readers a prepoſſeſſion in favor of ſuch a monarchy. But was it not impolitic to draw the character of a Perſian prince in ſo pleaſing a

light, at a time when the States of Greece contended for their liberty with the powerful ſovereigns of that nation?

POLYMETIS.

Had the character of Cyrus been in any degree applicable to Darius or Xerxes, there might be ground for cenſuring the conduct of Xenophon upon a principle of policy; but ſuch was the contraſt between the former and the two latter of thoſe princes, that any compariſon of them could reflect neither love nor eſteem upon the imperial invaders of Greece.

PARMENIO.

Conſidering both the prudence and military talents of Cyrus, I never can think it probable, that with an army of two hundred thouſand men, he ſhould have been ſo completely defeated by a female commander, as that not one of the number ſhould ſurvive. The horror of his cataſtrophe, one ſhould think, is likewiſe fictitiouſly exaggerated. We are told that

Tomyris,

Tomyris, having cauſed his head to be cut off, ordered it to be thrown into a veſſel filled with human blood, accompanying her ſavage revenge with terms of reproach: "There, ſaid ſhe, riot in that blood for which you thirſted, and of which you was always inſatiable."

POLYMETIS.

That Cyrus and his army were cut off by ſtratagem, appears to be ſufficiently confirmed; and in the invaſion of a foreign country, ſuch incidents are not uncommon: but that not one of the whole was left alive, may indeed be a groundleſs exaggeration. With reſpect to the circumſtances mentioned of his cataſtrophe, as they are related only by Juſtin, their authenticity may be queſtioned. There are ſeveral incidents in the hiſtory of the Scythians which ſeem to be fabulous.

PARMENIO.

I recollect one in particular, which is memorable on account of its ſingularity. The Scythians, on their third expedition

pedition into Aſia, had been abſent from their wives and children for the ſpace of eight years: and no intelligence being received from them, their wives concluding they had periſhed in the war, married their male ſlaves, who had been left at home to tend the cattle. The maſters, on their return, were attacked upon the borders by theſe men, who endeavoured to repel them from the Scythian territories. The war between the rivals was carried on for ſome time with a variety of fortune: until at laſt, a propoſal was made by one of the maſters amongſt themſelves, that laying aſide the uſe of military weapons, they ſhould attack their opponents only with rods, ſwitches, and ſuch like inſtruments of correction as they had formerly been accuſtomed to employ in their magiſterial capacity. The reſult was, that the ſlaves, who had hitherto diſplayed great courage in battle, when oppoſed with ſwords and lances, no ſooner beheld the rods lifted up againſt them, than recollecting the ſtripes they had formerly received,

received, and which they dreaded much more than wounds, betook themſelves to flight. Such of them as were taken periſhed upon the croſs; and the women, unable to endure the reproach of their former huſbands, had recourſe to a voluntary death.

POLYMETIS.

If the anecdote be really authentic, it may ſerve to aſcertain a doubtful principle in human nature; which is, how far, in the minds of ſlaves, the fear of reſentment will preponderate over courage, when their lives ſeem not to be in danger. We know that the proſpect of great and immediate danger will excite the moſt timid to acts of valor, in defence of their own ſafety; but fear, when it operates in a leſs degree, repreſſes, inſtead of exciting, every effort towards reſiſtance.

SOPHRONIUS.

SOPHRONIUS.

I ſhould imagine, that in this caſe, the ſlaves were much influenced by an aſſociation of ideas. The ſight of the rods and ſwitches not only brought to mind the chaſtiſement which they formerly uſed to receive from the hands of their maſters, but revived the remembrance of their own comparative inferiority, and by that means damped the courage which was neceſſary for maintaining the conteſt.

POLYMETIS.

You account for the moral phenomenon with philoſophical acuteneſs. It was happy for the maſters that the ſtratagem proved ſo ſucceſsful: for had the fortune of the ſlaves prevailed, the latter would doubtleſs have ſeverely retaliated upon their former lords, when fluſhed not only with the triumph of victory, but the ſecure poſſeſſion of the wives and fortunes of the vanquiſhed. One ſhould think,

think, however, that the reception which the maſters met with on this occaſion, would abate the national propenſity to the invaſion of foreign and diſtant countries.

SOPHRONIUS.

It would doubtleſs be a natural effect: and I think, that from ſuch a propenſity, both of the Scythians and Egyptians, a way was paved for the more ſpeedy and complete eſtabliſhment of the Aſſyrian monarchy. For the eaſtern nations being the people who were expoſed to the inroads of thoſe invaders, they would be more diſpoſed to join each other for their mutual defence; and as the authority of one potentate might be exerted with greater and more immediate advantage than of ſeveral diſtinct princes, they would be willing to place the whole executive power in the hands of that prince under whom they could enjoy the moſt effectual protection.

POLYMETIS.

POLYMETIS.

You aſſign a very probable reaſon for the rapid elevation of the Aſſyrian monarchy; and from that epoch, we hear no more of any hoſtile expeditions made either by the Scythians or the Egyptians.

FINIS.