

T H E  
NATURAL HISTORY  
O F T H E  
E A R T H,  
*Illustrated, and Inlarged:*  
A S A L S O  
*DEFENDED,*  
And the  
O B J E C T I O N S against it,  
Particularly those lately publish'd by  
*Dr. Camerarius, answered.*

---

Written originally in *Latin* by JOHN  
WOODWARD, M. D. Professor of  
Physick in Gresham College, Fellow of the  
College of Physicians, and of the Royal Society:  
And now first made *English* by BENJ.  
HOLLOWAY, L. L. B. and Fellow  
of the Royal Society.

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The Author's

# P R E F A C E.

**S**everal Years are now pass'd, since I set forth my Natural History of the Earth, in our own Language, for the Use of English Readers. This the learned Dr. Scheuchzer, Professor of Mathematicks at Zurich, publish'd afterwards to the learned World in Latin, under the Title of Geographia Physica. As there were, in that Work, several Things altogether new, it cannot well be thought strange that some People should entertain Doubts concerning them, and set themselves in Opposition to them; which they

A 2 did,

## The Author's P R E F A C E.

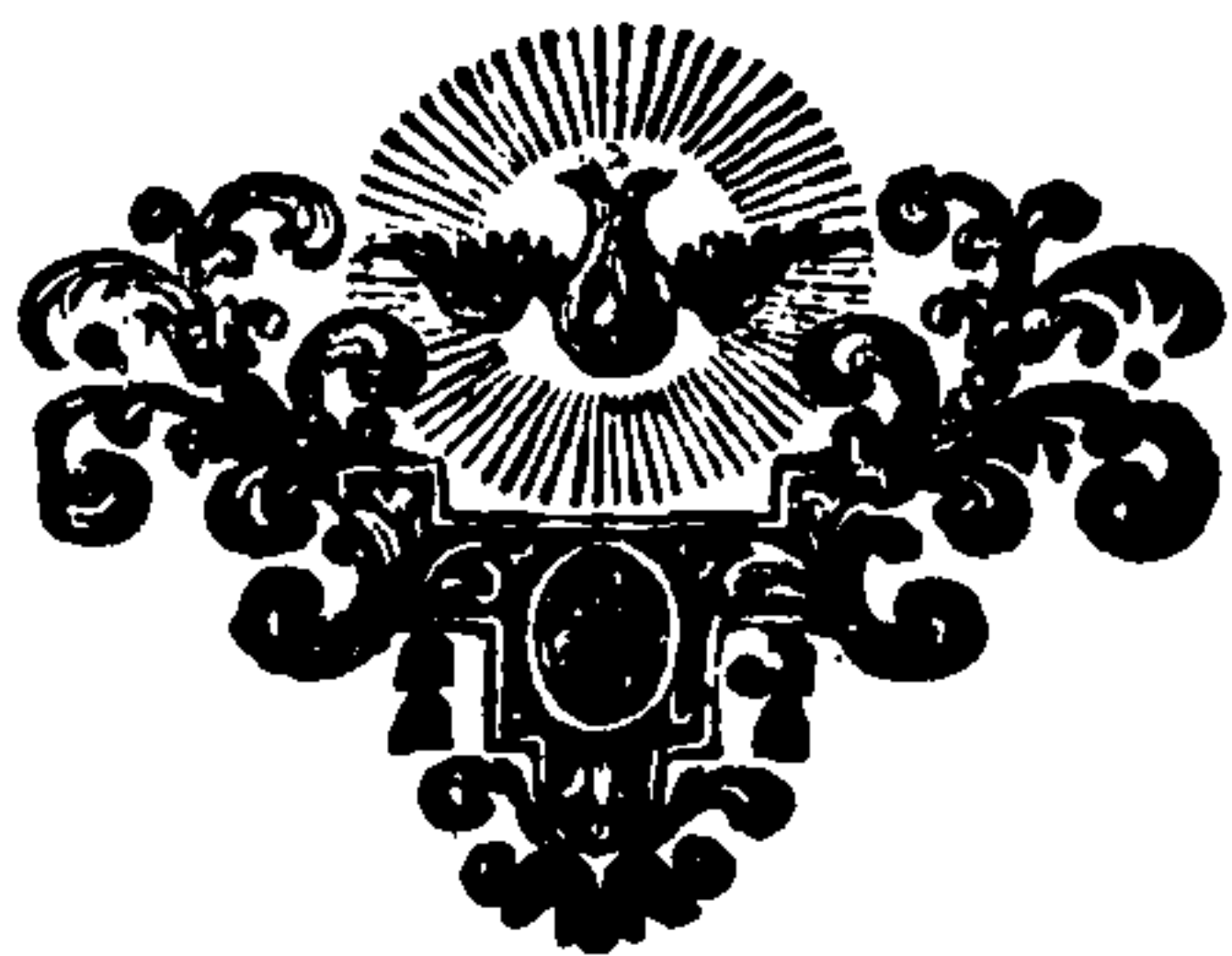
*did, with great Pains and Vehemence; but not with that Force or Weight of Argument to deserve to be severally answer'd by me. Besides, I am of a Temper not disposed to Resentment, nor indeed to Controversies of any Kind. But when the learned Dr. Camerarius's Dissertations came abroad, I presently discerned so great Acuteness, Diligence, and Happiness of Invention in Him, that scarce any Thing had been objected by others that was not there proposed by him, with some Additions of his own entirely new. So that, in returning an Answer to him, I shall likewise refute all the rest.*

*They who shall expect to find, in this Treatise, any Ostentation of Skill in Dispute, or Triumph over my Adversary, will be disappointed. The Cause I defend is supported by Nature itself, and carefull Observations of Things; nor will I any where depart from these in this my Defense.*

*Besides the Arguments which are now brought in Confirmation of my Doctrines formerly published, here  
are*

## The Author's P R E F A C E.

*are offered others not produced before: and such as, I hope, will appear to be of no small Moment, nor in any wise unworthy Consideration. The Subject of which I write certainly demands the strictest Examination: and I should not a little rejoice could I be perswaded I have treated it with an Exactness suitable to its Dignity. But, whatever this my Performance may be, it will find Pardon from Readers of Candour and Humanity, and all such who rightly consider with how great Care and Concern, the Thoughts of those are taken up, who apply themselves to the Practice of Physick with that Fidelity and Diligence it requires, which I ever shall do.*

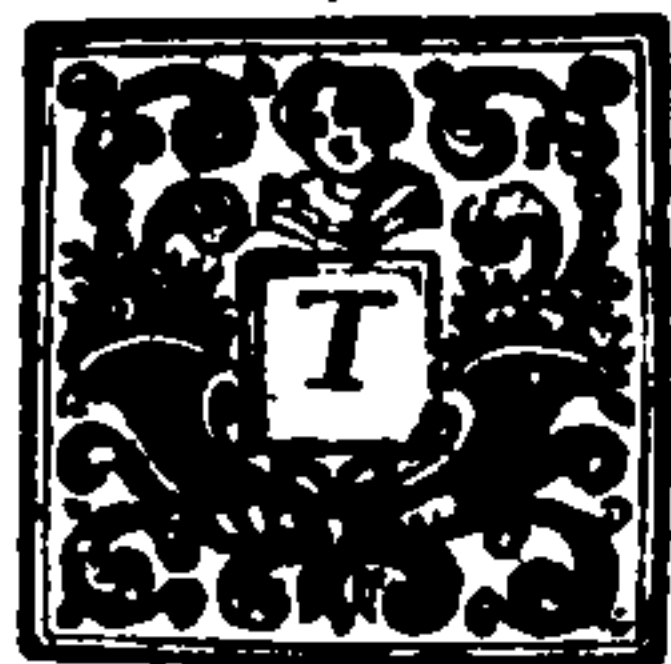




T H E  
CONTENTS.

---

PART I.



*THE Reason of my publishing this Answer. P. 1*

*The Method and Design of my Studies, p. 2*  
*to trace and set forth*

*the true Laws of Nature. ibid.*

*The Approbation of the Learned. p. 3*

*Hinderances to my Design in the  
Natural History of the Earth. p. 4*

A 4

*After*

## The CONTENTS.

*After the publishing my Book, several  
learned Men, rejecting their former  
Opinions, embrac'd mine;*  
Page 4

*Particularly Dr. Scheuchzer,* p. 5  
*And many others,* p. 6  
*Especially the Writers of Germany,*  
p. 7

*Who are most knowing in Fossils.* ibid.  
*From these Dr. Camerarius dissents;*  
*but without Reason.* p. 9

*Address to Dr. Camerarius.* ibid.

*Part I. of this Dissertation, where-  
in is consider'd his unfair Way of  
treating me, and his Misrepresen-  
tation of Things.* p. 10

1. *Examples of this in his Enqui-  
ries relateing to the Belemnite.* ib.

*Of the Ætites and Geodes.* p. 11

2. *Of the Ammonite.* ibid.

3. *The Ammonite inhabiting the in-  
ner and deeper Parts of the Sea,  
is seldom flung upon the Shores by  
Storms.* p. 12

*Lesser Storms do not reach the deeper  
Parts of the Main, and therefore  
remove not the Shell-Fish which  
reside there.* p. 13

*But*

## The CONTENTS.

*But greater Storms reach those Parts,  
and bring up Shells that are rare,  
and never otherwise seen. Page 16*

*A Corollary relating to the prodigious  
Destruction that was made at the  
Deluge. p. 17*

4. *Dr. Camerarius judges, from  
Shells small and not arriv'd at  
full Growth, found in the Earth  
with these that are large and  
grown, that both were produced  
there, but without just Grounds.*

p. 18

5. *Shells, digg'd up in other Coun-  
tries, in as great Plenty as in  
England.*

p. 19

*Dr. Camerarius's strange Inconsistency  
in this Matter.*

p. 21

6. *Of the Origin and Formation of  
the Conchitæ, and other like Bo-  
dies.*

p. 27

*Dr. Camerarius's Mistake in this  
Affair.*

p. 28

*Occasionally of the Cavities in Stone  
formed after the Model of Shells,  
&c.*

p. 29

*And of Spar, &c. formed in the  
Shape of Shells, &c.*

p. 30

7. *Dr.*

## The CONTENTS.

7. *Dr. Camerarius's Objections, as to the Site of Shells in the Earth, refuted.* p. 31
- Of the Situation of Metals, and Minerals, in the Earth.* p. 33
- Of the Site, and Order, of the Stony and terrestrial Strata.* p. 34
- The Origin of the Strata asserted from the Shells and other extraneous Bodies contained in the Strata. Their constituent Matter once dissolved, and sustained in the Water, of the Deluge.* p. 37
- That Matter being at last brought to subside by its own Gravity, the Strata were composed of it. The Laws and Order of that Subsidence.* p. 39
- The Strata, since the Time they were form'd, have suffered some Changes; 1. The upper ones by the Return of the Waters at the Conclusion of the Deluge.* p. 43
- 2. The lower Strata, by the Removal of metallic and mineral Matter.* p. 44
- Yet in many Places Fossils are found disposed, with wonderful Exactness, according to the Laws of Gravity. Examples of this.* p. 45
8. *Of*

## THE CONTENTS.

8. *Of the Growth, and consolidating of Stone.* p. 49

*Stone, in the Earth, saturated by Moisture there, and soft, being at length exposed to the Air, and dried, becomes harder.* p. 51

*The Argument, concerning the Vegetation of Stone, taken from Dr. Tournefort's Observations, considered.* p. 52

9. *Of the Growth of Metalls.* p. 55

10. *Of the Origin of Crystall, and of Gemms.* p. 56

11. *Water no fit Menstruum of Sulphur, Oil, or Bitumen.* p. 57

12. *The Ascent, of Water to Springs, not owing to the Pressure of the Strata.* ibid.

13. *What Supply the Springs receive from Rains.* p. 58

14. *Of Earthquakes.* ibid.

15. *Of the Olive Tree from which the Dove cropped the Leaf she brought to Noah.* p. 60

*Of Trees, and other Plants, frequently digged out of the Earth.* ibid.

*That Havock, of Vegetables, was caused by the Dissolution of the Earth, at the Deluge.* p. 61

*The*

## The CONTENTS.

*The Tradition of the Antients, concerning that Dissolution and Havock.* ibid.

*Some Passages of Holy Writ compar'd, and explain'd.* p. 62

*The Condition and Site of the Trees, particularly of the Olive, after the Return of the Waters of the Deluge.* p. 75

*The Mosaic Account of this Affair considered.* p. 77

*The Olive Trees were rooted up about Mount Arrarat, at the Deluge; for none are found growing in that Country now.* p. 78

## PART II.

II. *The 2d Part of this Dissertation, wherein are considered Dr. Camerarius's Mistakes, and careless Way of passing Judgment of these Things.* p. 81

1. *He joyns and confounds Things that are in their Nature very different.* p. 82

*He gives unfit Names to Things.* ibid.

2. *Dr. Camerarius's Inconsistency as to the Shells keeping themselves whole,*

## THE CONTENTS.

- whole, while moved and tossed by the Waves amongst Stones.* p. 83
3. *Of the Glossopetrae, their Nature, and Origin.* p. 86
- The Opinion of Fabius Columna, concerning these Bodyes, asserted, and his Reputation vindicated.* p. 87
4. *Of the Dissolution of the Earth, at the Time of the Deluge.* p. 91
- Terrestrial, and Mineral, but not Animal, or Vegetable Bodyes, dissolved at the Deluge.* p. 93
5. *Of the Abyss, or that great subterraneous Reservoir of Water.* p. 96
- Of the Quantity of this Water.* p. 97
- Of the Momenta of heavy Bodyes descending in a Fluid.* p. 98
- Of the twofold Increase of the Waters assigned by Moses. Occasionally, of the Mosaic Origin of the Earth. Also of the Chaos of the Antients.* p. 100
- Of the Place where those Waters are, at this Day, stored up. And something further touching Earthquakes.* 104
- The exact Agreement that there is, betwixt Nature and Holy Writ, concern-*

# The CONTENTS.

*concerning the Abyss, and the  
Structure of the terraqueous Globe.*

p. 107

*The Rise of Meteors, and of almost  
all the Changes, Phenomena, and  
Affections of the Atmosphere, from  
the great Abyss.*

p. 109

*The Cause of the Phenomena of  
the Barometer.*

p. 111

*Instances of certain Parts of the  
Earth's Surface being undermined  
by Earthquakes, and falling down  
into the Abyss beneath.*

p. 112

*6. Of the Salts that supply the Mi-  
neral Waters.*

p. 113

*7. Mountains not raised by Force  
of Earthquakes,*

p. 115

*8. The Origin of Islands. Parti-  
cularly of that Heap of Rubble  
raised in the Bay of Santorini,  
called by some an Island.*

p. 118

*The Conclusion of this second Part.*

p. 124

*With what Disposition of Mind I  
set myself to read Dr. Camerarius  
his Dissertations.*

p. *ibid.*

*With what View, and in what Me-  
thod I have answered them.*

p. 125

*Hindrances to the Search of Truth.*

p. 126

*The*

## The CONTENTS.

*The Scope and Design of all my Writings.* p. 128

*The Doctrines, by me formerly delivered, confirmed by all Observations made since.* ibid.

*The vain Attempts of my Adversaries in Opposition to them.* p. 129

*My Readyness to listen to the Admonitions of those who are candid: and to disregard those who cavil, and are contentious.* ibid.

## PART III.

III. *The third Part of this Dissertation, wherein are examined Dr. Camerarius his Conjectures, set up by him, in Opposition to what I have advanced.* p. 131

1. *The Sea-Shells, now digged up in all Parts, were not repositied in the Earth at the Time of the first Separation of the Waters from the dry Land, nor before the Deluge.* p. 134

2. *Those Shells were not originally lodged in the Fissures, but intermingled and incorporated with the Matter of the Strata, while this*

## THE CONTENTS:

*this was soft, loose, and in a State of Dissolution.* p. 138

3. *Those Shells were not brought out to Land by particular Inundations.* p. 141

4. *Those Shells were not brought, from Sea, into the Bowels of the Earth, by any subterraneous Passages.* p. 145

5. *Those Shells were not created, by God, in the Bowels of the Earth; but bred at Sea.* p. 149

*The gross Mistake of those who imagine, not only Shells, but several artificial Things, dig'd up, were formed in the Earth, by Nature playing and sporting under Ground.*

p. 154

*Of the supposed Analogy betwixt some Marine, and Terrestrial Bodies.*

p. 161

*The Conclusion to the Earl of Pembroke.* p. 162

The

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T H E  
N A T U R A L H I S T O R Y  
O F T H E  
E A R T H

*Illustrated, and Inlarged: as also, De-  
fended, particularly against the late  
OBJECTIONS of Dr. Camerarius.*

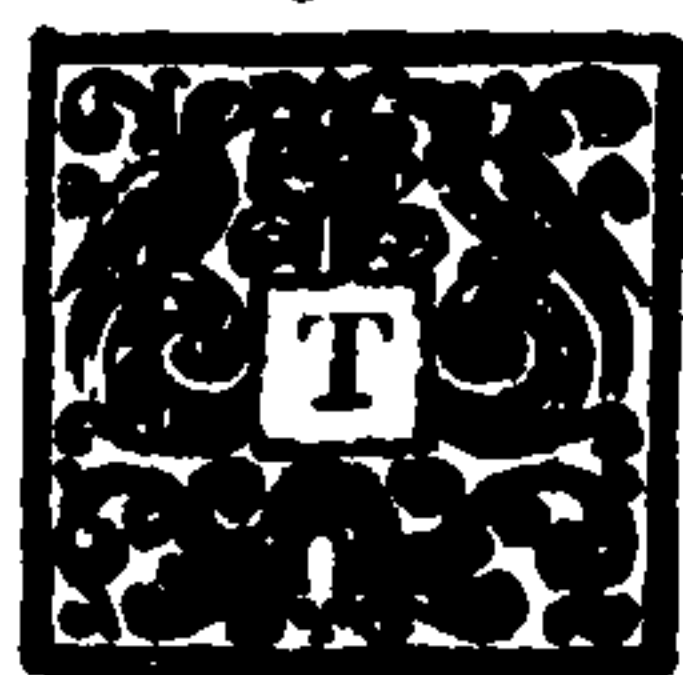
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P A R T I.

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*To the Earl of PEMBROKE.*

*My LORD,*



HE learned Dr. *Camera-**The Reason*  
*rius*, Professor of Physick *of my pub-*  
at *Tubingen* \* having at- *lishing this*  
tack'd me with so much *Answer.*  
Eagerness and Vehemence,

tho', every where, with great Care  
and Art concealed under a Shew of

B                      Complai-

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\* In *Dissertationibus Taurinensib. Tu-  
bingæ editis. 8vo. 1712.*

Complaifance and good Manners, Your Lordship, and all others of like impartial and ingenuous Disposition, would think me wanting to myself should I neglect to give some Account of my Studies, and the Success of my *Essay towards a Natural History of the Earth*, publish'd some Years agoe; which otherwise there would have been no Occasion for me to have done.

*The Method and Design of my Studies,*

As to my Diligence in these Studies, I may be allow'd to affirm that for many years I have apply'd myself to them with great Constancy. I have carefully search'd the principal Mines of our Island, and the Bowels of the Earth by what ever Means laid open to View; observing the Strata of every Sort of terrestrial Matter, the Manner in which the Minerals there lay, with the Order wherein the several Kinds of Fossils were found: and the Main of what I discover'd from these Observations I set forth in that Book with the utmost Truth and Exactness.

*to trace and set forth the true Laws of Nature.*

Nor did I take those Pains, or write that Book, with any View of supporting some former Hypothesis of my

my own, as that Gentleman suspects, and more than once charges me to have done; but to describe, to others, with what Accuracy I could, the true State of those Things which I had myself observed. And afterwards to advance some Propositions, not such as I might have framed in my Mind before, or that should carry only some Shew of Truth, but that should be certain, as following naturally and plainly from the very Observations themselves; without which, I conceived, the whole Description of those Observations would not be of any real Use.

As soon as I had publish'd that *The Appro-*  
Treatise, impartial Judges, especially *bation of*  
they who had apply'd themselves to *the Learn-*  
these Studies, publickly confessed this *ed.*  
Matter to be highly worthy of a more  
attentive Consideration both of them-  
selves and of others: and that many  
of my Propositions were of the greatest  
Importance. They, from that Time,  
represented the Study of Minerals, as  
most beneficial to Mankind, and re-  
gretted its having lain so long ne-  
glected. In a Word, that Book found  
Fortune so favourable, or the Learned

so well inclined to it, that in a little Time it was carried over the greatest Part of *Europe*, and every where receiv'd with Candour, and not without Approbation.

*Hindrances to my Design in the Natural History of the Earth.*

This was so great an Encouragement to me, that, if my own private Affairs, and that constant Attendance which the Practice of Physick requires, had not otherwise engaged me, and the publick Commotions, occasion'd by the long and cruel War, drawn off the Minds of Men from the more liberal Arts of Peace, I had certainly made a greater Progress in it. What added still more to my Satisfaction was, that from the first publishing that Work, no Man of Candour and Judgment ever made any doubt of my Observations, or ever went about to refute the Propositions drawn from them.

*After the publishing my Book, several learned Men, rejecting their former Opinions, embraced mine.*

Indeed, before the publishing that Work, Naturalists were generally of Opinion, that the Shells, found in Stone, and digged out of the Earth, were not the Produce of the Sea, but meer Stones \* form'd in the Earth, and

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\* See Mr. Ray's 3 *Physico-Theol. Disc.* p. 127.

and of terrestrial Origin. But, I am persuaded, there are now very few, if any, who dispute their being the real Spoils of the Sea, and left behind, by the Deluge, at Land. This is certain, that of those who have made the most accurate Search into these Things, with a View to discover their true Nature, not a few, rejecting their former Opinion, have imbraced mine : and even publickly defended and maintain'd it. Of the many I could name, I shall mention only one, whose Authority is equal to that of many, I mean Dr. *Scheuchzer*, a Person of distinguish'd *Particu-* Parts and Judgment, consummate *larly Dr.* Learning, and who is deservedly *Scheuchzer:* ranked among the first Naturalists of Europe. He publish'd, in the Year 1695, a Dissertation *De Generatione Conchitarum*, wherein he endeavours to prove that these Bodyes ought to be reputed native and genuine Fossils. But, afterwards, upon a carefull Perusal of my Book, he publickly acknowledged \* his Mistake ; confessing he had too hastily embraced that Opinion.

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nion.

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\* In *Epist. Dedicat. Geogr. Phys.*

nion. Thereupon, as became a sincere Labourer in the Cause of Truth, he gave up his own, and came over to my Sentiments: and the many learned Works, wherein he has from that Time asserted and demonstrated the Truth of this Opinion, besides his other Writings, abundantly shew the great Progress he has made in these Studies.

*and many  
others,*

In short, the Testimonies of the greatest Men that have wrote on the same Subjects, and their Approbations of my *Natural History of the Earth*, are so many, and considerable, that I should seem too much pleas'd with the Fruits of my own Studies in this Way, if I should particularly recount them all. Neither is there any Need that I should do that, seeing their Works are in every Bodies Hands. Nor had I said any Thing of this Kind, now, nor hereafter, either privately among my Friends, or much less thus in publick, had not the just Defence of myself, and of the Cause, which so many great Men with me have approv'd, required it.

But

But, after all, if what I wrote did *especially* not seem of Weight to the learned *the Writers* Dr. *Camerarius*, unless he thought *of Germa-* himself more knowing than all those ny, Gentlemen, every where so deservedly famous for their Knowledge in natural Things, and could not acquiesce in their Judgment, he should not surely have gone about with so much Importunity to oppose his own singly to all theirs. For he acknowledges of his own Accord, that *I have easily won over, to my Side, the greatest of those in Germany who are taken with this Sort of Learning.* \* After which Declaration, he had never set himself with so much Vehemence against an Opinion, received by them, jointly with me, had he not thought himself much more intelligent in these Things, than all of us.

This Testimony of his, *that the who are greatest Men in Germany were ea-* *most know-* *ing in Fos-* *sils.* sily brought over to my Opinion, makes more for the Truth of it, and may justly be thought to add the greater Confirmation to it, because there are in *Germany* more Sorts of

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Mine-

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\* *Dissert. Taurin.* p. 268, 269.

Minerals, more frequent and diligent Searches after them, more exact Experiments and Assays of Each: and consequently a more easy and sure Way of attaining the true Knowledge of the State and Nature of those Things, than in any other Part of *Europe* besides. For which Reason, as the *Germans* are most addicted to these Studies, they have been always allowed to have the greatest Skill in them. What Pains they have taken, how shrew'd Judgment they have used in those Studies, and how far the *Germans*, particularly the later Writers, have kept up the Privilege so deservedly conferr'd on their Nation, we have Proof beyond all Exception in the Works, of this Kind, which Dr. *Bayer* \* Professor at *Aldorf*, and Dr. *Spener* † of *Berlin*, as also other learned Men of that Country, have lately set forth. Now, since these appear in Favour of me, establish my Doctrine by their Authority, and confirm it with their Arguments, I have certainly the less Cause

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\* *Descrip. Fossil. Territor. Norimberg.* 4to. 1708. † *Disq; de Crocodilo in Lapide, aliisq; Lithozois Miscell. Berolin.* 1710. p. 99.

Cause of Apprehension from the Attacks of Dr. *Camerarius* alone, however eloquent, and, as I am forward to believe, knowing in other Matters.

What moved him particularly to dissent, not only from me a Stranger, and perhaps known to him merely by Name, but from the most noted Persons of his own Country, and deservedly celebrated, he best knows. *From these Dr. Camerarius dissents, but without Reason.* But this I will be bold to say, wherever he has dissented, in that Work, from mine and their Opinion concerning these Things, he has at the same Time departed from Observation and Fact; whereby he has given great Cause to doubt whether he has search'd into Quarryes, Mines, and the other interior Parts of the Earth, with a Diligence needful to support so large a Share of Positiveness.

If a Person of his Eloquence and Politeness, should here expect the same Accomplishments in me, and think himself a little too roughly used, while I call in Question not only his Candour toward myself, but his Skill in the Things he treats of, and his Industry in examining into the Nature

ture of them, I hope he will Pardon me, when he finds I assert nothing in the following Discourse but what I shall make clearly appear.

Part I. of  
*this Dissertation*;  
*wherein is*  
*consider'd*  
*his unfair*  
*Way of*  
*treating me,*  
*and his Mis-*  
*representa-*  
*tion of*  
*Things.*

I. First, if he has read my Book with due Attention, I have great Cause of Complaint of his Want of Candour, almost every where, toward me. For he often ascribes to me Things I never said, and sometimes such as are apparently contrary to what I had expressly set forth. There are Instances of this almost without Number; but I shall content myself with recounting only a few of them.

1. *Exam-*  
*ples of this*  
*in his En-*  
*quiries re-*  
*lateing to*  
*the Belem-*  
*nite.*

1. Where he treats of the Nature of Fossil Shells, contending earnestly that they are not of Marine Production, he mentions the *Belemnite*, and asks me \* *under what Genus of marine Animals I would rank that?* as if I had asserted it to be of some *Genus of marine Animals*. Had I said nothing of the Nature of the *Belemnites*, he might perhaps have fancy'd I took them for Crea-  
tures

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\* P. 298. *Conf.* also P. 349.

tures of the Sea. Tho' that would have been a little hard, from my Silence to judge of my Opinion. But when, *with the Consent of all Naturalists*, I had expressly affirm'd, that † *the Belemnites were really Fossils, and of mineral Origin*, I can impute his Suspicion of my Opinion in this Affair, which I have clearly express'd, to nothing but Prejudice, and too much Precipitancy; being unwilling to attribute it to any other Cause in the least unworthy the Character of so great a Man. Hence also it is, that he confounds the ‡ *Ætites*, and *Geodes*, both mere *Of the* Stones, with Shells, and other Things *Ætites and* of marine Extract. *Geodes.*

2. He likewise takes great Pains *2. Of the* to demonstrate the \* *Cornu Ammonite.* *Ammonite.* *nis not to be a Nautilus*: and indeed, for what I have said, he might as well have used other Arguments to prove it no *Murex*, or no *Oyster*; for I never ascribed it more to the Classe of that, than of either of these.  
But

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† *Nat. Hist. Earth. passim.*    ‡ *Dissert. Taurin.* p. 299.    \* p. 296. 297, and 340.

But yet ‡ the *Ammonite* is really a Shell, of the wreathed or turbinated Kind, produced at Sea, and brought from thence to Land. It has the Marks, and what we call Essential Propertyes, of a true Shell, tho' of a Kind plainly different from all those.

3. The *Ammonite*, rarely light of upon the Shores. I inhabiting the inner and deeper Parts of the Sea, is seldom flung upon the Shores by Storms.

3. The *Ammonites* are indeed but rarely light of upon the Shores. I never met with above one Species of them found there ; whereas out of the Earth there are dig'd very many. But all the Kinds of Shells, that are to be found on every Shore, have not yet been observ'd and collected with due Care. Besides, there are many which are bred in the inmost and deepest Parts of the Sea, where they have their Abode, and never of themselves come near the Shores, nor are flung out of their native Seats, even by the Violence of Tides or Storms. Of some Kind of these I take the *Ammonite* to be. Most of those Shells which are cast upon the Shores, by Tides, or Storms, are such as were bred not far off, and among the Shallows

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‡ See *Nat. Hist. Earth, Prælim Dissert. in fin.*

lows and Flats. The Disturbances given by Tides, or Tempests, never reach the inner and deeper Recesses of the Ocean. It is therefore less to be wonder'd at, if the Shells produced in those Places, and there residing, are seldom found cast upon the Shores.

The learned Dr. *Camerarius* indeed professes himself † *doubtful of the constant Calmness of the Bottom of the Sea.* This, in so great a Man especially, I cannot but much wonder at, since the Thing is so certain, and so generally known: and the Truth of which he might have had thoroughly confirm'd to him, from Books, as well as from the very Persons, who, when the Surface of the Sea has been most tempestuous, have dived to the Bottom. But since there is perhaps none of these Persons known to us both, to whom I might refer Dr. *Camerarius*, I will recommend him at least to one great Author, out of many, who has wrote of this Matter; one, of whose Fidelity the most suspicious cannot doubt. I mean Mr. *Robert Boyle*, the great, and lasting Honour of his noble Family,

*Lesser Storms do not reach the deeper Parts of the Main, and therefore remove not the Shell-Fish which reside there.*

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† Page 288.

mily, who is deservedly ranked among the highest Philosophers of our Age, and who has wrote a \* *Treatise on this Subject, entitled, Relations about the Bottom of the Sea.* In the third Section of that *Treatise* he may find, that the *Water at the Bottom of the deeper Seas, is ever calm, nor in the least disturb'd, even whilst its Surface is most troubled, and tempestuous.* He may also there learn that *Divers take the Water, when the Sea is so very rough that scarcely any Vessels will hazard themselves out of Port;* so that he was under a very great mistake, when he hastily said, † *that Divers never go under Water during great Storms.* But to the Question he puts soon after, ‡ *why Divers do not bring on board, from the Bottom of the Sea, some of these Shells call'd by Naturalists Pelagiæ, because they reside only in the Deep of the Main?* I return for Answer, in the first Place, what, tho' it be easy and obvious, may deservedly be thought satisfactory, and

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\* *Mr. Boyle's Tracts*, 8vo. Oxon. 1671.

† *Dissertat. Taurin.* p. 288. ‡ *Pag.* 288.

and a fit Solution of such a Difficulty; that those Persons, not being Philosophers themselves, nor employed, by such as are, with Design to promote natural Knowledge, but meerly in Hopes of Gain, when they have dived to so great a Depth, with Hazard of their Lives, look for Pearls, and Things of Value; but they neither collect, nor observe others which would be plainly of no Use to them, nor, if they should bring them up, reward their Labour. But, if this Answer should not satisfy the curious *Camerarius*, he ought also to observe, that those Divers look for Pearls not far from the Shores; neither do they go under Water but in such Places as are meer Shallows, if compared with the more remote and deep Parts of the Main, which I speak of. No Disturbance, as may be reasonably believ'd, has ever been given to those inner Recesses of the Ocean, since the universal Deluge; at which Time those Places were totally broken up, and the Shells, inhabiting there, being forced from their antient Dwellings, born to the most distant Places, and not a few left in those their new Seats  
at

at the Retreat of the Waters. Those, in my Opinion, are what we now frequently find in the Earth, but very seldom on the Shores, and of the Origin and Nature of which the learned *Camerarius* has raised this Dispute.

*But greater Storms reach those Parts, and bring up Shells that are rare, and never otherwise seen.*

After all, tho' those Shells are never now moved from their native Places, yet there are others often flung upon the Shores by greater Storms, which lesser never reach. The most violent of these Storms, by us called *Hurricanes*, are those which happen about *Barbadoes*, and other Islands of the same Sea, and in the adjacent Parts of *America*. Where those Storms arise, they usually rage more vehemently, than any *European* can easily credit, or conceive to himself, and disturb the Seas to a much greater Depth than usual. After those Storms, Shells lie expos'd on the Shores, in much greater Numbers, than are thrown forth by lesser Storms, and of Kinds quite different from them. Neither is it to be doubted, but as those more violent Tempests cast up Shell-Fish very rarely otherwise seen, being such as inhabit the inner Parts of the Sea, where lesser Storms do not reach, so,  
if

if other yet more violent Tempests should happen, sufficient to disturb the Bottom of the deepest Seas, they would bring up the *Ammonite*, and other Shells, such as, it is plain, were heretofore brought up by the Deluge and never since.

From these Shells, found in such great Numbers, and of such various Kinds, in Places far distant from any Sea, even to the Tops of the highest Mountains, and the Bottoms of the deepest Mines, which nevertheless, as has been noted, are generated only in the Middle of the Ocean, and are never found near the Shores; from these, I say, it is manifest, what great and surprizing Changes were then made: and with what Tumult and Confusion, dreadful beyond all Description and Imagination, all Things were tofs'd and hurl'd about; which they certainly never had, but for some most weighty Cause, such as was that of bringing on the Universal Deluge.

*A Corollary relating to the prodigious Devastation that was made at the Deluge.*

4. Dr. Camerarius judges from Shells, small, and not arriv'd at full Growth, found in the Earth with those that are large, and grown, that both were produced there; but without just Grounds.

4. It frequently happens, that, with the large and full grown Shells of Sea Animals, there are digged up others of the same Species, but smaller, tenderer, and not yet arriv'd to Maturity, or their just and compleat Bulk. From these, especially of the same Magnitude, and Maturity, to which they usually arrive about the End of May, and from such Vegetables as we find in many Places in the Earth arrived to the State they usually attain by the same Season of the Year, from these, I say, I could certainly form a Judgment of the Time of the Year when the Violence of the Deluge coming on put an End to the Growth of both \*. There are also digged up at Land, as well as found at Sea, Shells, full † grown that yet are *thin* and *transparent*: and others also, which, by Length of Time are become tender and friable, as tending towards Decay, and finally to Destruction; but that any are ever found, in the Earth, which even the most quick sighted Person, *by only looking*

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\* Nat. Hist. Earth. Part III. and VI.

† Dissert. of Dr. Camerarius. p. 226.

on them, can discern to be still in a Way of growing, tho' Dr. *Camerarius* affirms this, I dare be bold to assert the Contrary. If he has any such Shells by him, from which he thinks he can demonstrate that, I do not ask him to send any of them over to me, which might be troublesome, but I may at least expect he should set forth some of those Signs from which he makes that Inference. For if he can shew any such, I will immediately publickly confess my self mistaken in my Observations, about these Things, and that I have err'd in my Judgment concerning them, I will come over to his Opinion, and most willingly embrace the Truth he shall so demonstrate.

5. The learned *Camerarius* indeed s. *Shells*, the more willingly admitts \*, *that* <sup>digged up</sup> *great Plenty of Shells* may possibly <sup>in other</sup> Countries, be digged up in *England*, because it <sup>in as great</sup> is an *Island* <sup>Plenty as in</sup> *every where* † *surround-* <sup>England.</sup> *ed by the Sea*, from whence he supposes those Bodies to have been carried thither through *some subterrane-*  
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\* Page 282.

† Page 347.

*ous Passages, by Inundations, and violent Changes*, which he fancies it has undergone; of which I shall say something hereafter; but he denies \*, that any Judgment can be made of *the State of other Countries, from Arguments fetched from that Island*. He else where says †, that in the Midland Parts, especially of larger Countries, a like Quantity of them is not to be found. But how unadvisedly these Things are asserted, tho', by a Person very intelligent in other Things, all the most Antient, as well as the Modern Writers unanimously testify; the unquestionable Accounts which I my self have procured from the most inland Parts of, *Asia, Africa, and America*, as well as *Europe*, clearly shew: and lastly the Things themselves, the Bones, Teeth, and Shells, of Marine Animals, of which, together with many other Things, I have by me great Numbers, collected there, and brought thence hither, give abundant Proof.

But

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\* Ibid.      † Page 282, 290, 347.

But why do I endeavour to con-<sup>Dr. Came-</sup>  
firm, by the Testimonies of others, <sup>rarius's</sup>  
what he confesses to have observed, <sup>strange In-</sup>  
and found Himself? For he says, in <sup>consistency</sup>  
another Place \*, *there are whole* <sup>in this Af-</sup>  
*Mountains in Germany, which ap-* <sup>fair.</sup>  
*pear to be nothing but Shells:* and  
that particularly about † *Echterding*,  
great Numbers, and variety of them,  
are found. And soon after he men-  
tions ‡ *whole Mountains, all where-*  
*of consist of Stones figur'd or cast in*  
*Shells, and which are, as it were,*  
*formed and compil'd of them.* These  
are his own Assertions of the Plenty of  
Shells, and of Stones moulded in them,  
found *in other Countries*; a Plenty of  
both no way inferiour to what are any  
where to be found in this our *own*  
*Island.* These Things are indeed  
so contradictory one to another, and  
his own Representations of Fact so  
totally inconsistent with this his Opi-  
nion and Doctrine, that how they can  
be easily reconciled I am not able to  
see; he must look to that himself.  
But tho' Shells abound so much in  
C 3 those

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\* Page 293. † 297, 298. ‡ 338.

those Parts, that whole Mountains seem to be made up of them, yet he could find no Remains or Traces of them about \* *Tubingen*. But what follows from thence? Does he believe, he, or any one else, has so carefully searched these Parts too, as to be satisfy'd there are not still some that may lye concealed there, and be, some Time or other, at last discovered? Or what if, by Length of Time, and having lain in a Soil containing Salts, detrimental, and gradually destructive to the Texture of such Bodies, they are long since perished? Or finally what if None at all were ever lodged in those Parts? For I have not any where said, nor can it indeed be thought, that they were left in all Parts of the Earth, especially since in some they are so accumulated, and heaped up as to compile whole Mountains. A little lower, as becomes a Man so ingenuous, he confesses, *there offered themselves to his View Myriads of small Shells*, lodged very deep in the Earth, in those very Places  
*about*

*about Tubingen, but, as he believes, not of Marine Origin. And he wonders, nor indeed without Reason, that such Numbers of them should be found at so great a Depth in the Earth, since they must have been, some Time or other, carried out of their Native Seats, and by some means or other lodged there. So that, altho' those Shells were not really of Marine Origin, of which yet there is not the least Reason to doubt, because the River and Terrestrial Kinds are very light, and seldom or never found at so great a Depth in the Earth, yet they prove at least, that the Earth, so far, has been violently disturb'd, and suffered great Changes. But he \* enquired of those who break and draw up Myriads of Stones out of Quarries, and they were all alike ignorant of such figured Bodies, except one, who declared, he had twice or thrice found a small Shell in the Stone, the Shape of which he did not remember. But if one or two such Shells were observed by a heed-*

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less Digger, it is to be believ'd, many more might be discovered by those who look more diligently after them. For neither may we depend, more on the Diligence or Curiosity of these Diggers whom he rightly calls \* *rude Labourers*, than of those † *Divers*; both of which usually have their Mind, and Eyes, most intent upon that which they are in Search of, and, even tho' admonished, are blind to the Rest. If any one therefore would be surely inform'd of the Truth of Things of this Nature, he should, while others digg, examine the Places, and carefully survey, with his own Eyes, what they digg up. *But when perhaps others may discover these Things, at least about the Neighbourhood of Tubingen, by greater Diligence than ordinary, they are abruptly called away from thence in the midst of the Search ‡.* Which indeed I then begun to suspect, when I saw he denied that he found any Shells there of Marine Origin; nor do I indeed doubt but, if at any Time  
he

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\* Page 276,  
 ‡ Page 284.

† Conf. pag. 14. *supra*.

he would search the same Places again, and only use greater Diligence and Patience without so *sudden* an *Interruption*, he may find great Plenty of them. But let us proceed to what next follows. *In all our Journey, over so many Mountains, in Switzerland, and Valois and the Alps, and Chains of Hills, we met with nothing at any Time figured in that Manner, tho' we looked over innumerable Stones, on the highest Ridges of the Alps, particularly of great Bernardus.* This he tells us *p. 284*, and not much after, viz. *p. 297*, he attests that Shells of many Kinds, Univalves, and Bivalves, are to be seen in Abundance on the Mountain *Randus in Switzerland*, and in Places every where round about it. Now to deny, in that Part of his Dissertation, that any Shells were to be found in those Places; but to acknowledge in this Part of it that many and various Kinds were found there, made equally for his purpose. This great Man might \* indeed have properly inform'd

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\* Page 284.

form'd his Readers, upon this Occasion, that he *had not yet seen* the learned Dr. *Scheuchzer's Book on that Subject*, if that Book had been publish'd in some remote and more obscure Part of Europe. But since that Book had been abroad nine Years and more, before Dr. *Camerarius* had wrote on the same Subject, and deservedly gained its Author so great a Reputation, that he then first obtained, among the Learned, the Title of the *Helvetian Pliny*, the learned *Camerarius* might certainly, I do not say he ought to have *seen it*. If indeed *he had seen it*, I do not in the least doubt but, that if he had not immediately changed his Opinion, he would not have defended it so strenuously, after he had considered the great Number and Variety of Marine Bodies found in *the Mountains of Switzerland*, and other Places, and delineated and described *in that Specimen of Dr. Scheuchzer's Lithographia Helvetica*, published at *Zurich* in the Year 1702.

6. I said that at the Time of the Deluge, while Shells, sustain'd and upheld in the Waters, floated, together with Sand, and other the constituent Matter of Stone, Flint, Spar, and all other Minerals, reduced to their primary Particles, the dissolved Matter of these, entering the Shells, filled them up, so that they gave their own Form, or Figure, to the Matter so received into them, and were as *Matrices*, and *Moulds* to it: \* that of these Shells, whether so fill'd or empty, sinking together with the Matter of Stone, Clay, Chalk, and all the rest that this terrestrial Globe is compos'd of, are made those Strata, of which this our Earth consists: that the Strata of Mountains afterwards, being laid open by the Force of Rains, Torrents, and Accidents which often happen in all Parts, were broke up, and the Shells contained in them, which lay uppermost, with some which lay deeper, were thrown out, and left exposed at the Surface:

6. *Of the Origin, and Formation, of the Conchitæ, and other like Bodies.*

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\* *Nat. Hist. Earth. Part. II. and IV.*

Surface: † that at length those Shells, so laid open, thrown out, and exposed, were worn away, or broke, but the Matter enclosed in these Shells, whether Stone, Flint, Spar, or any other, of a Constitution firm and solid, did still retain, and represent the *Concave*, ‡ *or interior Form* of those Shells, in which it was moulded. *This*, from an accurate and often repeated Examination, and diligent Consideration of these Things \*, *I asserted to be the true Origin of the CONCHITÆ, COCHLITÆ, ECHINITÆ, and* other like Bodies. But here this very learned Man professes *himself unable to comprehend these Matrices, these Moulds. † For these figured Stones bear the outward Form of the Shells; not the inward, which they plainly ought, if they were formed in the Hollow of them.* Now these *Matrices and Moulds*, which he could not yet comprehend, I believe he easily may hereafter, if he will only look into these Matters, a little more carefully. For my own Part I have

*Dr. Camerarius's mistake in this Affair.*

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\* Ibid. Part. 4. † *Dissert.* p. 338. ‡ Ibid. Part. 5.

have Nature my Guide in this whole Affair; and since I have offered Nothing, at any Time, but from the Things themselves, and have relyed wholly on Observations of the same made with the utmost Accuracy, I now appeal to them and to Nature; and, as of all other Naturalists, so especially to the Observation of the learned *Camerarius* himself on these Things, but made with more Care than hitherto. If indeed he had used such Care and Diligence before, he would certainly have had no Cause to enter into a Controversy on this Subject. For among Thousands and Myriads, of those Bodies, which are found in their Places, I dare take upon me to say he would not find one Stone, or Flint, which *bears* the Convex or *outward Figure of the Shell*. If he shall find any such hereafter, I will then admitt the Force of this Objection, and yield up my Opinion to it.

One Thing indeed there happens *Occasionally* in some Places, which is not here to *of the Cavi-* be passed over. When Water, con- *ties in Stone* taining in it Vitriol, or other like *form'd af-* Salts, pervades any Strata, it dissolves *for the Mo-* *del of Shells:*  
the

the Shells lodged in such Strata by little and little, carries their dissolved Particles away with it, and leaves the Spaces, before filled and possessed by those Shells, empty. Examples of this are to be found in almost all Parts of the Earth. To say Nothing of other Places, there is here, in *Portland*, an huge Stratum of the hardest Stone, in which may be observed an infinite Number of such Cavities, or vacant Spaces, representing to View both the Shape, and Size, of Turbinated Shells, and Bivalves. Into these Cavities if there be poured melted Lead, or any other Metall, it will always take the most exact Figure of these Shells. So where it happens, that the Water, passing through, carries with it, besides such Salts, Particles of Spar, or other Minerals, it frequently lodges them in those Cavities, and there leaves them till at last it fills them up. Wherever this happens, it always follows, as of Necessity it must, that the Matter of Spar or other Minerals so formed, exhibits and represents the very Sizes, and perfect Figures, interior, and exterior, of the Shells

*and of  
Spar, &c.  
formed in  
the Shape  
of Shells,  
&c.*

Shells whose Places it had filled. Nor are there seldom found *Conchite*, and other Stony and flinty Bodies of that Sort, at length cast out of the Strata, incruſted with the Subſtance of ſuch Spar, and other Minerals, ſupplying the Place of the Shell that is worn away, and deſtroyed. If Dr. *Camerarius* means theſe Incruſtations, as I think he does not, I was not treating of them; nor indeed do theſe make out what he would demonſtrate, but rather ſhew the Contrary. For if theſe Incruſtations are broken off, the Surface of the Stony Matter, contained within, exhibits the *interior* Figure of the Shell, in which it was firſt moulded, as exactly as thoſe other Stones, which remain ſtill covered with the Shells; which ever bear the Impreſſion of the *interior* Surface of the Shells, after the Shells themſelves are decayed or conſumed.

7. But I come now to that part 7. *Dr. Ca-*  
of the Book, where Dr. *Camerarius* merarius's  
treats of the Order wherein theſe Bo- *Objections,*  
dies are found lodged in the Earth. *as to the*  
He is not forward to admitt any *Site of* *Shells in*  
Thing that I have offered on this Sub- *the Earth,*  
ject. *refuted.*

ject. For to what I had writ he returns,---- \* *These Things indeed carry a great Shew of Proof as to what relates to Crabs and Lobsters,---but demonstrate Nothing with Respect to the BUCCINA, and CONCHÆ VENERIS; since these are found so very numerous on the Shores, and have not the small specifick Gravity of Crabs, and therefore were not lodged in the upper Strata, so that they ought to have been found in the lower.* I am realy very much concerned when I cannot make this learned and ingenious Gentleman's Observations, of Things, which require no great Study, but only common Sense, and a meer View of them, comport with my own, which were not made without due Diligence and Consideration. I have made Tryals of many Crabs, as exactly as possibly I could; and found some of them answer to Water, in Specifick Gravity, as  $1 \frac{3}{4}$ , to 1, and others as 2 to 1. But I have observed many of the *Buccina* that have not the Proportion  
of

of 2 to 1, and but few that exceed that Proportion. For the *Concha Veneris exigua alba striata*, this has the Proportion of  $1 \frac{1}{2}$ . These therefore coming so near the specifick Gravity of Crabs, we cannot expect to find these more commonly than Crabs. But lastly he says, *the BUCCINA, and CONCHÆ VENERIS, occur in very great Numbers on the Shores.* There are indeed some few of the *Buccina*, and but only one Species of the *Conchæ Veneris*, which is that which I mention'd above, to be found on the Shores of our Island: and only a very small Number on any of all the Shores of *Europe*.

Nor indeed is he less doubtfull in *Of the Si-*  
his Opinion concerning the Order of *tuation of*  
Metals, and Minerals, and their Dis- *Metalls, and*  
position in the Earth. \* For he thinks *Minerals,*  
the *Molecule*, or *minuteſt* Particles, of *in the*  
*Earth.*  
Metalls and Minerals, too heavy to have  
been *supported in the Water*, or ming-  
led with the Matter of the *Strata of*  
*Stone*, so that they should have been  
*precipitated down*, so as to consti-  
D tute

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\* P. 307. 309. 325.

tute the lowest Stratum of all, and to reach the very *Centre of the Earth*. But the Things themselves, and the daily Experience of Chymists, afford Arguments sufficient against this Opinion of his. For who knows not, that Gold and Silver, which are not the lightest Sorts of these, are sustained in *Aqua regia*, and *Aqua fortis*, so as not to sink to the Bottom? This is a sufficient Answer to Dr. *Camerarius*. Nor indeed is it here to be enquired, how so great an Abundance, as well of separate Particles, as of Nodules, or Lumps of Metallic or Mineral Matter, became repositied in the *Strata*, among Sand, and other lighter Matter. This is a Subject foreign to the present Inquiry, as I had intimated to my Readers, *Nat. Hist. Earth*. Part. 4: and therefore Dr. *Camerarius* should not have wholly neglected that Admonition of mine.

Of the Site, and Order, of the Stony and terrestrial Strata. He moreover denies, \* *that Order, Disposition, and Distinction of the Strata, with the extraneous Bodies contain-*

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\* P. 291.

*contained therein, according to their specifick Gravity, to be commonly observable.* But on what Argument does he chiefly rely when he does this? From what Example of the Things themselves does he endeavour to demonstrate the contrary? Why truly from what *Mountsaucon* has supply'd him with from *Ramazini*. But, when he objected this to me, he should have seriously consider'd with himself, what those learned Men thought of the Strata about *Modena*, † who believe *those Strata were not from the Deluge, but were formed at various Times by the Mud of Rivers.* Whether this be true, or false, I do not here enquire; but if Dr. *Camerarius* takes it for Truth, and supposes that those Strata have been the Work of later Times, and thrown up by the Rivers, then they are not those which we are here treating of, and consequently make Nothing to his Purpose. And therefore he should make Use of other Arguments, fetched from other Places. Nor indeed are

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† P. 294.

there such other Places wanting, where he imagins he finds Matter for Arguments of the same Kind, and which are not refuted by the Judgment of any One, nor easily to be refuted; for Example, \* *The Quarry of Biberax, and other Quarries, and the Pits that are dig'd thereabouts, contradict my Opinion, which present sometimes to View Strata of Earth, sometimes of Sand, sometimes of Clay, and sometimes of Stone.* In Case I believe and acknowledge these to be so, depending upon his Fidelity and Diligence, which indeed I easily do, because they are often found so elsewhere, yet Nothing can be gathered from thence to destroy my Opinion, and overthrow the Doctrine I have advanced relating to those Things. He indeed says, † *but the very View of the Strata shews, they were not formed, and laid one over another, by such an orderly Subsidence, according to their specific Gravity, because then the Strata of Earth,*

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\* P. 291.

† P. 310.



Earth, Chalk, Sand, Stone, and all other Matter, as well that which is now more loose, as that which is more solid, of which those Strata consist: and the Order and Condition in which those Bodies are found, plainly shew that Matter to have been once \* all in a State of Solution, all sustained in the Waters, and at last, subsiding in those Waters, formed those Strata. It is not here material to enquire how that Dissolution was effected; it ought to suffice, that the Thing is certain, that there are every where extant Proofs of it so manifest that if any One, I will not say instructed in even the first Rudiments of Natural Philosophy, but who has only common Sense, and the Use of his Eyes, will but go into the next Quarry, he cannot but immediately acknowledge the Matter to be actually so, which those who sit contriving Hypotheses in their Studies, deny to be possible. From such a Contemplation of Things, and Observation of the Strata in the Earth, it  
was

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\* See *Nat. Hist. Earth*, Prælim. Dissert. and Part 2.



and never argued otherwise any where else ; \* *This Subsidence happened generally, and as near as possibly could be expected in so great a Confusion, according to the Laws of Gravity.* For in such a Confusion of Matter dissolved, it could not be imagined that the Subsidence should be every where alike, or the Strata, thereby composed, always placed in the same certain Order. They therefore who look for that, look for what I never promised to shew them. But when they read my Writings without due Attention, they thence frame Laws of Nature, as if conceived according to my Opinion, and devise to themselves a Sort of Fabrick of the Earth exactly according to those their Laws ; and if any of them, entering upon that Fabrick, find those Laws not justly observed, they immediately pronounce mine wrong and mistaken. But to return to the Matter in Hand ; this is most certain, the Subsidence could not be every where uniform, and the same. Nay it was

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\* *Nat. Hist. Earth. Part 2. Consect 3.*

was necessary, it should vary, in every Place, according as the Quantity of Matter sustained, answered to the Quantity of Water that sustained it: as the Water itself was more troubled, or more calm: as each Body sustained was greater or less: as there were more, or fewer, of any Kind, in the same Place: and finally, as the Place, where each Body fluctuated before it began to sink, was farther from, or nearer to, the Bottom, and as the Course of its Descent was longer or shorter. For it could not otherwise happen but that a Particle of Matter, however light in itself, floating within some few Feet of the Bottom, when Things began to settle, must reach the Bottom much sooner, and so lye deeper in the Earth, than another, tho' much heavier, which floating perhaps a thousand, or more Paces above, began to sink at the same Time. \* It is therefore

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\* *This Argument is more accurately treated of in that Chapter of my greater Work, Part of which the ingenious and learned Dr. J. Harris has inserted in his Book, entitled, Remarks on some late Papers relating to the Deluge, and to the Natural History of the Earth. London published, in the Year 1697. 8vo.*

therefore necessary, tho' we suppose this whole Affair to have been transacted exactly according to the Laws of Gravity, that a great Part of that Mass shou'd sink promiscuously, and confusedly, and be laid without any certain Method: that the Constitution of the Strata should be various, and uncertain: and that therefore lighter Bodies should be often found lodged under heavier. \* 'Tis most evident that only that Matter, and those Bodies, which, when Things began to settle, were higher, and fluctuated nearer to the Surface of the Mass, and had consequently a longer Descent to make, † could be disposed into any certain Method and Order. It was also necessary that these should sink last; and so constitute the upper Parts of the Globe, and those nearest to its Surface. Hence the Reason is plain why the Strata nearer the Surface of the Earth, and the Marine and other Bodies found therein, lye in better Order than those placed

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\* Conf. Part 2. Sect. 5. *infra*.

† Ibid.

placed at a great Distance lower. But this more uniform Site of the *The Strata*, upper Strata, and the Disposition of <sup>since the</sup> the Bodies therein, I would have un- <sup>Time they</sup> derstood only of those Places where <sup>were form-</sup> the upper Strata, after the Subsidence <sup>ed, have</sup> of the Matter, and Consolidation of <sup>suffered</sup> the Earth, were not removed, and <sup>some Chan-</sup> born away. For I shall elsewhere <sup>ges ;</sup> shew, by many remarkable Instances, <sup>i. the upper</sup> that they were in several Places so <sup>ones by the</sup> removed, and born away, by the <sup>Return of</sup> Force of the Waters returning from <sup>the Waters</sup> off the Earth, at the Conclusion of <sup>after the</sup> the Deluge. The Matter so forced away was thrown else where, and there laid without any certain Method, or Order. And truly this seems to be the State of that Tract of Land about *Modena*, \* where Things lye as the Current of the Water, so returning, disposed them. In like Manner great Quantity of Gravel, Land; and other Matter lyes promiscuously, in some Places, at the Surface of the Earth, nay even to very great Depths, as well in *England*, as in all other Countries.

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\* See P. 35. *Supra*.

Countrys. But for the Strata themselves from which that Matter was then taken away, and so by that Means were uncovered, and now appear bare, and on the very Surface, which before lay under all that Matter, these Strata, I say, commonly present to View Things laid perplexedly and confusedly together, and that for the Reasons above assigned.

2. *the lower Strata, by the Removal of Metallic and Mineral Matter.*

Besides which, from the unequal Subsidence of the dissolved Matter, there must of Necessity be an Inequality also of the Strata ; the Strata themselves, since the Time they were first formed, and compacted, have apparently not remain'd in the same State, but undergone considerable Changes. To say nothing of the other Matter of them, I will only recite here what I have set forth in my *Nat. Hist. of the Earth*. Part IV. Consect. II. *There have and do still happen Transitions and Removes of the Metallic and Mineral Matter, from one Part of the same Stratum to another : and from the lower Strata to those which lye above them. From which Transitions of that Matter,*  
and

and Changes of it's Places, the Gravity also of the Strata themselves must necessarily have been changed too. For that heavier Matter, being extracted and removed, leaves its own Strata lighter: and adds to the other, into which it has shifted, the Gravity taken from the former. So that from the Gravity of the Strata as they now are, a certain and exact Estimate of their original Gravity, cannot always and every where be made; especially in Countrys which most abound in Metalls. For, in others, the Strata retain their primitive and original State, if not entire, yet much less changed.

This, as in other Parts of our own *Yet in many* Country, *Britain*, may be observed *Places Fos-* in those Parts particularly of the Coun-<sup>*sils are*</sup> ties of *Glocester*, *Oxford*, and *Nor-*<sup>*found dis-*</sup> *thampton*, where Metalls and Mine-<sup>*pos'd, with*</sup> rals less abound: where the Strata<sup>*a wonder-*</sup> of Stone, and every other Matter, are<sup>*full Exact-*</sup> found disposed according to their re-<sup>*ness, accord-*</sup> spective Gravity, so that they seem to<sup>*ing to the*</sup> have retained their primitive Consti-<sup>*Laws of*</sup> tution to this very Day. Some Ex-<sup>*Gravity.*</sup> amples of this are now lately set forth in the learned Mr. *Morton's Nat.* <sup>*Examples*</sup> *Hist. of Northamptonshire*, a Work <sup>*of this.*</sup> of

of many Years Labour, no way inferior to any of the Kind, and which will give abundant Proof, to all who are Judges of these Studies, of the Author's unwearied Diligence and uncommon Knowledge in Natural Things. It is also farther to be observed, that those Counties, being very remote from the Sea, did not suffer so much Damage by the Return of the Waters at the End of the Deluge, and in many Places fewer of their upper Strata were born away. There are indeed many other Things which might be offered here relating to the Subsidence of the terrestrial Matter, and the Formation, and Disposition, of the Strata, which, had I not already exceeded the intended Bounds of this Treatise, I might produce here. But I shall quit this Subject after I have only put the learned *Camerarius* in Mind of one or two very remarkable Instances of lighter extraneous Bodyes, found among lighter Terrestrial Matter, and of heavier lodged among heavier ; which indeed seems to be of great Moment towards putting an End to this Controversy, and  
which

which I have formerly mention'd in my *Nat. Hist. of the Earth. Prælim. Dissert. versus fin.* In several Countyes of *England*, e. gr. *Kent, Surrey, Essex, Hartfordshire, Berks,* and *Oxon*, there occur almost every where many and vast Strata of Chalk. To these, which are sufficient of themselves, I could add other Places, not only in our Island, but in foreign Countryes also, where Chalk much abounds, in all which great Numbers of Shells, and other marine Bodies, very different indeed from one another, both of the Turbinated Kinds, as also of Bivalves, and Echini, are found; yet all these are ever of the lighter Kinds of Shells, and such as come nearest the Specifick Gravity of Chalk. But in Strata of Stone, a Matter much heavier than Chalk, only the heavier Shells are found, and that too in not less Numbers or Variety. If any one seriously considers this, which could neither fall out by Chance, nor any other Means than what I have assign'd, I can hardly think it possible, but he may of himself from hence resolve all his Doubts as to this Matter. Another Argument,

ment, for this, may be taken from the Crustaceous Kinds of Marine Animals. It could not be otherwise, but that Crabs, Lobsters, and other Animals of the Crustaceous Kind, must be cast out of the Sea, with those of the Testaceous. But, tho' the former are ordinarily the bigger, and, were they now extant, would be more easily found, yet I have almost every where met with Thousands of the Testaceous, without having been hitherto able to find, with the utmost Diligence, above five or six Remains of the Crustaceous, or to procure them from any other Part of the Earth. Nor indeed does this seem strange to me; nay I should rather wonder if it happened otherwise. For those Crustaceous Kinds, being lighter than Chalk, and almost every other Sort of terrestrial Matter, and so subsiding last of all, must lye upon the Surface of the Earth, exposed to the perpetual Injuries, of the Weather, Rain, and other Casualties, till being totally decayed, and rotten, they left behind no Signs of their ever having been there. Nor indeed is this any Thing other than what I wrote before,

in

in my *Nat. Hist. Earth, Prælim. Dissert. in fine*, and *Part 2. Consect.* 3. which Passages and some others, if the learned *Camerarius* had more carefully attended to, I cannot see that he would have had any Grounds to have raised a Controversy on this Subject.

8. In Opposition to my Opinion of the Origin of the Strata, the learned *Camerarius* supposes Stone to grow; of which if he can give any Proof from the Thing it self, he shall no longer find me tenacious of my Opinion, or defending my Doctrine, but I will immediately give up both to the Truth which he shall so demonstrate. Therefore he should exert himself, to find some Argument in Confirmation of his Opinion. Let him turn over his Common-place-book to see if he has any Examples of this Growth, which he speaks of, observed by himself, or any other. Let him search all his own Country, *Germany*, if he thinks he can find any Proof of this. But if he is disappointed in all these, let him make Enquiry of the same in any other Part of the Earth. Yes truly he has a most certain Proof from the

E Things

8. *Of the Growth, and consolidating of Stone.*

Things themselves, every where to be found, both at Home, and Abroad, and obvious to any one. For when I assert that *there is no Instance of Strata of Stone growing gradually more and more hard,---so as, by Degrees, finally to attain a complete solidity*, Dr. Camerarius \* *thinks that Examples occur very frequently, not only in Germany, but in other Places, of Stone of a softer Nature while in its Quarry, and which must therefore be wrought as soon as drawn out, because otherwise it would be wonderfully hardened by lying some Time abroad, exposed to the Weather. Examples of this Matter are indeed very frequent; but does he fancy this will prove, that Stone, in its Strata under Ground, grows gradually more and more hard, and by little and little attains a complete Solidity?* He had surely something else in his Mind when he wrote this. For if Stone, drawn out of its Quarry, and exposed to the Air a long Time, does actually become hard, can he think it thence follows

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\* P. 315.

follows that they do the same while they lye in their native Seats down in the Quarrys, expos'd to no such external Causes to harden them? This indeed I could not have in the least expected, nor have believed to have been so easily received by so great a Man, and one so acute at censuring the Writings of others. Did I ever deny that Stone, when drawn out of the Strata, becomes harder? Who was ever ignorant of this? I had actually made mention of the same Thing before \*, not as a Matter first discovered by my self, but to give the Reasons of that Hardening, which perhaps the Generality of Readers had not observed, and which also seems to have been the Case of this learned Gentleman when he wrote against me. For in my *Nat. Hist. of the Earth, Part 3d, and 4th*, treating of the great Plenty of Water in the Earth, and the Power it has to insinuate it self, I said scarce any Stone, nor indeed any Marble, is so close, that the Water does not at least

*Stone, in the Earth, saturated by Moisture there and soft, being at length expos'd to the Air, and dried, becomes harder.*

E 2 so

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\* *Nat. Hist. Earth. Part 3. Sect. 1. Consect. 8.*

so far penetrate, and pervade it, as to insinuate it self into its Pores, and even moisten it throughout. So that all Kinds of Stone, while in the Strata, must of Necessity be less solid, and hard, than after they have been long digged out, and dryed by the Air, and Sun.

*The Argument, concerning the Vegetation of Stone, taken, from Dr. Tournefort's Observations, considered.*

But this Argument, fetched, as he fancies, from the very Nature of Things, he endeavours to confirm by the Testimony of the learned, and deservedly famous Dr. *Tournefort*. Out of his Observations Dr. *Cameraarius* produces what follows, *In the Cave which is called Antiparos, Dr. Tournefort saw a new Sort of a Garden, with Variety of Plants, of Marble \* still growing, ranging into Beds, and Species, and which, from all the Circumstances of their Formation, could not but have grown after the Manner of Vegetables.* p. 315, 316. What shall I answer to this Remark of an Eye Witness? I readily acknowledge him to be a most skillful Botanist, as he has applied

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\* Of Stone, Pierre. *M. Tournefort's Mem. de l'Acad. des Sciences.* 1702. p. 221.

plied himself to those Studies, much to his own Honour and the publick Advantage; but he has acted somewhat unadvisedly, and extended too far the Bounds of those Studies, when, in an Account of Vegetables, their Nature, and Properties \*, he adopted Stones into the same Family. Among the many Calamities of the long and tedious War, may be justly reckoned the Hinderance to all mutual Commerce of Literature, when but few French Books, as well as other Commodities, could be brought over to us, or few of ours sent over to them, and those only privately. Whence it is no Wonder if my Book was not carried thither, or at least never came to the Hands of the learned Dr. *Tournefort*, which I readily believe. For had he seen that Book, he had found what he treats of, accounted for by me. For he might have there learned, that it was not the *Stone* it self that was in a Way of Growth in the Garden, but *Spar* affixing to the Stone, in that most beautiful Order.

E 3

\* That

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\* *Mem. de l'Acad.* 1708. p. 151.

That the Thing really was so appears from Dr. *Tournefort's* own *Description*\* of it. And he himself might have immediately discovered this, at first Sight, had he been more used to make Observations under Ground. For there *white* Spars are commonly found cast and fixed upon the Strata of *grey* and other coloured Stone; as appears in almost every Cavity, and Fissure, where Water pervades, and sparry Matter, or that of which Spar consists, abound. And I not only have shewn, that Spars *grow* exactly after this Manner, but have set forth in the 4th Part of that Book, the Reason of their Formation, and the Order of their Growth. When therefore the celebrated *Camerarius* thus confounds Bodies, in their Nature and Original very different from one another, and takes the Growth of Spars in the Fissures of the Strata,

for

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\* Une espece de Broderie, haute d'environ deux, ou trois Lignes.---La Matiere en est *blanchatre*, quoique la Pierre d'ou elle sort soit *grisatre*: & je regard comme une espece de Calus. M. *Tournefort*, Memoires de l'Acad. des Sciences. 1702. p. 221.

for the Growth of Stones and Marble which constitute the Body of the Strata, he is so far from producing any Thing, as he imagines he does †, against *my System, and the Account I give of the Origin of all Stones*, that he represents my Doctrine very ill, if not invidiously, and discovers his own Unacquaintedness with these Subjects. If by Chance his happy Genius, and great Elocution, should draw some to be of his Opinion, yet he will not gain many of the more intelligent Readers, at least by the Strength of these Arguments.

9. *What shall I say*, says Dr. Ca- 9. *Of the*  
*merarius, of the Growth of Metals,* *Growth of*  
*of their particular Way of ripening,* *Metals.*  
*their Regeneration, and Generation*  
*anew in Glebes long exhausted, and*  
*likewise of the Increase of pure and*  
*solid Metall \*?* What, learned Sir,  
 you would now, or hereafter, say of  
 these Things, I know not, nor am  
 able to guess. But this I will say,  
 when you shall demonstrate any other  
 Opinion, *of the Generation and*  
E 4                      Growth

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† P. 316. \* P. 323.

*Growth of Metals*, contrary to mine on the same Argument, I will forthwith embrace it. But, in the mean while, I would ask of you, where I have ever said, *that Water can dissolve all Metals*, contrary to all Chymical Experiments †? For unless my Memory and Eyes very much deceive me, I have said no more on the Subject than that the Water takes up the Particles of Metall, which lay before loose, and separate, in the Interstices, and Pores, of the Strata of Stone, and thence carries them into the perpendicular Fissures of the Strata \*.

10. Of the  
Origin of  
Crystall,  
and of  
Gemms.

10. With the like Candour it is that Dr. *Camerarius* ‡ ascribes to my Doctrine, *so numerous a Crystallization, and Formation of so many Gemms*, in the Waters, at the Time of the Deluge. Whereas, tho' I well knew that some Crystallizations did then happen, yet, as they were but few, I passed them over in Silence. Nor indeed did I then so much as mention any one Crystallized Body,  
except

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† P. 327.    \* *Nat. Hist. Earth.* Part IV.  
‡ P. 326.

except the *Selenites*, and *Echinated Crystalline Ball*. But, on the contrary, I declared, as expressly as I could, that the far greatest Part of *Crystallizations*, and figured *Gemms*, has been produced since the Deluge, by Means of Water, in the Fissures of the Strata. *Nat. Hist. Earth.*

Part IV. Consect. 6, 7, 8.

11. Another invention of the same Ingenious Gentleman is *that Menstruum of Water, for Sulphurs, Oils, and Bitumen*, which, of his Liberty Dr. *Camerarius* is pleas'd to ascribe to me. p. 328.

12. But where did I ever say, *the Waters are press'd out of the Abyss by the Weight of the incumbent Strata, and so, contrary to the Laws of their own Gravity, rise up to their Springs* \*? I actually assign a Cause, of this Ascent, very different from that, but agreeable to Nature and right Reason. *Nat. Hist. of the Earth.* Part III.

13. The

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\* Page 318.

13 *What  
Supply the  
Springs re-  
ceive from  
Rains.*

13. The learned *Camerarius*, as discerning and quick-sighted as he is, *does* \* *not see how the Rains can be wholly excluded* from mixing with the Water of Springs, and Rivers. Nor really do I *see* why he wrote this. For tho' I have denied, that they owe their Rise wholly to Rains, yet I have no where excluded these. On the contrary I have, in exprefs Words, declared that the Water of Rains is wont to fall into and mix with that of Springs, and Rivers. *Nat. Hist. of the Earth.* Part 3. Sect. 1. Confect. 4.

14. *Of  
Earth-  
quakes.*

14. Moreover, when he insinuates †, that I deny that there ever were *TOWNS swallowed up by Earthquakes, MOUNTAINS broken, Rocks sunk, and new LAKES formed*, he does not seem to have read what I wrote of these, *Nat. Hist. of the Earth.* Part III. S. 1. Confect. 12. viz. *that the Earthquake is sometimes so extremely violent, as to undermine and ruin the Foundations of the Strata, so that the whole Tract*

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\* P. 320. † P. 303, 339.

*Traët sinks down to rights into the Abyss underneath,---the Water thereof immediately rising up and forming a LAKE in the Place where the said Traët before was. Several considerable Traëts of Land, and some with Cities, and TOWNS standing upon them, as also whole MOUNTAINS, many of them vastly large and of a very great Height, have been thus totally swallowed up. Nor was there the least Reason for him to imagine, from what I have any where written, that all Earth-quakes would be universal, if the Waters of the Abyss were so varied, and gave the Earth such Concussions \*. For I have shewed, that it might, and commonly does, happen, that by the Effort which causes these Concussions, some one Traët of Land only is affected, yet should that Effort extend it self further, and act with greater Force, there might be, and actually have been, some Shocks, which at least a great many Parts of the Earth, if not the whole Globe, have felt †.*

15. Nor

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\* P. 322. † *Sec Nat. Hist. Earth.* Part III.

15. *Of the Olive Tree from which the Dove cropped the Leaf she brought to Noah.*

*Of Trees, and other Plants, frequently digged out of the Earth.*

15. Nor does he use me with more Candour, where he says \*, I imagined the Olive Tree from which the Dove cropped the Leaf that she brought to *Noah*, to have been that Time *swimming in the Waters*. For I wrote nothing like that; but the direct contrary. See *Nat. Hist. Earth*. Part VI. In the Strata of Stone, even to the greatest Depths, are found Leaves, and other Parts, not only of the common and known Plants, but of others that are very strange, and of Kinds whereof there are none at this Day growing in those Countries where these are found so lodg'd in the Strata underneath. In the very same Manner, in most, if not in all, Parts of the Earth, Shrubs and Trees are digged up, some very large, and many of Species not now found growing in those Places. Nay there are found buried Trees, in great Numbers, and some of huge bulk, in Islands where the Soil is either so barren, or the Air so bleak and sharp, or else the Winds there so blustering and tempestuous, as to suffer none now to grow

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\* Page 344.

grow there; nor can we learn either from History, or from the Accounts of the most antient Inhabitants, that any ever did grow there. So univer-*That Ha-*  
 sal a Devastation could never have *vock, of Ve-*  
 been effected, without a Cause equally *getables,*  
 extensive: and in Truth there are so *was caused*  
 great a Variety of Circumstances and *by the Dis-*  
 Phænomena, which plainly shew the *solution of*  
 universal Deluge to have been that *the Earth,*  
 Cause, that there can I think be no- *at the De-*  
 thing offer'd in Contradiction or in *luge.*  
 Objection to the Proof they give.  
 Now tis very remarkable, that these  
 Trees are found with their Roots still  
 adhering to them. For this plainly  
 shews there was a Dissolution and  
 Failure of the Ground, where they  
 formerly stood and grew. Of this  
 there was also a long Tradition a-  
 mong the most antient Nations \*. *The Tradi-*  
*Bacchus is by the Naturalists taken* *tion of the*  
*for the Fruit of the Vine. He is* *Antients,*  
*seign'd to have been born † a second* *concerning*  
*Time* *that Disso-*  
*lution and*  
*Havock.*

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\* Φυσιολογῆτες -- ὅτι ἀπο τῆ ἀμπέλου καρπὸν Διόνυσον ὀνομαζούσιν. Diodor. Sic. L. 3. p. 195. † Διὶς δ' αὐτῆς τὴν γένεσιν ἐκ Διὸς ὧσα ἰδοῦναι, διὰ τὸ οὐκ εἶναι μὲν τῶν ἄλλων εὐπω καὶ τὸ Δευκαλίωνα κατακλυσμῷ θανατῆται καὶ τῆς γένεσος τῆς καρπῆς. καὶ αὖτ' τὴν επομβρίαν πάλιν ἀναρπύνας. Ibid. p. 196.

Some Passages of Holy Writ compar'd and explain'd.

*Time of Jupiter, because in Deucalion's Flood, (which they usually confound with Noah's) the Vine is supposed to have perished with other Trees, and afterwards to have sprung up a-new. But we have a much fuller Description both of the Earth's dissolving, and the falling of the Trees, in Seneca, where he treats of his Deluge, viz \*. their Roots being let loose, every Shrub, in particular the Vine, fell down, and every Plant lost its Support in the Ground, which was become soft and fluid.--- The Buildings fall and are overpower'd, and the Waters being admitted into the Earth quite to the very deepest and lowest parts of it, their Foundations sink and fail, and the whole Earth becomes a Bog. In vain are Things tottering assisted by props, for every Foundation is in*

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\* Nat. Quæst. Lib. 3. C. 27. Solutis quippe Radicibus, Arbusta procumbunt & vitis, atque omne virgultum non tenetur solo, quod molle fluidumque est.---Labant & madent Tecta, & inimum usque receptis Aquis Fundamenta desidunt, ac tota Humus stagnat; frustra titubantium fulcra tentantur, Omne enim Fundamentum in lubrico figitur, & lutosa Humo nihil stabile est.

*a slideing State, and nothing can stand firm in Ground so quaggy. And afterwards, speaking of the Earth †, he affirms it to have been changed, dissolv'd and reduc'd to a Fluid:--- that it was necessary its Parts shou'd perish, and be all perfectly destroy'd, that they might be all again formed a new, simple and pure. There had obtain'd an Opinion, amongst many of the Antients, that the very Earth was corrupted, and was therefore destroy'd, purified, and formed a new, at the Deluge. This is what the Philosopher here points at. Perhaps there may some Time or other be published the Passages of those ancient Writers to this Effect, more accurately collected out of their Writings, and illustrated with Remarks. But thus Seneca goes on to describe the Dissolution of the Earth ‡, It therefore begins to putrify, and the*  
*Particles*

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† Terram esse mutabilem & solvi in Humorem.---Partes ejus interire debuerint, abolireve funditus totæ, ut de integro totæ rudes innoxieque generantur. ‡ ---Incipiet ergo putrescere, dehinc laxata ire in Humorem, & assidua Tabe defluere.--- Seneca. Nat. Quest. L. 3. c. 27, 29.

*Particles of it, being loosened, to turn into a Fluid, and by a continued Solution to be absolutely liquated. To which Opinion of this Philosopher Lycophron very much agrees,*

*\* When Jove, in Tempests raging,  
storm'd the Earth,  
He dash'd the Whole into minutest  
Atoms.-----*

Where the Scholiast, *Is. Tzetzes*, expounds ἡμάθυνε by ἄμμων ἐπίβριστα κατέκλυσε: and that very properly, since all *Stone* was reduced into *Sand*, and the *hardest* Bodies in the Earth into *soft* and *tender*. So that, at the Deluge, in such State of Things,

† *The World was unmade or taken to Peices again, as ‡ Nonnus in his Dionysiaca well observes. We have also some Footsteps of the Earth being*

\* 'Οτ' ἡμάθυνε πᾶσαν ὀμβρήσας χθόνα,  
Ζηνὸς καχλάζων νασμὸς. —

† ——— Κόσμος ἀκόσμος ἐγένετο. ———

‡ Lib. 6.

being so dissolv'd, and melted as it were, in *Manilius* §.

*Th' Earth quivers now, before tho' firmly  
bound,  
And from their Feet withdraws the treache-  
rous Ground.*

*The melted Globe swims in itself: the  
Main  
Spews up a Sea, and sucks it in again.  
Nor can the great Abyss itself contain.  
All Nature thus was in Confusion hurl'd,  
And the Deep gorg'd itself with all the  
World.*

*Deucalion only then remain'd behind,  
The Solitary Heir of all Mankind.*

The Knowledge and Tradition that the Gentiles had of these Things came first from the *East*. The *Hebrews* of old had frequent Commerce with  
F first

§ Concutitur Tellus validis Compagibus  
hærens,  
Subducitque solum Pedibus; natat Orbis  
in ipso;  
Et vomit Oceanus Pontum, sitiensque re-  
forbet,  
Nec sese ipse capit. Sic quondam merse-  
rat Urbes,  
Humani Generis quum solus constitit Hæres  
Deucalion.— *Manil. Astr. Lib. 4.*—

the *Phenicians*, and *Ægyptians*, and both these with the *Gracians*. And thence was the Fountain and Origin of many of those Notions, and Customs, which afterwards obtained among the *Greeks* and *Romans*. That the Destruction of the whole Earth was threatened, before the Deluge: and that that Destruction was effected during the Deluge, we have the Authority of *Moses*, *Gen. vi. Vulg. Lat. † I will destroy them, with the Earth.* So the § *LXX Version, And behold, I will destroy them, and the Earth. Gen. ix. ‡ 11. Nor shall there hereafter be a Deluge to destroy the Earth.* So the *Hebrew*, as well as the *Samaritan*, *Chaldee*, and other Interpreters. The \* *Vulgar Latin* Translator

† Ego disperdam eos cum Terra. *Vulg. Lat. Gen. the 6th. 13.*

§ Καὶ ἰδοὺ ἐγὼ καταφθείρω αὐτούς, καὶ τὴν γῆν. *LXX.*

‡ Neque erit deinceps Diluvium ad disperdendum Terram.

\* Neque erit deinceps Diluvium dissipans omnem Terram. *Vulg. Lat. Rob. Steph. f. Par. 1546.*

flator hath it, *Nor shall there hereafter be a Flood dissolving the WHOLE EARTH.* The † LXX, and there shall be no more a Deluge to dissolve the WHOLE EARTH. *Dissipare*, the Word used here by the Vulgar Interpreter, signifies not only *disjicere* to scatter, but *liquare*, and *dissolvere*, to melt, and *dissolve*. Thus Seneca, † *the Showers wash away the Snow in the Spring; and the first Heat melts [dissipat] what remains behind.* And Cicero, § *Epicurus is against the Notion of Bodies Concreting, least it shou'd be inferr'd that, on the Contrary, there might be a Perishing and Dissolution [Dissipatio] of them.* To which the Word *καταρθείω*, used by the LXX, well answers, signifying to melt, corrupt, putrefy; from *φθείω*, or rather from *φθείς*, whence also *φθειρίασις*. So that that

F 2                      Destru-

† Καὶ ἐκ ἧς ἔσται κατακλυτμὸς ὕδατος καταρθεῖραι ΠΑΣΑΝ τὴν γῆν.

† Quippe vernis Temporibus Imbres nivem diluunt: Reliquias ejus primus Calor dissipat. *Nat. Quæst. Lib. 4. C. 2.*

§ Epicurus Corporum Concretionem fugit, ne Interitus & Dissipatio consequatur. *De Nat. Deor. Lib. 1.*

Destruction of the Earth was effected by *melting* and dissolving it, and *all Fossils*. To this the Royal Psalmist \* agrees, *He uttered his Voice, the Earth melted*. For which Reason *Philo-Judeus* thought the whole World, at the Deluge, was turned into the Nature of Water. ‡ So the *Pseudo-Sibyll*,

*Water is all, and all Things are destroy'd by Water.* § And the

Author of the Book *De Dea Syria*, \* *All Things are become Water*.

Among the sacred Writers also there's great Agreement, as in other Matters, so likewise in this. *Habak. iii. 6.* † *He stood and measured the Earth; he beheld, and drove asunder the Nations; and the everlasting Mountains were broken to Pieces, [or scattered,*

\* Dedit in Voce sua; liquefacta est Terra. *Psalms* xlii. 6.

‡ Νομίσαι τὰ μέρη τῆ παντὸς εἰς μίαν φύσιν  
‡ ὕδατος ἀνασχοιχέμενα. De Abrahamo. p. 355.

§ ὕδωρ ἔσαι ἅπαντα, καὶ ὕδασι πάντα ἀπολείται.

\* Πάντα ὕδωρ ἐγένοντο.

† Stetit & mensus est Terram: Vidit & exfilire fecit Gentes: & contriti sunt Montes Perpetuitatis, incurvaverunt se Colles Saeculi. *Habak. 3. 6.*

scattered, *dissipati*, *Hebr.*] *the perpetual Hills did bow.* So the LXX, † *The everlasting Mountains were dissolved, the eternal Hills were melted.* The Chald. Paraphr, § *He discover'd himself and shook the Earth, and brought on the Flood, &c. The Mountains that were from all Antiquity are broken to Pieces, the Hills that were from the Beginning are depress'd or beaten down.* The Syr. Version, † *The Mountains are dissolved, and the Hills are brought low.* The Arabic, \* *The Mountains are dissolved, the Hills are melted.* And lower, Verse x. ‡ *The Mountains trembled: the Overflowing of the Waters*

F 3

† Διαθρύβη τὰ ὄρη εἰς, ἐλάκησαν βουνὶ αἰώνιος.  
LXX.

§ Revelatus est & commovit Terram, & adduxit Diluvium, &c. Fracti sunt Montes qui erant ab antiquo, depressi Colles qui existerant a Sæculo. *Chald. Paraphr.*

† Dissipati sunt Montes, & humilati Colles.  
*Syr. Verf.*

\* Comminuti sunt Montes: —liquati sunt Colles. *Arab.*

‡ Tremuerunt Montes: Inundatio Aquarum transiit: dedit Abyſſus Sonitum suum.  
*Verf. x.*

*ters passed by: the Abyss uttered his Voice. In this Place the Destruction of the Mountains is particularly treated of: and hence it is plain the primitive Mountains were [contriti] beaten to Pieces, or, as the Commentators rightly explain it, liquati, comminuti, dissipati, melted, broken to Pieces, dissolved. Nor is this any other than what I was lead, by Observations of Nature, to set forth, Nat. Hist. Earth, Part 2. Thus likewise Amos ix. 5. 6. The Lord God of Hosts is he that toucheth the Land, [or the Earth,] and it shall MELT, and all that dwell therein shall mourn. It shall rise up WHOLEY like a FLOOD, and shall be drowned as by the Flood of Ægypt. The Vulg. Lat. ‡ The Lord God of Hosts is he who touches the Earth, and it shall MELT, and all who dwell therein shall mourn: and ALL the Earth shall rise up like a River, and*

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‡ Dominus Deus Exercituum qui tangit Terram, & tabescet: & lugebunt Omnes habitantes in ea: & ascendet sicut Rivus omnis, & defluet sicut Fluvius Ægypti.

*and flow about like the Flood of Ægypt.* This Passage does not treat of any new or future Deluge, as some imagine. For both the Prophet and the People were assured by an Oracle, \* of all others the most infallible, that no such shou'd ever happen more, to the End of the World. The dreadful Devastation made by that antient Deluge was in every Man's Mouth, and impress'd on every Mind. Nor was there any more easy and sure Method to strike the People with Horror and Dismay than by mention of that Deluge, and Repetition of the surprizing Phænomena of it. For this Reason the *Hebrew* Writers the oftener made Use of this Method. As did *Amos* also; and indeed *the dissolution of the whole Earth* could not be more fully or happily express'd by any Series of Words, than those which this Prophet has made choice of, nor could the promiscuous *Raising* of the Earth so dissolved, and the *sustaining* it in the *Water* be more clearly set forth; of which also, traceing closely the

F 4

Foot-

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\* *Gen. ix. 8. & seq.*

Footsteps of Nature, and supported by Observations made in the Bowels of the Earth, I treated *Nat. Hist. Earth.* Part 2d. Consect. 2d. Of this likewise the Compiler of the *Sibylline Oracles*,

*The Mountains and the Earth shall swim,---* †

As above,

----- *He shall break up  
The Earth's Recesses, and dissolve her Walls.---* †

Thus *Isaiah* xxiv. 18, 19, *The Windows from on High are open, and the Foundations of the Earth do shake, the Earth is utterly broken down, the EARTH is clean DISSOLVED, the Earth is moved exceedingly. The Chaldee has \* it, The Earth is dissolved by a Dissolution: the LXX, with Confusion shall the Earth be confounded. So Job* xii. 15. † *God sendeth out the Waters, and they*

† Πλεύσει γῆ, πλεύσασιν ὄρη. Orac. Sibyll. Gallæi. Lib. I. p. 133.

† Κευθμῶνάς τε γαίης σκεδάσει, καὶ τείχεα λύσει. Ibid p. 122.

\* Dissolutione dissolvetur Terra. Chald.

‡ LXX. Ταραχῇ ταραχθήσεται ἡ γῆ.

§ Deus emittit Aquas, & subvertunt Terram. *Job.* 12. 15.

*they overturn the Earth.* The lxx, †\* *He sent forth the Waters, which, overturning (the Earth,) destroy'd it.* And this is that [ *Απώλεια* ] *Destruction* of the Earth of which St. Peter speaks, § *By the Word of God the Heavens were of old, and the Earth standing out of the Water, and in the Water. Whereby the World that then was, being overflowed with Water, perished. But the Heavens, and the Earth, which now are, &c.* In which Account indeed he gives a short, but true Representation of the Constitution of the Terraqueous Globe, or of the Orb of Earth, with the Abyfs shut up in it, and the Ocean without. How exactly agreeable to Nature itself this is drawn, may be seen in my *Nat. Hist. of the Earth*, Part 3d. The Apostle asserts that primitive Earth to have been *destroy'd*: as, after him, the Author of the Book  
*de*

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†\* LXX. ὕδωρ — ἐπαφῇ ἀπώλεσεν αὐτήν (γῆν) κατασρέψας.

§ Οὐρανοὶ ἦσαν ἐκπαλαι καὶ γῆ, καὶ ὕδατος καὶ δι' ὕδατος συνεσῴσα πρὸ τοῦ Θεοῦ λόγῳ. δι' ὧν ὁ τότε κόσμος ὕδατι καὶ ἀκλυσθὲς ἀπώλετο. Οἱ δὲ νῦν οὐρανοὶ, καὶ ἡ γῆ, &c.

*de Egregoris*, \* which is wrongly ascribed to *Enoch*, *The Whole Earth is destroyed*. To conclude, he makes a plain and manifest Difference betwixt the Antediluvian Earth, and that which we now inhabit, betwixt *The World that then was, and the Heavens and the Earth which now are.* ‡ As *Philo* likewise fitly and wisely observes, *a new Earth* § sprang from the Primitive, which was dissolved at the Deluge: and *St. Chrysostom* †\* asserts, that there was an *Abolishing* or *Destruction*, as of Men and Animals, so *likewise of the Earth itself*, and that the same was afterwards \*§ *restored and framed anew*. Many of the Modern *Jews* likewise, as well as the Antient, maintain directly the same Doctrine. For tho' they did  
not

\* Ap. Grab. in Spicileg. Patrum. p. 351.

ἡ γῆ πολλὰ ΠΑΣΑ.

‡ ὁ τότε κόσμος, — οἱ ὃν οὐρανοὶ, καὶ ἡ γῆ.  
§ Νέας [τῆ γῆς] ἀναφανείσης. De Vita Mo-  
sis, Lib. 2. p. 663.

†\* Καὶ αὐτῆς τῆ γῆς ἀφάνισμον. Homil. 22.  
in Gen. v. Op. Tom. 2. p. 262.

\*§ Ἀναγοιχείωσιν. Ibid. p. 266.

not know how far the Dissolution went, yet they affirm that there really was a Dissolution. *The Hebrews say three Palms of the Surface of the Earth were dissolved, and turned into Water; and therefore it is said, Gen. vi, 13, And I will destroy them, with the Earth.* † To this is agreeable the Hebrews calling the Deluge *מבול*, which according to R. S. is derived from *בלל*, to confound; because all earthly Things were confounded by it. But Kimhi derives it from the Root *נבל*, \* which signifies to flow about, and rot to pieces. The Rabbins also assert, ‡ that all the Trees on the Earth were rooted up by the Waters of the Deluge. The Trees therefore being thus deserted, by the Earth's being dissolved, and they being all fallen down, § many of the bigger Sorts of them, having large and spreading Heads, lay, upon the Departure of the Flood, with their Branches stretched up to a great Height

*The Condition and Site of the Trees, particularly of the Olive, after the Return of the Waters of the Deluge.*

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† Lyran. in Gen. vi. 13.

\* Munster in Gen. vi. 17.

‡ Id. in Gen. vii. 18. and viii.

§ *Nat. Hist. Earth, Part. 6.*

Height in the Water, and, after that was withdrawn, in the Air. And thus probably lay the Olive Tree, § from which the *Dove* pluck'd the Leaf, she brought to *Noah*, Gen. viii. 11. But Dr. *Camerarius* earnestly contends, † *that even the Olive Leaf alone, which the Dove returning brought to Noah, sufficiently proves that the Earth remained intire, and the Tree continued fixed by its Roots to the Earth, under the Waters of the Deluge.* The Reason he gives is this, for, says he, \* *if the Tree had been floating about, a Leaf of it had been no Proof, to Noah, that the Earth was become dry.* Nor truly did *Noah* infer any such Thing from thence; he only conjectured that the Waters were so far ‡ *abated* and diminished, that the Trees began to appear. And that he might with as much Reason have concluded from thence, if the Tree lay along upon the

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§ *Nat. Hist. Earth.* Ibid.

† *Dissert. Epist.* p. 344.

\* Ibid.

‡ Gen. viii. 8. 11.

the Ground, as if it had stood upright. † *For the Olive Tree is sometimes very tall, and large, (as Dr. Stapel rightly observes,) with Boughs spreading forth to a great Extent.* And therefore those Boughs, which happened to extend upwards, while the Tree lay along, might appear as far above the Water, as any others could if the Tree had been then standing. So that the *Dove* might pluck a Leaf from one of these, as long before the Waters were abated, as it could, if the Tree had then stood upright, and rooted in the Ground.

*Moses* himself gives no express Account of the Condition and Site of the Olive Tree. But if his \* *De-* *The Mosaic Account of this Affair consider'd.*  
*struction* of the Earth implies its *Dissolution*, which indeed I think I have proved, § it is certain that Tree cou'd not be standing at that Time. As for *Noah*, it is evident, from the History itself, that he knew nothing of what was done, at that Time, out of the Ark. If he knew not that  
the

† J. Raij. *Histor. Plant.* Vol. 2. p. 1541.

\* Gen. vi. 13. ix. 11.

§ *Nat. Hist. Earth.* Part 2d.

the Waters were abated, 'till he sent out a *Dove* to discover that, much less cou'd he know that the Earth was dissolved, and all the Trees driven about as Chance directed. So that had *Noah* believed the Olive Tree to have been *standing*, which yet does not appear, that had really made Nothing to the present Purpose; nor could that Mistake of his have been brought as an Argument against me.

*The Olive Trees were rooted up about Mount Ararat at the Deluge; for none are found growing in that Country now.* I cannot leave this Argument without observing one Thing, which I think very material. Tho' we learn from *Olearius, Tavernier, Chardin*, and others, that Olive Trees are found growing in great Numbers in *Persia*, and other Places far remote, yet *none* now grow in all that Country where the Ark rested; \* whence it happens, that *many have very much wondered, whence the Dove took the Leaf she brought to Noah.* But that Difficulty will

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\* Il n'y a point d'Oliviers; ce qui fait, que plusieurs s'étonnent ou la Colombe peut prendre la Rameau qu'elle apporte à Noë. Les Voyages & Observ. du Sieur de la Boulaye 4to. p. 85.

will immediately vanish, and the Truth of the Thing appear without any Room for Doubt, if the Affair be rightly considered and represented. For probably these Trees might abound in that Country before the Deluge; and yet be all then rooted up, and buried deep in the Earth, or laid along upon its Surface. Nor should any one wonder if the Olives of *Ararat* had the same Fate with our † *English* Pines, which we so commonly find buried in our Fens and Marshes, when yet none are found now growing here, unless planted, and raised by Art. And indeed, in this Case, 'tis plain, the Olive Tree, from which the *Dove* cropped the Leaf, could not be in a standing Posture, but lying along. And very likely 'twas owing more to Chance than Choice, that the *Dove* took an Olive Leaf; for any other had served as well to shew the Waters were abated. But probably the Olives there lay in greatest Numbers, and that Leaf offered itself first.

And

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† See Dissert. 3. Sect. 3. Infra.

And if it imported but little what Leaf was brought, there was no Necessity, that the *Dove* should take her Flight into *Persia*, or some other remote Country, to find out this. Besides a Leaf brought from any other Region had not shewed the Thing looked for. For the Earth was not plain, but some Parts of it lay higher than others: and therefore a Leaf brought from a very remote Country had indeed signified that the Waters, if any still remain'd in those Parts, were little, and of no considerable Depth; but not at all, in the Parts where the Ark rested, and that Leaf was not gathered.

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THE



tent of his Skill and Knowledge in these Things, is.

1. *He joins  
and con-  
founds  
Things  
that are in  
their Na-  
ture very  
different.*

1. For when he offers, as he does, Natural Things confusedly, and presents in the same Order and Class such as have not the least Relation to one another, but are most different in their Nature, they who do not better know this Gentleman, might be apt to suspect this to have been the Effect of his Ignorance in this Affair, or done with Design, and some indirect Purpose to keep others in the Dark, as to the Merits of the Controversy begun by him. If any desire Proofs hereof, such may be found, as in many other Places, particularly in Page 298, and 299; where he promiscuously brings in, together, Shells, Bodyes formed in Shells, Stones, and native Fossils, none of which have any Agreement in Nature with the other, or are Things of the same Class.

*He gives  
unfit Names  
to Things.*

To this confused Way of rangeing Things, may be added, those uncouth Names, he makes use of, devised, and imposed by fancyful Men; such as *Ombria*, *Brontia*, *Gryphites*, *Hysterolithos*, *Bucardites*, *Balanoides*,

*noïdes*, and others; which Names communicate no real Ideas in themselves, nor in the least assist towards understanding the Constitution, or Properties of the Things to which they are applied. 'Tis certainly the Business of a Naturalist, by fit and descriptive Names, to clear up Things not well known; but by no Means to render them more obscure, by a Cloud of Names, which neither any Way explain the Nature of the Things in Question, or any others, nor indeed convey any right Notion of them to the Reader:

*Not with dark Smoak to smother  
up what's bright,  
But out of Smoak to send clear  
Rays of Light\*.*

2. But to spend no more Time about his Way of methodizing, and of naming Things, let us come to the Things themselves. Dr. Camerarius asks † *with what Colour can it be supposed, that Shells, sinking down together, and forming the same Stratum by Reason of their being of the* <sup>Dr. Ca-  
merarius's  
*Inconsisten-  
cy as to the  
Shells keep-  
ing them-  
selves whole,  
while moved  
and tossed  
by the  
same Waves, a-  
mongst*</sup>

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\* Non Fumum ex Fulgore, sed ex Fumo Stones.  
dare Lucem. Horat.

† P. 309, 310. Conf. 296, 297.

*same specifick Gravity, should not be then broke to pieces ; for that must of Necessity have happened from their being dashed each against other, as they subsided, in the confused Com-motions of the Waves. The Stones, meerly by their Weight, must have broke the Shells which were there amongst them, and beat them all to Bitts. He thinks it utterly impos-sible for them not to have been so broke : and therefore makes this Ob-jection more than once. But it surely is a sufficient Answer to this so often repeated Objection, that so vast a Number of Shells are still found en-tire, and not at all broken, even in the firmest and hardest Stone. Nor does he himself deny that this is actual-ly so. Shall I assert, says he, that no real Marine Bodyes are found there? \* Far be it from me after so many Observations of that learned Gentleman, and, he might truly have added, of every other Man, in all Parts of the Earth. He presently after this makes Answer to a Question  
of*

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\* Page 346.

of his own, *By what Means came these Shells into the Earth, the Strata, and those Parts\*?* Many of them, says he, if not all, were cast there by the *Deluge*, through the *Fissures* of the *Earth*, while it was gaping, and lodged in the *Strata* while they were yet soft and fluid. Now what Part am I to act here, when he is at such Variance with Himself, should I interpose as a Reconciler? He grants that the Shells are really found in the *Strata*: and points out the very Means of their Conveyance thither; *viz.* they were lodged there by the *Deluge*, while the *Strata* were yet soft and fluid. And yet he averrs he is entirely ignorant, with what Appearance of Truth it can be supposed *that the Shells sinking together, and forming the same Stratum, should not be then broke to Pieces, and destroyed, by the Dashing and Agitation of the Stones.* Let us therefore proceed to something else.

G 3

3. What

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\* Page 346.

3. Of the  
Glossope-  
træ, their  
Nature,  
and Origin.

3. What they commonly call the *Glossopetræ*, of which I my self have several digged up here in *England*, as well as others brought from the Island of *Malta*, and various other Countryes, are apparently Teeth of Sharks, and such like Fishes. Nor, indeed, according to any Judgment to be formed from the Words of Dr. *Cammerarius* himself, can I make the least Doubt, but that those he mentions, digged up about *Montpelier*, are the Teeth of Marine Animals also, tho' he is at so great Uncertainty about them. For, what Reason does he produce for his Doubts about these †? Only because in Distillation they did not yield *Volatile Salt, Spirit, and Oil*, in the Quantity he expected; tho' they did afford an *Urinous Phlegma*, which alone might have served as a *clear Indication of a Volatile Animal Salt* ‡. But, tho' from these Tokens they did not with any Certainty appear to him to be the Teeth of Animals, yet, since even such a *Phlegma* is not to be extracted from any Mineral

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† P. 272.    ‡ P. 172.

ral Body, it is thence highly probable that these rather had their Origin from any Part of Nature than from the Earth. And indeed whoever makes Searches of this Kind, without observing the various Circumstances of the Things, and comparing them well together, will obtain little Light or Advantage from them. There is no one but knows how easily and how soon the Volatile Particles, of almost every Body, fly off of their own Accord, and are exhaled. Nor certainly can any one expect so great a Plenty, of these, from those Teeth which have lain buried above 4000 Years in the Earth, as from others of the same Kinds just taken fresh out of the Mouths of the Animals. If Dr. *Camerarius* should doubt of this, let him try, if he can, to extract a like Quantity of Salts from human Bones and Skulls which have been long buried, as from those of Bodies but newly dead.

But to that Argument Dr. *Came-*<sup>*The Opini-*</sup>  
*rarius* adds another, which is, that \*<sup>*on of Fa-*</sup>  
*the Glossopetræ do not* (as Fabius Co-<sup>*bius Co-*</sup>  
lumna,<sup>*con-*</sup>  
G 4lumna

cerning  
these Bo-  
dies, assert-  
ed, and his  
Reputation  
vindicated.

*lumna had*, he says, *falsely pretend-*  
*ed) turn into a Cinder, but into a*  
*Calx.* For those *Glossopetræ* which  
*F. Columna* had procured from *Mal-*  
*ta, did*, he tells us \*, *when put*  
*into the Fire, burn to a Cinder,*  
*[Carbo] before they went into a Calx,*  
*or Ashes*, as the Bones, Teeth, Horns,  
and other like Substances of Animals,  
are wont to do: and for that Reason  
he judged them to be of the same  
Substance, and not of the Nature of  
Stones, which do not turn first into a  
*Cinder*, but into a *Calx*. Dr. *Camera-*  
*rius* charges *F. Columna* † with  
*Falsehood* for asserting that the *Glos-*  
*sopetræ* turn into a *Cinder*. But  
how came he to any certain Know-  
ledge of that? Did he learn it from  
Tryals made on the *Glossopetræ* of  
*Montpelier*, and finding that they  
immediately turned into a *Calx*? If  
he take upon him to affirm this, I will  
give him Credit. Yet there are some  
other Things which he ought also to  
have

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\* F. Col. *De Glossop. Dissert. sub fin. Lib.*  
*de Purpura.* p. 31. † Fab. Col. *ibid.*

have been well assured of, and carefully to have considered, before he had called in Question, not the Judgment, but the Fidelity, of *F. Columna*. Not to mention others, he ought certainly to have known, if the *Glossopetræ* are found lodged in very different Places, and in different Sorts of Matter, whether they would not, in Tract of Time, be so affected by that Diversity of Places, and of Matter, as to turn, when committed to the Fire, some of them into a *Cinder*, and others presently into a *Calx*. He ought further to have observed, that the same Body, put into the same Fire, burning slower, or remaining there a shorter Time, will turn into a *Cinder*: but, if in a stronger Fire, or continued longer, into a *Calx*. Which is obvious of it self: and indeed *Columna* has given some Hints of it. But to say something here of the Character of *F. Columna*, he was a Person of a noble Family, and Himself a Man of extraordinary Ingenuity. He was also eminent for his great Learning: and for his Pursuit of the Study of Natural Things with more Diligence, Accuracy, and Success,

cess, than almost any one of those Times; as the Writings he has left behind him, by which he has deserved greatly of Posterity, abundantly testify. His Contemporaries looked upon him as a very diligent Searcher after Truth, and as a Man of the greatest Fidelity; which Reputation he still retains, now at the Distance of almost a Century from the Time of his Death. When the celebrated Dr. *Camerarius* therefore reproaches a Person of that illustrious Character, with Falsehood, as to an Experiment that he made, and yet really produces no Proof of such a Charge, he surely acts in a Manner unbecoming an ingenuous and learned Man, and such as can be very little agreeable to those who are really such. Nor has he treated this Gentleman only, who is of those early Times, with so much Liberty, in his *Dissertations*, but several more modern Writers likewise, and some who are yet living, and of the greatest Repute for Learning and Judgment: and that, at least as appears to me, and perhaps to all others of candid Disposition, not because what they have set forth is any Ways  
repug-

repugnant to Truth, but meerly because their Opinions do not square with his own.

4. What I have written concerning the Dissolution of the Earth, and of all Fossils, the learned *Camerarius* is very averse to admit. *Tho' it be allowed*, says he, *that real Marine Bodies are found in the Bowels of the Earth,---yet it does not follow from thence, that the Earth was dissolved at the Deluge* \*. Such a Dissolution he pronounces † *supposed*, without any Proof: and treats it as supported by no Shew of Truth. But before he had inveighed, with so much Vehemence, against this Proposition, he ought to have shewn, how, without such a Dissolution, the Shells of *Conchæ*, *Cochleæ*, *Echini*, and other Marine Animals, came to be exactly filled with Stone, Flint, Spar, and other Mineral and Metallic Matter, as they are at this Day found to be: how the Surfaces of Stones, Flints, Spars, and other Mineral and Metallic Bodies, every where digged up,

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\* P. 287. † P. 326.

up, came to have the very Forms, and even the finest Lineaments of these Shells, impressed upon them: and, finally, how it happened that so great a Plenty, and Variety, of Marine Bodies, were immerfed in the Strata of Stone, and almost every other Kind of Terrestrial Matter, and so intimately and thorowly incorporated with that Stone, and Matter, as, together, to constitute one common Mass; and this in Places the most remote from any Sea, and to the greatest Depths in the Earth that Men ever dig; he ought, I say, to have explained by what Means all these Things could be effected, without a Dissolution of the Earth, and of Fossils, before he had, upon his single Opinion, and Authority, condemned what I had advanced, wherein is given an Account how all this was brought about, and by a Method the most plain, easy, simple, and such as is exactly conformable to the Procedure of Nature it self.

Dr. *Came-*

Dr. *Camerarius* neither believes himself, nor thinks any Body else easily will, that softer Matter remained entire, while the most solid was dissolved, at the Deluge. For *who-<sup>Terrestrial, and Mine-  
ral, but not  
Animal, or  
Vegetable  
Bodies, dis-  
solved at  
the Deluge.</sup>* ever, says he, \* *shall compare the most solid Marble, and hardest Stone, with the tender Shells of Fish, will not be easily perswaded that these could remain entire, and not be dissolved by that Agent that reduced all Marble into Powder.* But this perhaps will appear less wonderfull to any one who has observed, which may be easily done in many Places, or been informed from the Observations of others, that the exterior Parts of Marble, and of the hardest Stone, lying a long while exposed to the Weather, or the sharp and salt Vapours of the Sea, are, by Degrees, worn, eaten, and consumed away, while the Shells, contained in them, not only continue to exist, but often remain a long Time after entire, or but little hurt by the same Weather, Salts, and Vapour. Which Fact had  
this

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\* P. 307.

this Gentleman, so very knowing in all other Respects, been rightly appriz'd of, and duely considered it, I'm apt to think he would not have insisted on this Argument. But, as to the true Cause of the Dissolution, made at the Deluge, it cannot be sufficiently shewn within the Compass of either that *Essay*, or of such a Tract as this. My Design in both is to shew, that the Earth it self, and all Fossils whatever were really dissolved; but that Shells, and other Animal, and Vegetable Bodyes were not; and indeed that the Thing actually was so, I think I have, from Observations, sufficiently made out, and proved. But to add somewhat further to what I have, above, brought in Answer to this Objection of the learned *Camerarius*, he ought also to consider that the Texture, and Constitution of the former of those Bodyes, is very different from that of the latter. For the Parts of Animals, and of Vegetables, are fibrous, and their Fiores connected, complicated, and variously interwoven each with other; but the Parts of Fossils, even the hardest, are only contiguous, and held together

ther by no common Tye. Whoever rightly reflects upon this Difference of these Bodyes, he will not think it so difficult perhaps to find the Reason why all the Fossils were immediately dissolved, while the others were not in the least hurt, but remained entire and in their Original Condition. If therefore the celebrated *Camerarius* should, at any Time, resume this Argument, which, in real Friendship, I would advise him not to do, let him dream no more of *a Menstruum sufficient to dissolve the whole Globe of Earth*. There are others indeed who, like him, have before done the same, without being able to touch any Point of what I have delivered; but only betrayed their own Ignorance, both of the Powers of Nature, and the Operations of a *Menstruum*. He objects also to my Doctrine, that *the Dissolution of the Globe would have been the Destruction of the first Creation* \*. This I readily grant him, it being no other than what Nature shews, and *Moses* teaches: and what indeed I my self have

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\* P. 344.

have endeavoured to make out, *viz.* that the Deluge was brought on, and the Dissolution of the Globe effected, by the Divine Appointment, in Order to *destroy the first Creation.* *Nat. Hist. of the Earth.* Part II. 'Twas therefore his proper Business to have examined, and try'd to have refuted what I had there set forth, and not thus to have taken and dressed it up in Form of an Objection against what I had deliver'd.

5. Of the  
Abyss, or  
that great  
subterranean  
Reser-  
vatory of  
Water.

5. The learned *Camerarius* confesses † that he very much desires to see Arguments to prove the Abyss, or Central Sphere of Water. But I think it needless to produce any new Arguments here, nor those in particular with which, if God gives me Life and Leisure, I am ready to render the Truth of this Matter more evident; since what I have proposed in my Book has made it sufficiently clear, and indeed put it out of Doubt. Nor can I make any Question but those Arguments would have given Satisfaction to this learned Writer,  
had

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† P. 318.

had he sufficiently attended to them. Which since he seems not to have done, I will here propose two of them anew; one of which is to shew the Quantity of Water that overflowed the Earth at the Time of the Deluge, and the other to shew the Place where the Water is now reserved.

Of the first of these we may form *Of the*  
a Judgment from a Survey of the *Quantity*  
Strata, and generally of whatever else *of this Wa-*  
is found in the Earth, being, as 'tis *ter.*  
easy to observe in very many Places,  
all repositied in a regular Order and  
Method, and indeed according to the  
respective Gravity of each. † For  
to effect this, 'tis most evident and  
certain that an immense Quantity of  
Water must needs be required. Such  
a Disposition of Things, as we now  
almost every where see, could, by  
no Means, have been brought about  
unless the Fluid, in which all was  
transacted, had been very thin: un-  
less the dissolved terrestrial Particles  
had been considerably distant each  
from other: and lastly, unless their  
Descent was very great, or the Place,  
H from

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† See page 41, Et Seqq. *supra*.

*Of the Moments of heavy Bodies descending in a Fluid.*

from which they first began to subside, very remote from that where they all at length settled in their Order. \* For Nothing of that Regularity in the Settlement of the terrestrial Matter could have happened, if those Waters had not vastly exceeded that Matter in Quantity. But, if we suppose this, the Explication of this Phænomenon will be easy. For, as the Velocity of Bodies subsiding in Water is different, according to the different Gravity of those Bodies, it was necessary that, of those which were of the same Magnitude and Figure, and began to subside together, and from the same Height, the heavier should sink fastest, and so be placed at the Bottom of all. Yet, tho' those Bodies differed so much from each other in Gravity, it could not otherwise happen but that the Heavier, in their Descent, sometimes falling and hitting upon the lighter, should be, by that Means, much impeded, and retarded in their Motion; while the Lighter were

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\* For this was absolutely necessary, that the heavier Bodies, from so great a Space of Descent, might have Time to get before the lighter, and leave them at some Distance behind. For, without that, they had not been placed deeper and below them.

were accelerated and pushed on by such Impulses of the Heavier.\* But, after the Heavier had reached their Journey's End, or the Bottom of the Water, the Lighter might proceed to subside in their Order, unless, when it so happened, that, by so great a Quantity of terrestrial Matter, subsiding between the Heavier and the Lighter, as to fill the intermediate Space betwixt them, both settled at the same Time. In Case no such Impediment intervened, two such Bodies would be repositied at no great Distance beneath one another; † tho' if the Lighter of them was so impeded, it would be layd at a greater Distance above the Heavier. But if there happened to be two Bodies, not very different in Gravity, it was necessary that the Heavier of those should sink thro' a great Space of Fluid, before it could leave the other, which was

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but

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\* From these their Collisions it was unavoidable but there should be some Confusion and Disorder in the Sediment they together constituted.

† So that, Heavier and Lighter Bodies may some Times be found near one another, and lodged in the very same Stratum, tho' their Subsidence was exactly according to the Laws of Gravity, and tho' those Bodies, so different in Gravity, sunk through a very great Space of the Fluid.

but a little Lighter, at any considerable Distance behind it. And yet, of those Bodyes, that are almost equal in Gravity, we frequently see the Heavier lodged in the Strata far beneath the Lighter; whence 'tis most evident that these two Sorts of Bodyes must needs have sunk through an immense Mass of Fluid. If we consider all these Things, with due Attention, 'twill thence abundantly appear that so great a Work could not have been transacted, without the whole Stores of the Abyfs, or such an Orb of Waters as I represented. \* Which of itself sufficiently shews that such an Abyfs really existed.

*Of the two-fold Increase of the Waters assigned by Moses. Occasionally, of the Mosaic Origin of the Earth. Also of the Chaos of the Antients.*

After that the *Deluge* had prevailed for the first forty Days, and the Waters were increased greatly, so that all the high Hills under the whole Heaven were covered; and the Waters were fifteen Cubits above the Mountains, † which Inundation was brought on, that Men, and all terrestrial Animals, might perish in it,

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\* *Nat. Hist. Earth. Part 3. Sect. 1. Consect 1.* † *Gen. vii. 17, 19, 20.*

it, the Waters *prevailed* anew, and, very likely, for a much greater Number of Days. *An hundred and fifty Days* \* are mentioned in the Whole. In the first forty of these, the Waters were brought out of the Abyfs, which, together with the Rains that fell, covered the Mountains. But in the following Days the primitive Earth was dissolved: the Waters which then remained in the Abyfs were poured out: the dissolved Matter of the Earth was taken up into and sustained in the Waters, and afterwards precipitated again downwards, disposed, and formed into a new terrestrial Globe. But, hitherto, the Condition of this new Globe, was the same of the old one when first created; § *it was without Form*, ‡ that is, not yet reduced to such *Form* as might render it habitable, and fitted for such Ends as it was made to answer. The Surface of it was *plain*, even, and *spherical*; *not broken*, so as to have any Hills, Valleys, Caverns, or Fissures; † all which were

H 3                      absolutely

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\* Gen. vii. 24.    § Gen. i. 1.    ‡ Gen. i. 2.  
 † *Nat. Hist. Earth.* Part 2.    Consect. 5.

absolutely necessary for the Production, and Sustainance of Animals, Vegetables, and Minerals. It was also, like the primitive, *void*, \* while all the Waters, that were to be suddenly sent back into the Abyfs, which was then *void*, or empty, and to be remanded again into the Bowels of the Earth, remained yet, without, upon the Surface of it: and till this Sphere of Earth, which was like a Crust, or Shell, was broken, † Hills raised, Valleys sunk, and Fissures made, whereby the Waters were to return down again into the Abyfs. Afterwards the Waters, withdrawing at the Divine Command, *were gathered together unto one Place*; ‡ *viz.* into the Abyfs, within the Earth, § and, which is as a Kind of Appendage to it, the *Sea*, † as before in the original Earth; *and the dry Land appeared.* [†] And the Earth at length attained a *Form* compleat, fitted for Habitation, and to answer the Uses of it. Of this whole Affair I may  
some

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\* Gen. i. 2. † Nat. Hist. Earth. Part 2. Confect 6. 8. ‡ Gen. i. 9. § Nat. Hist. Earth, Part 2 and 3. † Gen. i. 10. [†] Gen. i. 9.

some Time treat more at large ; but, till then, what I have already wrote sufficiently shews the Sense of the sacred Writer, where he says, *the Earth was without Form, and void.* \* From these Words of *Moses* the Heathens devised their *Chaos* ; and are herein followed by most Modern Philosophers. But neither the *Jewish*, nor *Christian* theological Writers, seem to have rightly understood this Passage ; they being not thoroughly informed of the true Fabrick and Constitution of the terrestrial Globe : nor did they sufficiently attend to the *Mosaic* Description of it, couched indeed in few, but the most proper and express Words, that could ever possibly have been pitched upon. To conclude, in some Time of the latter Part of this Space of 150 Days, the Waters were abated, and withdrawn from off the Earth, so far, that their Surface was sunk to about the same Degree, to which it had arose in the first forty Days of the Flood, and the Ark touched upon

H 4                      Mount

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\* *Gen.* i. 2.

Mount *Ararat*; \* where, at length, it rested.

*Of the Place where those Waters are, at this Day, stored up. And something further touching Earthquakes.*

The other Argument, whereby I proved that such a Mass of Water did really exist, and shewed the Place where it is now reserved, is drawn from Consideration of some Phænomena of Earthquakes. For that these are caused by the Force of Waters within the Earth I think I have proved by Arguments sufficiently firm and convincing. Now since there are, on Record, Earthquakes, and indeed not a few, by which the Globe, for many hundred Miles together, has been shaken, at the very same Moment of Time, it thence follows, that the Waters, which caused those Concussions, were not only equal in Extent to that Space of the Globe which was so shook, but one fluid Body continued, and not divided into Parts, or distinguished into Regions, so that particular Portions thereof should be confined each to its proper Cavern. *Nay, there want*

*not*

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\* Gen. viii. 4.

not Instances of such an universal Concussion of the whole Globe, as must needs imply an Agitation of the whole Abyss. † For an Effect of so vast an Extent could never have proceeded but from a Cause equally extensive; such as might affect the whole Earth at once; which cannot be done without such an Orb of Water, as I have described. We have had Accounts from Writers of the most unquestioned Fidelity, and even from Eye-Witnesses, that there have been Earthquakes, in our own Times, so that it can hardly be thought that the learned *Camerarius* could be ignorant of them, wherein the Motion, given to the Earth at the several Shocks, perfectly resembled that of the Waves of the Sea raised by a strong Wind. Whoever shall rightly attend to this Phænomenon in particular, he must, not only acknowledge that the Earth contains in it an Abyss of Water, and is moved by the same: but must also readily agree with me that this  
terre-

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† *Nat. Hist. Earth.* Part 3. Sect. 1. Con-  
sect 12. in fine,

terrestrial Part of the Globe is Nothing but a thin Shell, which includes in it, closely on every Side, an immense Mass of Waters, and whenever those Waters happen to be put into any extraordinary Motion, the Earth is by them moved and agitated just in the same Manner as the inclosed Waters are moved and agitated. As of the primitive Earth, in which no One can doubt but that there was an Abyfs, so the Use and Design of this second Earth likewise was to serve for an Habitation to Men, to send forth Vegetables, and all those other Things, which might serve for the Nourishment, for the Defense and Convenience of Men, and Animals created for their Use. To answer which Purpose there was no Need of a thicker Crust of Earth; one more thin, such as the present is, would best answer the End proposed, the Water making up the far greatest Part of the Globe. Nay, a thicker one would have perpetually obstructed the Passage of Vapours, † and intercepted all that Communication,

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† Confer. p. 109, 110, *infra*.

munication, betwixt the Abyfs and the Atmosphere, which is so necessary for the Preservation of human Life, and of all Things which grow out of the Earth. \*

To this Description and Account of the terraqueous Globe, taken purely from Observation and Views of Nature, that of the illustrious Arabian Philosophor *Job*, as well as that of *Moses*, *David*, and others of the *Hebrew* Nation, is exactly conformable. Of which two Accounts

*The exact Agreement that there is, betwixt Nature, and Holy-Writ, concerning the Abyfs, and the Structure of the terraqueous Globe.*

*He who well knows either, will know both. †*

Both of them set forth an Abyfs, a Mass of Waters very vast; on which this our Globe, or Crust of Earth, is founded, expanded, and lyes built all round it. ‡ Both also shew that this Abyfs communicates with the Ocean, supplies, and gives Rise as well to Vapours, Rains, Springs, and Rivers, as to the various Phænomena, and Affections, of

\* Confer. p. 109, 110. infra.

† Qui utramvis recte norit, ambas noverit. *Terent.*

‡ *Nat. Hist. Earth.* Part 2, 3.

of the terrestrial Globe, and of our Atmosphere. § Thus likewise we find, both from Nature, and from Holy Writ, that this immense Abyfs of Water, at the Time of the Deluge, was brought from out its Place, and poured forth upon the Surface of the Earth: and that afterwards the terrestrial Crust itself, being first liquated and dissolved, was taken up into and sustained in that mighty Mass of Water: and that finally all that Matter, so dissolved, afterwards subsiding, was composed and formed anew into a terrestrial Globe, after the Model of that which was made in the *Beginning*, at the Creation, and built and fixed upon a *Void*, a Place capable of such an Abyfs, and fited finally to receive it: and that this terrestrial Sphere being at length burst, and broken up, the Waters returning back again down into that hitherto *void* Place, left the Surface *dry Land*, commodious, fit, and rightly disposed for the sending forth of all  
natural

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§ Ibid. Part 3, 4. Conf. p. 109, 110. infra.

natural Productions : ‡ and that all these Things were not brought about mechanically, by any Tendency of their own, or the meer Powers of Nature, but were now tranſacted, the whole Fabrick formed, and finiſhed anew, by the ſame Hand, and Divine Counſel, by which 'twas created in the *Beginning*. \* But I hope to have hereafter Occaſion to treat of theſe, and ſome other like Things, more at large.

Nor was this ſo mighty a Maſs of Water created, and laid up there meere-ly for the Sake of ſwelling out the Globe, and bringing it to its juſt and neceſſary Dimensions ; no, there are other Uſes of this huge ſubterraneous Work-houſe of Nature, that are not only exceeding proper, but abſolutely neceſſary for the Production and Conſervation of all natural Things whatever. For in this Abyſs of Water are ſeated the Origins, and Initia, or firſt Beginings of all that

*The Riſe of  
Meteors,  
and of all-  
moſt all the  
Changes,  
Phænomena, and Af-  
fections of  
the Atmo-  
ſphere, from  
the great  
Abyſs.*

is

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‡ *Nat. Hiſt. Earth.* Part 2, 3.

\* *Ibid.*

is afterwards transacted, and brought to Perfection, in the Earth itself among Mines and Minerals, as also on the Surface, of it, and in this Region of the Atmosphere in which Vegetables grow, and whereon Man, and Animals live and have Being. That the same Seasons, in different Years, are so various, in some more cold, or wet, less fertile, or healthfull : in other Years, quite contrary, more hot, dry, fruitfull, or more healthy ; all these Variations, I say, are owing to the Operations of Nature, in that great subterraneous Promptuary of Water. As to Earthquakes, Vulcanos, Damps in Mines, the Origin of Springs, Rivers, and Rains, of Thunder, and Lightning, I say, I have offered my Sentiments, with the Observations whereon they are grounded, elsewhere ; † intending, as I shall see Men's Minds settled, and turning to these Studyess, if God shall give me Leisure, to methodise what I have wrote, and to treat of the same Subjects more at large, together

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† *Nat. Hist. Earth.* Part 3, 4.

ther with some others of like Sort, *e. gr.* Meteors, Frost, Winds, Tempests, and Storms. Mean Time I shall only intimate here, in general, that from numerous Observations made by Persons of great Sense, and Fidelity, in every Part of the World, I am satisfyed that all these take their *Rise* from the *Abyſs*: and that, whenever they are disposed to issue out thence, they constantly send forth before them some sure *Signs* of their Approach, very plain and discernible to all who attend and observe them, in the Sea, in great Lakes, in Springs, in deep Wells, in the Bowells of the Earth, in Caverns, and in Mines, before ever they begin to act, or shew themselves on the Surface of the Earth, and in the Atmosphere.

I shall now make only this one single Remark further, when Exhalations, Vapours, and watry Particles, ascend in any extraordinary Quantity, from out the Abyſs, into the Atmosphere, till they are there collected and so condensed as to form Drops and Rain, these Exhalations thus taking a Course and Motion, and exerting a Force, in a Direction quite  
contrary

*The Cause  
of the Phœ-  
nomena of  
the Baro-  
meter.*

contrary to that of the gravitating Atmosphere, they thereby so much diminish and break the Force and Pressure of the Atmosphere as sensibly to lessen and render it more languid; which is the true Cause of the Descent of the Quick-silver in the Barometer, as often as those Circumstances happen. Nor, since 'tis now agreed on all Hands, that the Ascent and sustaining of the Mercury in the Barometer, is owing to the Pressure of the gravitating Atmosphere, can it be wondered that, when the Pressure is, by the Causes here recounted, so much lessened, that the Mercury should thereupon descend. This is the real and constant Reason of that Phænomenon, as I have shewn in some Letters which I wrote several Years ago, and which perhaps may some Time appear in Publick.

*Instances of certain Parts of the Earth's Surface being undermined by Earth-quakes, and falling down into the Abyss beneath.*

What this learned Gentleman urges, p. 318, *that the Abyss would afford but a weak Support to the terrestrial Strata*, makes Nothing against me; I readily allow the same Thing. For altho' the Earth, being a Sphere or Spheroid, and consequently every Segment of it an Arch, which of all Kinds of Structure is the

the strongest, yet, since it is but thin, and subjected to the Force of such an Agent as is within itself, it may happen to give Way to that Force. Which is no more than I have delivered in very plain Words.---*The Earthquake is sometimes so extremely violent, that it plainly forces the superincumbent Strata: breaks them all throughout, and thereby perfectly undermines and ruins the Foundations of them. So that, these sailing, the whole Tract, as soon as ever the Shock is over, sinks down to Rights into the Abyss underneath, and is swallowed up by it; the Water thereof immediately rising up, and forming a Lake in the Place where the said Tract before was.* †

6. To what Purpose the learned *Camerarius* wrote that which I am next going to take Notice of, I cannot see, nor indeed avoid being much surprized at it; since it really makes Nothing against what I have offered, neither is it indeed agreeable to Truth.

I

His

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† *Nat. Hist. Earth.* Part 3. Sect. 1. Con-  
sect. 12.

His Words are these, *If the Water of the Abyss had pervaded the Strata continually from the Time of the Deluge, it must long ago have exhausted and drawn all the Salts out of them. Nor had there any now remained, to have given that Taste which we find in Mineral Waters.\** But have I ever proposed any Thing that could be refuted by this Argument, supposing it was true in itself? I have advanced Nothing any where relating to the Quantity of Salt which the Water, passing through the Strata, brings thence along with it, nor to the Time wherein that Salt shall be totally exhausted. And therefore this is a Subject that I leave to be treated of by any who shall hereafter write of these Things. Yet I cannot but take this Opportunity to observe one Thing, which is, that that Water, whether it rises from the Abyss, or, if Dr. *Camerarius* will have it so, from any other Place, has actually pervaded the Strata ever since the Deluge, and brought thence forth along with

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\* Differtat. p. 328.

with it Salts, and still continues to bring them, without having yet, or being perhaps ever likely to drain them all forth. For they so easily liquefy, mix with the Water, and flow out along with it, and so great Abundance is there of them in the Strata, that there is no Reason to fear that these Salts, some of which are of the greatest Use to human Life, and the Conveniences of it, should ever wholly fail. Whoever shall observe how great Quantity, especially of Vitriolick or acid Sals, there's almost every where found in the Earth, will not have the least Occasion to apprehend there should not be a sufficient Supply of those Salts, to saturate the Mineral Springs with all, thorough all future Ages.

7. When Dr. *Camerarius* says, *It is evident from History, that so many high Mountains have been formed, and cast up by Earthquakes,* \* he speaks of what I confess myself intirely ignorant, having never yet seen those *Historyes*; so that I should

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esteem

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\* P. 303.

esteem it as a very great Favour, if he could help me to the Sight of some of them. Certainly, when I had openly asserted, *that there is not any authentic Instance, in all History, of so much as one single Mountain that was heaved up by an Earthquake,* \* he ought not to have asserted the Contrary without producing at least *one Example* in Favour and Support of it. Till therefore he shews he can do that, while he is turning over his Authors, and producing their Testimonies, I may be allowed to give my Judgment from Nature itself, and the State of Things in the Earth. It is needless to say any Thing here of the *Monte di Cinere*, in the Kingdom of *Naples*, the Matter of which I have shewed was not raised by an Earthquake, but thrown up by a Vulcano that then broke out there. † From the Times that Men first begun to write for the Service of Posterity, there have not been wanting Persons to committ to writing, whatever

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\* *Nat. Hist. Earth.* Part 2. Sub fin.

† *Ibid.*

ever Works either of Art or Nature, they thought worthy the Notice of after Ages. Now, as they recorded many other Things, not alwayes because they appeared to be of great Moment, but as they happened rarely, it is scarcely credible that they should omitt those more remarkable Events, which could not happen without even the Astonishment of all who saw them; such as *the raising up so many vast Mountains* must certainly have been. The Rise of that *Heap of Cinders* is taken Notice of by most of the Writers of that Time, and by some since; but not a Man, at least that I know of, has ever committed to Memory the raising so much as any one single Mountain. Till therefore the learned *Camerarius*, or some other, shall shew, from the Historians he talks of, not yet known to the learned World, that the *Alps*, the *Apennines*, Mount *Taurus*, *Atlas*, or others, or at least some one Mountain, was formed and took its Rise from an Earthquake, or any other like Force in Nature, I must still, relying on the Arguments I have alledged in Defence of my own Opinion, believe  
I 3 those

those, and the other Mountains, were formed all together, at the Time that I have elsewhere assigned. † For if, of the numberless Mountains that there are in most Countryes and Parts of the Globe, some of them very high, and of great Extent, he cannot prove the Rise of any one in his Way, 'twill surely be what they call a good negative Argument of the Truth of my Opinion in this Affair. For if the Mountains, now so frequent and obvious, every where, were cast up, one after another, in different Ages, the Inhabitants of every Country had been always in Danger, or at least under perpetual Fear; nor would all the Historyes of those Times have been wholly silent in a Thing so surprizing, so well worth Notice and being recorded,

8. *The Origin of Islands. Particularly of that Heap of*

8. I have asserted that, as *Mountains*, so all *Islands* had their *Origin from the Deluge*. ‡ But the celebrated Dr. *Camerarius* fancyes that Nature has supplied him with a late Instance,

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† *Nat. Hist. Earth*, Part 2.

‡ P. 347, 348.

Instance abundantly capable of over-<sup>Rubble</sup>throwing my Doctrine. Says he, <sup>raised in the</sup>  
*That new Island, in the Bay of San-* <sup>Bay of San-</sup>  
*torini, is enough of itself most terribly* <sup>torini, called</sup>  
*to shake the whole Woodwardian Sy-* <sup>by some an</sup>  
*stem.* \* That is, if this formidable  
 Engine be managed by the most gal-  
 lant and brave *Camerarius*. Let us  
 therefore go on, to try his Strength.  
*It is, says he, an Island formed by*  
*a slow Emerision out of the Waters,*  
*put together by many Earthquakes,*  
*Noises, and Flames, becoming at last*  
*so large, and so much raised above*  
*the Waters, and as it was joyned to*  
*Rocks that rose together with it,*  
*and to those of the Neighbourhood.* †  
 A huge and formidable Engine in-  
 deed! but so far is it from shakeing,  
 or giving any such Blow to the *Wood-*  
*wardian System*, that it cannot, by  
 any Means, be so much as levelled  
 at it. But to leave off talking, in  
 Figures, in the Way of the most elo-  
 quent *Camerarius*; that Island, when  
 I wrote my *Natural History of the*  
*Earth*, was not in Being. So that

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certainly

\* p. 347, 348.

† Ibid.

certainly it could not be expected that I should predict its Rise to follow in some short Time. I then made mention of a Heap of Rubble like this, I mean the *Monte di Cinere*; only that was not cast up in the Sea. For is not this Island just like that Mountain, the Matter, and the Cause of the Rise of which I then fully explained? Are they not both of the same Kind, both thrown forth by the same Force of *Vulcanos*? For thus I had represented the Matter, and the Cause of that Hill, *That it is Nothing but a Heap of Stones, Cinders, and Ashes, spued out of the Bowels of the Earth, by the Eruption of a Vulcano, in the Year 1538*; † nor indeed did I ever go about to deny, that there were already, or might be hereafter, others thrown up in the same Manner. Neither did I deny that *Vulcanos* may as well rage with such Violence under the Sea, as in like Manner to break up its Bottom, and throw forth so great a Quantity of Matter as to pile

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† *Nat. Hist. Earth. Part 2. sub. fin.*

pile such a Heap of Rubble up to and above the Surface of it ; for it is reasonable to believe that, wherever the Eruption of a Vulcano happens, whether at Sea or Land, its Force and Effects will be the same. If therefore the ingenious Dr. *Camerarius* is pleased to give the Name of *Mountains* to Heaps of Rubble, cast out of the Earth by such Means, he may, with all my Heart, call those which are cast up at Sea, *Islands*. But whatever he shall fancy, or take upon him to write, of these Things, I intreat him not to imagine that I was speaking of such Kinds of confused Heaps of meer Rubble, when I referred the Origin of all Mountains and Islands to the Time of the Deluge. For all those which I call'd Mountains and Islands have the Matter, of which they consist, laid in a Method, certain, regular, and like that of the rest of the Globe : and are every where distinguished into Strata, lying commonly in an orderly Manner each upon other. Whereas both the *Monte di Cinere*, and that Moles of *Santorini*, are Nothing but rude indigested Piles of Fragments

ments of Stones, of Dross, Cinders, and Rubbish. The Vulcano therefore that flung out that Bomb at *Santorini*, is so far from *shaking my* WHOLE SYSTEM, that it cannot so much as touch this one single Proposition, relating to the Origin of Islands; which, I hope, will be readily admitted by every impartial Reader, especially a Person of so great Sagacity, so well versed in the Study of Nature, and so candid a Judge of the Works and Performances of Writers of all Kinds as your Lordship † is universally allowed to be. But if this Part of my *System* remains still firm and unhurt by *so many Earthquakes, so many Bellowings, and Flames*, which Way will this expert Ingeneer ply his Machine to shake and overturn all the rest of the Parts of it? Let him try, if he thinks fit, whether he can, by Arguments taken from this Phænomenon, refute what I have wrote of Vulcanos, of Earthquakes, of the  
Season

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† The E. of *Pembroke*, to whom this Treatise is addressed.

Season of the Year in which I have proved the Deluge happened, as also what I have wrote of Amber, and of the Situation of Paradise, with very many other Things. For what I have proposed concerning every one of these, he cannot deny to be *Parts* of that my *System*. If that be what he here contends for, I can indeed willingly grant him, that the Arguments, he has drawn from this Phænomenon, as much affect any of my other Propositions, as they do this of the Origin of Islands; which they are so far from having weakened, that they rather have established and confirmed it. In a Word that whole *System* appears, not only to myself, but to not a few others of the most accurate Searchers into Nature, so well and effectually supported by Observations, that I cannot think any one that shall apply himself to these Searches, with like Accuracy and Diligence, will ever go about to dispute any Part of it. For all others, they may go on, and please themselves with their own Opinions.

When

*The Conclusion of this second Part. With what Disposition of mind I set myself to read Dr. Camerarius his Dissertations.*

When first Dr. *Camerarius* his *Dissertationes Physico-Medicæ* came to my Hands, I thought my self particularly concerned to take Notice of so much of them as related to my Writings; to the End that, if I found any Part of my Doctrine confirmed by the Judgment, and improved by the Wit, of so great a Man, I might have less Apprehension from the Censure of others: or that, if he had candidly and friendly corrected any Mistakes, or pointed them out to me, I might have returned him Thanks for so obliging an Office, done me publickly, in a Manner as publick: or finally, that, if he had, as is the Custom, not only with vulgar Readers, but with the Generality of Animadverters, seemed, which yet I could not have suspected in such a Man, to have read my Writings, purely to pick an Occasion of Censure, and, relying on the Reputation he had acquired, and his own sprightly Genius, to condemn those Things, which, only because they were new, he would not assent to, and yet could not prove them erroneous, I might take the Occasion to vindicate and ascertain the Truth

Truth of them. When, contrary *With what*  
to my Expectation, I found I had fal- *View, and*  
len into the Hands of such an Ani- *in what*  
madverter, tho' I had many other *Method, I*  
Things which might advantagiously *have an-*  
have been offered here, I determined *swered*  
to produce only such Arguments as *them.*  
might defend what was called in Que-  
stion, and at the same Time discover  
the hasty Judgment of this Critick  
upon me. Some Things indeed there  
are brought by him into Dispute which  
I have designedly passed over, but  
they are only such as any Person, I  
thought, besides himself, the least con-  
versant in these Studyess, would not  
raise any Difficulty about. Yet seve-  
ral of those I have touched upon are  
such as shew how negligently the Au-  
thor hath run over my Book, how lit-  
tle conversant he has been in these  
Studyess, and how far he was from  
being sufficiently apprized of the State  
of the Earth, and the Nature of Fos-  
sils, the Subject he took upon him to  
treat of. Had I sought after Instan-  
ces of this Sort, I should have found  
Plenty enough of them every where.  
But what I have done in that Way is  
only sparingly, and that too by Con-  
straint.

straint. I have only defended myself, and the *Truth* of what I had laid down relating to the Earth, and all Fossils, especially Metalls; which I conceived would neither be unacceptable to Gentlemen who are curious, nor disadvantageous to the Estates of those who had Mines in them.

*Hinderances  
to the Search  
of Truth.*

Now that I am speaking of Truth, I can not well forbear making some few Remarks on this Subject. While some allow themselves so much Liberty, and others are so easy to be mislead, and carryed away, by the Conceits of every One that sets up for an Author, the Condition of Truth must needs be very precarious, and unsettled. And, as with the *Romans* of old, so is it at this Day with us,

*We have imposed on us the Shew  
instead of the Substance of Truth\*.*  
It is frequently so wrapt up in Clouds, and the thickest Darkness, that but few there are who know the Way to approach, or distinguish it; that 'tis  
not

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\* Decipimur Specie Recti.----

*Hor. de Arte Poet.*

not to be wondered at that there's in Science so little that is established and certain. If, as there are many, there be those who make Observations of Things with the greatest Diligence, and afterwards publish them with not less Care and Fidelity, there will straitways start forth others, who, buoyed up wholly with Opinion of their own Genius, tho' really destitute of all true Knowledge of Things, will yet be ever making such a Shew of their Skill, such Confusion in the Things they take upon them to treat of, in a Word, rendering them so dark, so perplexed and intricate, that but few Readers are capable of determining whom to follow, or what to depend on. By which Means it is that such Undertakers are so far from contributing to the publick Good, as they would be thought, that they defeat, and do it the greatest Injury imaginable. Some also there are who make it their Business to decry the Works of others, without attempting to furnish forth any Thing that is rational, or solid, of their own. These are the *Goths* and *Vandals* of the Common Wealth of Learning; they

they acting the very same Part in this, that those barbarous Nations did in the polite *Roman* World.

*The Scope  
and Design  
of all my  
Writings.*

As to my self, the Truth has been ever what I solely aimed at: and in the composing that whole Work, which this Gentleman thus sets himself against, I steered my Course intirely by Observation of Fact, and of the Things I treat of; nor have I therein proposed any Thing, that does not rightly square therewith. Nay,

*The Doc-  
trines, by  
me former-  
ly delivered,  
confirmed by  
all Observa-  
tions made  
since.*

ever since the first publishing that Book, I have taken Care to have the same Observations carryed on, with still as much Diligence as ever, all the World over; from which I have received not only many, but those the most substantial Confirmations of what I then offered: nor, in all this Time, has the whole Field of Nature presented so much as one single Thing that has given me the least Cause to doubt of the Truth of any one of those my Propositions. 'Twas the Remark of a great Man among the Antients, that *Time strikes out all Notions that are not well grounded, but establishes those which are*

*are founded upon Nature* \*. No Man living can be more conscious to himself of his Weakness than I truly am of mine; but that Work will remain a lasting Testimony and Monument how far that Defect has been supplied by my Diligence, and Faithfulness. There have not been wanting those, who have not spared any Pains, nor left any Stone unturned, to find out Mistakes, if they could, or any Thing that might deserve Censure, in my Writings; but all, hitherto, wholly in Vain. Every Attempt, to invalidate, has confirmed them the more. For still the more candid, and those who were better Judges, have openly professed, they never found any Thing alledged that, when brought to the Test, could deserve the Name of an Objection. Nevertheless, if any One hereafter, upon diligent Perusal, and well weighing what I have wrote, shall seriously think he has discovered in it any Errors, he can do Nothing more

*The vain Attempts, of my Adversaries, in Opposition to them.*

*My Readiness to listen to the Admonitions of those who are candid:*

K agree-

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\* *Opinionum Commenta delet Dies: Naturæ Judicia confirmat. Cic. de Nat. Deor. L. 2.*

*and to disregard those who cavil, and are contentious.*

agreeable to me, than in a friendly and candid Manner to admonish me of them. For by this Means he will really pursue the same End with me, who never proposed any Thing other than to make all my Studyes and Endeavours subservient to the Cause of Truth. But if any one, out of a Spirit of Contradiction, or Hopes of raising a Reputation, by publishing some Notions and Opinions contrary to mine, without any Regard to Truth, shall hereafter take upon him to attack my Writings, he will have no Reason to expect that I should neglect my own Affairs, and my other Studyes, to give him an Answer; tho' I am now doing it to a Gentleman, in whom I should rejoyce to have found a Candour, and Skill in the Subject he has undertaken to treat of, equal to the Politeness, Wit, and Happiness of Invention that he every where shews himself so much Master of.

THE



ought to have set up his own Opinions, against mine ; but those only such as are attended with Evidence very convincing, and much more probable than mine. 'This indeed is no more than what he well knew, and confessed, his Readers might justly expect from him. For thus he addresses \* the *Noble Person*, to whom he writes. *Methinks I hear You object, that I have indeed rendered those Things dubious, but have not pointed out any other Way whereby those figured Fossils could be produced, and brought into the Bowels of the Earth. But that is not my Business: nor am I duely qualified for it. Expect not therefore, says he, any Thing more of me than only some Conjectures, and those perhaps such as carry no Shew of Truth, and are supported by no solid Reasoning.* But surely, if any Thing was, this was his *Business*: and what was apparently *expected* from him. Now really, whatever shew of Modesty this may carry in it, these Expressions compliment

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\* P. 344.

ment the great Parts of the Author to the highest Degree that well can be; since they shew he expects that bare *Conjectures* of his, nay tho' looked upon by himself as slight ones, should pass current as sufficient Answers to the strongest Arguments of others. To think that in these Words of his he gives his real Judgment of his own Performance, must surely be surprizing, and indeed hardly credible. For how can it well be thought that a Man so ingenious, and discreet, should go about to offer what carries *no shew of Truth*, in Lieu of, not what really is so in it self, but what he only surmises, he has *rendered dubious*? to offer, as his *Conjectures*, what he confesses *are supported by no solid Reasoning*? Or how could he ever believe such would pass upon his Friend, who he represents to be as eminent for his Judgment as his Quality? But, after all, let us consider these *Conjectures*: and they are such as follow,

1. *The Sea-shells, now dug up in all Parts, were not re-posed in the Earth at the Time of the first Separation of the Waters from the dry Land, nor before the Deluge.*

1. *Some shells, says Dr. Camera-rius, were perhaps lodged there, in the Earth, before the Deluge, at the first separation of the Waters from the dry Land, \* i. e. at the Creation.* Now certainly this *Conjecture* of the learned Author will never appear very probable to any One, who hath observed what Plenty, and how great Variety, of these Bodies, are found in the Earth ; especialy if he has seen the whole Skeletons of Whales, the Teeth and Bones of Sharks, and of other Fishes, as also Sea-shells exceeding all Number and measure. Among others, of that Kind which *Fab. Columna* † calls *Concha Anomia*, I my self have taken Notice of many Millions in that one County of *Glocester* ; not to mention those which I have observed in other Countryes, and those I have received Samples of from almost all Parts of the World. That such an Abundance of Shell-Fishes, of the same Kind, should have been created, all at once, at the very Beginning

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\* p. 346.

† De Purpura. C. 12.

Beginning of Things, can hardly seem credible to any thinking Man: and still less credible is it that, without any Cause, they should immediately be extirpated, and destroyed. Dr. *Camerarius*, very ingenious, as he certainly is, has not been able to find out, at least has assigned no Reason for the Destruction of them. Whereas, what Exceptions soever he may be pleased to make to it, that *Destruction of the first Creation*, \* which I supposed, † I have proved was brought on with a Design worthy of the Divine Wisdom. Besides, there are almost every where found, ‡ in the Earth, Shells, of the very same Kind, some small, others large: some young, others old: some immature, others full grown: and, in a Word, small Ones affixed to the larger, or those which are young to the Old Ones, just in the same Manner as they commonly are found at Sea, for their better Security against the

K 4

Shocks

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\* Dr. *Camer.* Dissert. p. 344.† *Nat. Hist. Earth.* Part 2.‡ *Ibid.*

Shocks and Injuries of the Tides and Storms. These certainly give plain Proof that they were not all created together ; but generated successively, and at different Times. To this may be added, that the very Order ‡ in which these Bodies are often found disposed : and those Indications, which so many Shells and Plants carry with them, of the Season of the Year in which the Deluge began, \* sufficiently prove this *Conjecture* of Dr. *Camerarius* to be without any Grounds. I shall say nothing here concerning the Bones of Quadrupeds, or about Vegetables, and in particular the great Trees which are commonly found lodged in the Strata, none of which could ever be the Production of the Waters. But, if I should, after all, ask by what Authority this learned Gentleman affirms that, when the Earth was first created, it was covered with Water, and that afterwards the Waters were *separated from the dry Land* ? He must immediately

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‡ p. 45. to 49. supra.

\* Part I. §. 4. supra,

mediatly answer, that of *Moses*, Gen. i. But then *Moses* tells him likewise that those Bodyes, which are now found lodged to the greatest Depths in the Earth, were none of them created till after this *Separation of the Waters was made*. For the Waters withdrew on the third Day of the Creation \*; but Fishes, and the other Inhabitants of the Waters, were not made till the fifth, † which was two Days after. When therefore a Person, who would seem to write with so much Caution as Dr. *Camerarius*, says, that these Bodyes were left at Land, upon the Retreat of the Waters, when they were not created, and had not so much as Being till two Days after that Retreat, he says a Thing which surpasses not only mine, but the Apprehension of every Man of common Sense. Now, tho' he cannot shew us how this could possibly be, I will not straitways pronounce *the whole Camerarian System*, ‡ of which I have seen but a small Part,

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\* Gen. i. 9, 13.

† Gen. i. 20, 23.

‡ Differt. 19. p. 348. Confer. Part 2. § 8. supra.

Part, quite overthrown, yet I cannot well forbear thinking at least this Proposition of it, to be most *terribly Shaken*.

2. *Those Shells were not originally lodged in the Fissures, but intermingled, and incorporated with the Matter of the Strata, while this was soft, loose, and in a State of Dissolution.* 2. But let us proceed to the second *Conjecture* of the famous *Camerarius*, and see if that be more substantial. *Many of these Marine Bodies*, says he, *\* were hurried by the Deluge into the Earth, through its Chasms and Fissures.* For my Part, I allow that, not only *many*, but *all of them* were brought to Land by the Deluge. *Dr. Camerarius* invented those Fissures, the better to introduce the Shells into the Bowels, and interiour Parts of the Earth, and to elude the Doctrine of the Dissolution of the Strata. But, if they were then thrown into Fissures, they would be found in Fissures now. Whereas, I never found so much as one of those Bodies any where in the Fissures, nor have I read or heard, of any Man that ever did. They are always found, either loose on the Surface of the Earth, or incorporated

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\* p. 346.

corporated with the very Substance of Stone, and even the most solid Strata. If therefore he appeals to Nature in this Affair, she certainly gives her Suffrage for me. But, if he argues that those Fissures, and Chasms, have been since filled up in Tract of Time ; neither has that any the least Appearance of Truth in it : and Nature her self Shews the direct contrary. For, was the Thing so, the Shells, and those other Bodyes, would be now found in the perpendicular and other Fissures, and not in the Strata themselves, nor in that adventitious Matter with which the Fissures are supposed to be filled. But the Fact is quite otherwise ; they are found lodged promiscuously, and without any such Distinction, indifferently in all Parts of the Earth. To which may be added, that, if there were formerly any such Fissures, and filled up since, some Traces of them at least would still appear. That, the Variety of the Matter, and of the Constitution and Hardness of it, in the same Stratum, would readily and manifestly discover ; which yet we no where find it does. Another very strong  
Argument

Argument likewise, to me, that these Marine Bodyes were not originally thrown into, and lodged in Fissures of the Earth, is, that there are such Multitudes of them, met with, even in the most midland Countryes, every where all about for many Miles together, particularly here in *England*, throughout almost the whole Countyes of *Glocester*, *Oxford*, *Northampton*, *Somerset*, and *Wilts*; in the Fields, and on the Hills. Or, where they have been lodged so deep that they cannot be now turned up by the Plough, and cast out upon the Surface of the Earth, there they are found by those that have Occasion to dig down deeper, in the Bowels of the Earth. If these, and all other Parts of the Globe, in which such Bodyes are now found, were once Fissures, and Chasms, filled with no solid Matter, those Fissures must have been surely of a prodigious and even incredible Extent. Finally, tho' these Shells, every where found, in the Strata, and never in the Fissures, sufficiently shew how little *Dr. Camerarius* was acquainted with this Affair, on which he ventured  
thus

thus to pass his Judgment, I will presume to add one Thing further which must render his Oversight still more evident. In Mining, and Opening Quarries, at the Fissures of the Strata of Stone, it is common to find shells so broke in two, and divided with the Stone, that one Part of the same shells shall remain on this side of the Fissure, and the other Part on the other side of that Fissure. Which, tho' there were no other Argument of the same Thing, plainly proves those Shells to have been lodged in the solid Strata, while they were continuous, and before those Fissures were made: and also that both those Shells, and the Strata, were broke, and divided, at the same Time, and by the same Means.

3. The third *Conjecture* of Dr. *Camerarius*, is that *these Shells were brought out of the Sea by particular Inundations* \* Now I should think that, before he had published this *Conjecture*, he should have looked for

3. *Those Shells were not brought out to Land by particular Inundations.*

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\* P. 346.

for some Support for it in History: and if he had found any Accounts of such Inundations, as they would have been new, so they would have been very acceptable to the Republick of Letters, if he had published them. Or he should at least have produced from thence some Instances of *Inundations*, which have reached quite to the midst of the greatest Continents: which have laid his own Country, *Germany*, for two or three hundred Miles under Water; for, even there, at so great a Distance from any Sea, are those Marine Bodyes found: he should have given us Examples of such *Inundations* which have conveyed Shells, peculiar to the *American*, and other the remotest Seas, into the very Midland Parts of *England*, where we, at this Day, commonly dig them up: nay such as have brought Animals, that are Natives of the Land, or Rivers, into Countreyes where it is not probable there were ever any of the same Kind before, and certainly are not now the Natural Product of those Countreyes; such as Crocodiles, the Skeletons of which  
are

are found under Ground in *Germany* ;  
Elephants in *England*, where their  
Bones and Teeth are digged up in va-  
rious Places ; and that Kind of *Ame-  
rican* Deer, we call the *Moose-Deer*,  
in *Ireland*, the Skeletons, and Horns,  
of which, of incredibly large Size,  
are often digged up there : finally,  
which have fetched up by the Roots,  
and thrown down Trees, such as  
those large Pines, and Firs, which  
are found, in so great Numbers,  
buried in almost all Parts of *Eng-  
land*, where no such, not only in  
the Memory of Man, but in the  
Records of any History, have been  
known to grow ; it is certain, *Cæ-  
sar* ‡ testifies none were here in his  
Time. Dr. *Camerarius* should like-  
wise have bethought himself of a  
Way by which these Marine Bo-  
dies, brought from Sea, might, by  
the Violence of those *Inundations*, be so  
intermixed, and incorporated with  
the very Substance of the Strata of  
Marble, and all Sorts of Stone, in  
such Manner that, when these come  
to be now broke up, the Shells should  
for

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\* Miscell. Berolin. 1710. pag. 103.

‡ Com. de Bello. Gall. L. 5.

be found lodged in all Parts of those Strata: he should have thought of a Way by which some of these Shells could have been cast down to the Depth of several Hundreds of Feet in the Earth, while others were carryed up to the Tops of the highest Mountains, *e.gr.* of the *Alps* in *Europe*, and of other the loftyest *Asiatic*, *Chinese*, and *American* Mountains. When the learned Author framed this his *Conjecture*, he seems to have had *England* particularly in View, *An Island encompassed on all Sides with the Sea* \*. But he certainly ought to have considered that this our Island has Mountains, tho' not equal to those just mentioned, very large, and high; of which I scarce know any, which have not Shells lodged in them to the very Tops. If therefore he can imagine those Shells were carryed to the Tops of those Mountains by any particular *Inundation*, what Condition does he think, *France*, and all *Europe*, nay and the whole Globe, were in, at that Time when the highest Hills in *Britain* were covered by the Waters

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\* Page 290, 347.

Waters of that *Inundation*? For Water cannot be piled up in Heaps, but must flow about, till the Surface of it is on all Sides equidistant from the Centre of the Earth: and consequently all Parts of the Globe must be then laid as deep under Water as *England*. All these Things being seriously weighed, by any Man, I can scarcely believe he will easily come into this *Conjecture* of the ingenious *Camerarius*: or ever imagine that these Marine Bodies could be brought from Sea, and lodged in all Parts of the Earth, by any other Means than the *Noetic* or Universal Deluge.

4. His fourth *Conjecture* is what follows. Hence, says he, it is that *Those* *Shells were* so many Marine Bodies are found in *not brought,* England. *from Sea,* That Island, being environed by the Sea, admits, by subterranean Passages, the Waters of it into *into the* its Bowels deeper and further than you *Bowels of* would imagine\*. But before he had suggested that those Marine Bodies were brought, through any Passages, *the Earth,* *by any sub-* *terraneous* *Passages.* *or*

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\* Pag. 347.

or its interior Parts, and such as are very remote from the Sea, he should have put it beyond all Doubt that there are such *subterraneous Passages* from the Sea. Certain it is no such are yet discovered. Whereas if there really were such, they would be easily found out, so spacious † as they must be, to receive such vast Bodies into them, and to give Way for them to pass into the very Middle of this Island. Not to mention others, many Shells of the *Ammonite* Kind, two Foot over, are digged up in *Portland*, and some broader in *Glocestershire* and *Somersetshire*. Besides the Skeletons and Bones of Whales, and other the largest Fishes, are digged up here. But for what Purpose can we think those Fishes should swim up these Passages, if there were any such? And to Places so far distant from the Sea? For Nature has not assigned them any agreeable Way of Living or Habitation under the Earth. But should we suppose so great Numbers, some of them of so vast a Bulk,

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† Conf. p. 140. *supra*.



Tops of the highest Mountains, some Miles higher than the Sea, if not in *England*, at least in other Countryes. But, lastly, there's an Argument equivalent to almost all the rest, which is that these Marine Bodyes are never found, either in Fissures, or subterraneous Passages; but lodged in the very Strata of Marle, Clay, and of Stone, and every other even the most close dense and solid Matter. Are therefore those Passages, through which the Springs and Rivers are supplied with Water, usually damm'd, and fill'd up with terrestrial Matter, and Marine Bodyes? If so, whence have we at this Day remaining any Springs or Rivers? Or do those Passages, and subterraneous Channels, frequently change their Course, from one Part of the Earth to another? We certainly no where see or observe any Thing of this Kind. Springs, and the Heads of Rivers are at this Day in the very same Places that they antiently were. Nor indeed does there any where appear, in Nature, any Power that is ordinarily capable of effecting such Changes in the Earth. If there were ever any such Changes made, those  
Marine

Marine Bodyes would be now found, lying in a certain Method, and Track, answering the former Course of those Channels filled up since; which, as I have sufficiently shewed before, is no where to be seen.

5. Thus far I have had under Consideration what Confirmation from Nature, and the Things themselves, and what appearance of Truth, the four first *Conjectures* of Dr. *Camera-rius* carry along with them. But what shall I say to his fifth Conjecture? He thinks *it no absurdity to suppose God to have made some Analogy and Resemblance betwixt Marine and terrestrial Bodyes, by creating various Kinds of Stones representing the Forms of Sea-Shells* \*. By the same Rule also Hazle Nuts, such as grow on Trees upon the Earth, Pine Apples, nay even Oaks, and other Trees, and Vegetable Bodyes, which are found buried to a very great Depth in the Earth, were all there *created by God*. This is indeed an easy Way of solving all those Difficulties,

5. *Those Shells were not created, by God, in the Bowels of the Earth; but bred at Sea.*

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\* Pag. 348.

cultyes, but founded on no Support of Nature, or Attestation of Holy Writ. After all, supposing God did create these Bodyes entire, did he likewise create Pieces and Fragments of them in the Earth? For 'tis common to dig up Fragments of Shells: and, in some Places, only the upper Shells of Bivalves, in others, only the lower Shells: nay Bivalves, turbinated, and indeed Shells of all other Kinds, without having in them the Animal or Fish belonging to these Kinds. But perhaps we may set this Conjecture of *Dr. Camerarius* in a better Light, if we imagine *Aristæ* or Beards of Corn created without the Ear, the Bark of Cedars without the Wood, the Hides of Oxen without the Flesh and Bones, the Skins of Men without their Bodyes, and Hands or Legs without the rest of the Limbs, or other Parts. For in the same Manner the Fossil-Shells and other Things we treat of, are often found in the Earth; *e. gr.* all Sorts of Shells without the Fish in them, some one Bone without the rest of the Skeleton, or a single Tooth without the Jaw. But to pass over these Things, and what I have  
pro-

produced to the same Purpose in the *prelim. Dissert. to my Nat. Hist. of the Earth*, there are many other Things which much weaken this *Conjecture*: and which the *Camerarian Hypothesis*, that allows only the Figure and Similitude of Marine Bodies to those Fossils, cannot account for. 1st. The Shells, which are digged up in Places, and found lodged in Matter, fit to preserve them, and which therefore are firm, sound, and have less felt the Injuries of Time, yeild still a true Marine Salt, such as recent Shells taken out of the Sea, or cast on the Shores, are wont to yeild. This is certainly worthy the Consideration of the learned Author: and tis what I had long ago put him, and my other Readers, in Mind of, *Nat. Hist. Earth, prelim. Dissert.* 2. There are also found in the Earth the Teeth of Fishes ground down, and worn away, in the very same Manner as the Teeth of those Kinds of Fishes, taken at Sea, usually are, by chewing their Food. 3. The Shell-Fish called the *Purpura*, has a Tongue of a considerable Length, terminating in a hard boney sharp  
L 4 Point,

Point, with which, as with an Augre, he bores Holes thro' the Shells of other Shell-Fish, and feeds on the Substance of them drawn forth thro' those Holes. This has been observed of the *Purpura* by the antient Naturalists, particularly *Aristotle*, and *Pliny*. Thus *Aristotle* writes concerning it, *such is the Strength of this Member, the Tongue, in the Purpura, that he is able therewith to pierce thorow the Shells of Shell-Fish, particularly those of the turbinated Kind, with the Meat whereof he is wonderfully delighted* \*. What *Pliny* † says, is, *the Tongue of the Purpura is about a Finger's Length, with which he feeds himself, by boring thorow the Shells of other Shell-Fish; so hard is the Point of it*. Now there are commonly found in the Earth, among others,

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\* Ταῖς γὰρ πορτύραις τοσαύτην ἔχει δύναμιν ὥστε τὸ μόριον, ὥστε καὶ τῶν Κογχυλίων διαίρουσιν τὸ ἔσθαιον, ὅιον τῶν εὐρόμβων, οἷς διαλεάζουσιν αὐτάς. *Aristot. de Partib. Animal. Lib. 2. C. 17. versus finem.*

† Lingua Purpuræ Longitudine digitali, qua pascitur perforando reliqua Conchylia; tanta Duritia Aculeo est. *Hist. Nat. Lib. 9. C. 36.*

thers, Shells bored thorow in the Manner above described; whence it is certain that those Shells had once living Fishes in them, and that those Fishes formerly lived in some Place, where also there were *Purpuræ* to feed on them: and that Place could be no other than the Sea. 4. It is common to dig up the Shells of Oysters, *Conchæ*, *Pectines*, and other Bivalves, which retain plain Marks of Tendons, and other Signs which undoubtedly shew that they had once actually the living Creatures in them. 5. Lastly, the *Echinite*, *Conchite*, *Cochlita*, and other Bodyes of that Kind, consisting of Stone, Flint, Spar, and other Mineral Matter, which every Way match the Size, and exhibit the perfect Resemblance of the interior Part of those Shells, from which they have derived their Names, could never have been so formed, moulded and shaped, had not those Shells been quite empty. But there are other Bodyes also, of which I have Samples by me, formed likewise of Stone, Flint, and Spar, which represent only Pieces, or some particular Parts of the *Echinite*, *Conchite*,  
te,

*ta*, and *Cochlita*. These, any One, at first Sight, may plainly discern were formed in the Shells, while they had yet their Fishes actually in them: and therefore could receive only so much of the Stoney Flinty or Sparry Matter, as would fill up the Parts which were empty or vacant, and not possessed or taken up by the Fish. Thence it is, that those Stoney Flinty and Sparry Bodyes bear only the Resemblance of that Vacancy, as having been moulded in it. Now these Bodyes plainly shew those Shells to have had Fishes formerly in them: and at the same Time point forth to us the true Origin of them; *viz.* that they were not produced in the Places where they are now found, but were at some Time brought all from the Sea.

*The gross  
Mistake of  
those who  
imagine,  
not only  
Shells, but  
several ar-  
tificial  
Things  
dig'd up,  
were form-  
ed in the*

But let us consider this *Con-  
jecture* of Dr. *Camerarius* a little more attentively, to see if it may not be applyed to other Uses, and made to explain some Things, which have afforded hitherto Matter of Dispute to the Learned. Indeed I cannot think that Dr. *Camerarius* will take it ill, if I endeavour to improve, in-  
large,

large, and render more usefull, what *Earth, by* he had the Ingenuity, and good For *Nature* tune first to find out. It is common *playing and* in many Places to dig up Coins having *sporting un-* inscribed on them the Names of *der Ground.* *Alex-*  
*ander the Great, Julius Caesar, Cu-*  
*nobeline,* and other Emperors and  
Kings. Should any fancy that these  
were stamped by some Mint-Master  
many Hundred Years ago, and after-  
wards lost, or hid and burved in the  
Earth, and have lain there for so long  
a Time, he truly would seem to rea-  
son much after the common Rate, and  
just as those do who believe the  
Shells, found in the Earth, were ori-  
ginally produced at Sea. 'Tis much  
the shorter and easyer Way of de-  
ciding so disputable a Point, if, as the  
Matter of the Coins must, so like-  
wise the Forms of them, be ascribed  
to the Workmanship of God. And  
he who thus happily first removed  
this cruel Stumbling-Block, out of the  
Way of the Students of Antiquity,  
can never be thought less deserving  
our Praises and Rewards than he who  
shall happily find out

*Where*

*Where there grow Flow'rs inscrib'd  
with Names of Kings* \*.

Nay further, if it so fall out that those employed in digging, should, as they frequently do, find, under Ground, Things carrying with them the Appearance and Shape of Pots, and Earthen Vessels, tho' those Things have been hitherto taken for antient *Roman Urns, Pateræ, or Simpula*, yet it would be intolerable, that we, and all Posterity should run still on in the same Mistake. For in good Truth it is to the full as likely that these Pots, and other Things, were formed by Nature in the Earth, as those Shells. But least I should seem to propose this rashly, or to arrogate to my self the Honour of this *Conjecture*, so much of a Piece with that of Dr. *Cameraarius*, there are some Writers of Natural History, and indeed principally those, that will needs have it that the Shells, found in the Earth, were produced there, who advance the same Opinion concerning these Utensils.

Whether

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\* Quibus in Terris inscripti Nomina Regum  
Nascantur Flores... ---

Whether or no, if Dr. *Camerarius* gives Sanction to this Opinion of those Writers, People may not go hereafter to search for Earthen Ware, as now they do for Ores of Metalls, in the Bowels of the Earth, and so finding them there under Ground ready made to their Hands, have no need to buy, or have Recourse to the Potters, they may not be all undone by the Shift, I cannot tell; let them look to that. But, certain it is, that *Bob. Balbinus*, with great Elegancy, calls these Vessels *Fossil Pots* \*. *Conrad Gesner* terms them *Native Pots* †. And Dr. *Jo. Dan. Major* treats of them as of *Fossil Urns* ‡. *Balbinus* gravely and wisely argues that Clay--- readily, and of its own Accord, disposes it self into the Shape of Pots, Nature her self directing what she would have here done †. Finally another like

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\* Ollas Fossiles. Miscell. Hist. Regni Bohem. L. 1. C. 49.

† Ollæ Nativæ. De Fig. Lapid. p. 87.

‡ Urnis Fossilibus. Dissert. Epist. de Cancri & Serp. petrif. p. 43.

† Existimat Argillam--- ad figuram Ollarum sponte sese ac libenter componere, Natura ipsa quod fieri velit docente. Loco supracitato.

like sagacious Writer, treating of Pots digged up near *Spremburg* in the lower *Lusatia*, is of Opinion, *That the Possibility of such Pots being formed by Nature is not to be disputed*\*. This Way indeed of arguing and making Inferences, having already got Authors of so stanch Judgment, and Patrons so mighty, if it should at last prevail as to the Formation of Shells, Bones, Teeth, and other like Bodyes in the Earth, it would make the whole Matter so easily intelligible, that no Doubt or Dispute can ever possibly be raised about it hereafter. But yet I cannot forbear telling them that there is one Thing I would advise the Authors that shall take upon them this Task, to write, not in Prose, but in Verse, nor were it amiss that it should be set also to some suitably merry Tune; since *that Nature*, to which, they ascribe such Works, can be only fictitious, and *Poetical*: and that *God*,  
which

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\* Credit naturæ in ejusmodi fabricandis Ollulis Possibilitatem non esse detrahendam. D. Ebr. Hagendon Miscell. Cur. Ann. 3. Obs. 237.

which *Camerarius* brings in here meerly imaginary, and *Mechanical*\*. But 'twere to have been wished that this so considerate a Writer had taken here the Advice of one of the best Judges of Poetry that ever lived,

----*Ne'er introduce a God,  
But for a Cause right worthy of a  
God* †.

With so much Reverence did he, in those Days, think those his Gods, tho' really no better than fictitious, ought to be treated. But they who suppose the One only true God, the great Author of Nature, to be thus employed, in making Toyes, and Things of no Use, may be deservedly thought either not rightly to know God, or not to pay him due Reverence. So that a Man of great Wit and Learning, Dr. *Hier. Cardan*, with good Reason, sharply reprimands that rash Way of Conjecturing; *We sorry idle Fellows*, says he, *talk of God as of*  
*one*

\* Θεὸς ἀπὸ μηχανῆς.

† Nec Deus intersit nisi dignus Vindice  
Nodus  
Inciderit.----- De Arte Poet.

one of us ‡. Of the same Sort also is that other *Conjecture* of the famous *Camerarius*, where he says, *he had rather suppose the beneficent Creator would have shewed Men the Use of Letters, than believe he would have let them lived for sixteen and more Ages without the Knowledge of them, or that Picture should be more antient than simple Writing* \*. 'Tis impossible surely but that, from the Time this lucky *Conjecture* was first advanced, *Polidore Vergil*, *Geo. Paschius*, and others who have wrote of the Inventors of Things and Arts, must lose the Esteem they have hitherto obtained, and be now finally wholly despised. Nor can it be well wondered at if the late Author of *Muscipula*, who, in his facetious Manner, attributes the Invention of the Mouse-Trap to his happy *Welch* Hero, he reckoned fit Company for such *Poetical* Writers.

But

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‡ Nos Nebulones loquimur de Deo tanquam de uno e nobis.

\* Pag. 304.

But Dr. *Camerarius*, not to seem altogether destitute of an Argument, takes in one, and that only, from Analogy. As, says he, God will have Species of Vegetables in the Sea, perfectly analogous and like others at Land, in that great Variety of Coralls, Corallines, Spunges, Alga's, Fucus's, &c. what hinders but that there may be such a Vegetation and Growth of Stones in the Earth, as there is commonly at Sea, and as is especially observable in Coralls, that are of Stoney Nature \*. Most certainly nothing hindered but that God might have done so; tho' that he actually has done so, does not thence by any Means follow so far as I can perceive. But if it were so that God had made Bodyes at Sea analogous to others at Land, it does not thence follow, that he must likewise, on the other Hand, have needs created Bodyes at Land resembling those at Sea, or that there should be any Vegetation of Stones, in the Earth, representing Marine Bodyes. But not

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\* Pag. 349.

to insist upon this, let the learned *Camerarius*, if he can, produce such Bodies growing *in the Sea*, either *Coralls, Corallines, Spunges*, or any other, which are *analogous to Terrestrial Bodies*, either in their outward Form, or inward Texture. For, in Truth, neither I, nor any Body else, ever saw any Samples of such Things. But when he, from his better furnished Cabinet, and Store, shall be able to produce any, I will readily come into, and embrace this his *Conjecture* concerning them.

*The Conclusion to the right honourable the Earl of Pembroke.*

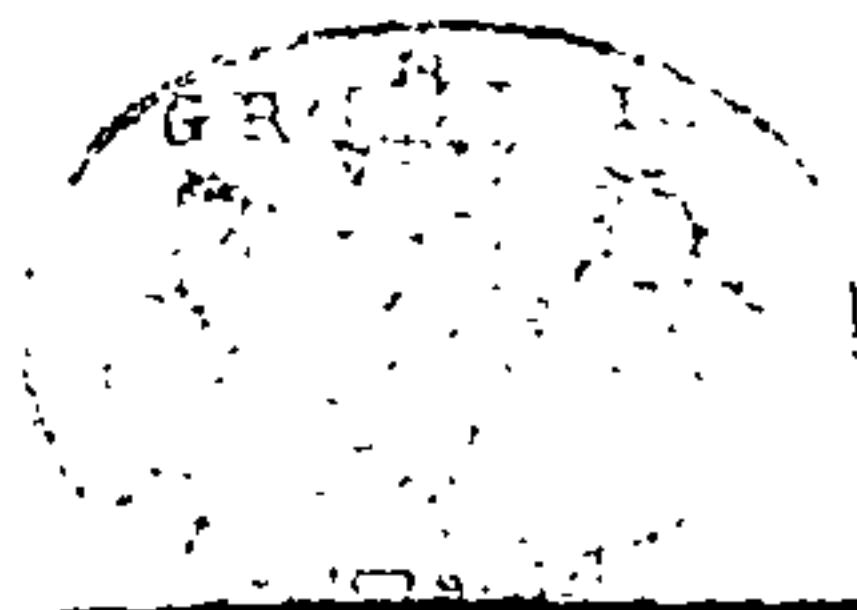
These, my Lord, are the Objections which the learned Dr. *Camerarius* has been pleased to offer against what I have set forth, in the *Nat. Hist. of the Earth*. Of what Force and Weight they are, whether he had really any just Cause for writing at all, and whether what I have here replied may be admitted as a full Answer to him, I willingly leave to be determined by any impartial and intelligent Person, but, above all, your Lordship, to whose distinguished and uncommon Judgment, as in all others, so likewise in these Studies

dyes and Subjects, I pay a very great Deference ; wishing, most sincerely, that, as you have hitherto done, you may long continue to live, with Health, and Prosperity, a Benefit, and Blessing to this our Age, our Nation, and this great Metropolis.

*Gresham College*  
xi Dec. 1713.

*F I N I S.*





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## ERRATA,

Occasion'd by the Editor's being at  
a Distance from the Press.

**P**Age 1. line *ult.* after *Art* add (,) P. 5. l. 14.  
read—*but whose Authority.* P. 12. instead of  
*Prelun*, in the Reference at the Bottom, r. *Pralim.*  
P. 17. l. 8. r. *From these strange Shells.* P. 31. l. 17.  
instead of *interior Figure*, r. *inward Form.* *ibid.* l. 26.  
instead of *the Book*, r. *his Book.* P. 61. the last Mar-  
ginal Title should stand higher against l. 19. P. 73.  
in the Reference, l. penult. r. *Οἱ καὶ νῦν.* P. 74. in  
the Reference, the Accents are wanting over  
*ἀπόλλυται*—*τότε*—*γῆς.* P. 145. l. penult. r.  
*subterranean Passages.* P. 156. in the Reference  
after *Flores* add *Virg. Eclog. 3.*

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