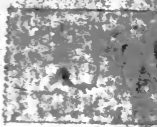


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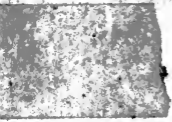
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A

TREATISE

ON THE

DELUGE.





A  
T R E A T I S E  
O N T H E  
D E L U G E.

CONTAINING

- I. Remarks on the Lord Bishop of CLOGHER's Account of that Event.
- II. A full Explanation of the Scripture History of it.
- III. A Collection of all the principal Heathen Accounts.
- IV. Natural Proofs of the Deluge, deduced from a great Variety of Circumstances, on and in the terraqueous Globe.

A N D,

Under the foregoing GENERAL ARTICLES,

The following *Particulars* will be occasionally discussed  
and proved, *viz.*

The *Time* when, and the *Manner* how *America* was first peopled.—  
The *Mosaic Account* of the *Deluge* written by *Inspiration*.—The  
Certainty of an *Abyss of Water* within the earth.—The Reality  
of an *inner Globe* or *central Nucleus*.—The Cause of the *subterranean*  
*Vapour* and of *Earthquakes*.—The Origin of *Springs, Lakes, &c.*—  
—The Formation of *Mountains, Hills; Dales, Vallies, &c.*—The  
Means by which the *Bed of the Ocean* was formed.—The Cause  
of *Caverns* or *natural Grottos*; with a Description of the most  
remarkable, especially those in *England*.—Also an Explication  
of several lesser Phænomena in Nature.

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Adorned with a *Copper-Plate*, representing the internal Structure of  
the terraqueous Globe, from the Center to the Circumference.

---

BY A. CATCOTT,  
LECTURER of St. John's, in the City of BRISTOL.

---

L O N D O N:

Sold by M. WITHERS, at the *seven Stars*, in *Fleet-street*; and  
D. PRINCE, in *Oxford*, 1761.

Where also may be had,—REMARKS on the Lord Bishop of CLOGHER's *Explanation* of the *Mosaic History* of the *Creation* and *Formation* of this *World, &c.*

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## PREMONITION.

**A**BOUT five years ago I published some REMARKS *on the Lord Bp. of CLOGHER's Explanation of the Mosaic Account of the Creation and Formation of this World*; and intended that this Tract should have followed soon after, as a kind of *Second Part*: but before I could quite finish it, I was seized with an illness, which affected my sight in such a manner, that I was obliged to lay aside all thoughts of compleating it (tho' nearly finished) for three or four years: and it was not without several relapses, that I could bring it to the state in which it is now presented to the reader.

## P R E M O N I T I O N .

SOON after the publication of the first Tract, his Lordship of *Clogher* (the late Rev. Dr. *Clayton*) also died; on which account (and for the reasons mentioned, page 8.) I have in a great measure dropped the controversial part in this; having only selected one or two principal Articles, that I thought exceptionable; and these, not so much because his Lordship had asserted them, as because several, otherwise learned and ingenious, writers had maintained the same; and it appeared to me to be of some consequence to settle the truth.

To pretend to introduce *Novelties* in Natural Philosophy in this enlightened age, may be esteemed by some almost as bad as to presume to make new discoveries in Religion: and yet, some points

## P R E M O N I T I O N .

discussed in this Tract, may possibly be new to many. In order therefore to remove this formidable, though in itself weak, objection, I have frequently chosen to make use of the words of any other writer (that had expressed himself judiciously on the point) rather than my own : which also is the reason, why several quotations will be found in this Tract, that otherwise might have been omitted.

It may be proper to inform those, who have encouraged the publication of this Tract by their Subscriptions (to all of whom I desire my sincerest Thanks for their favours), that it is a distinct Treatise of itself, at least independent of the *above-mentioned Tract*, relating to the *Creation, &c.* the few particulars in That,

## P R E M O N I T I O N .

which were explicative of This, being introduced in their proper places, or similar explanations given.

SOME of my Subscribers may possibly find a difficulty in understanding the *Mosaic* Account of the Flood, as *philosophically* explained in the *former part* of this Tract, I would therefore advise such *first* to make themselves well acquainted with the *Copper-Plate*, and the *Explanatory Notes* belonging to it, p. 54; and then, I hope, there will be no great difficulty in comprehending it; or at least a second perusal will make the whole plain and clear.





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GEN. vi. 13. *And God said unto Noab, The end of all flesh is come before me;—and behold I will destroy them with the earth; paraphrased; and the Universality of the Deluge urged therefrom - - - - - 17—18*

Ver. 14. *Make thee an Ark of gopher-wood, (rooms shalt thou make in the ark) and pitch it within and without with pitch.—A window shalt thou make to the Ark.—And of every liv-*

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<p><i>ing thing of all flesh, two of every sort shalt thou bring into the ark to keep them alive, &amp;c.</i>          —Thus did Noah, according to all that God commanded him, so did he, The necessity of Divine Instruction in order to execute the above Command, and the certainty that all creatures perished that were not within the intent of that instruction, shewn - - -</p>	18—25
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## E R R A T A.

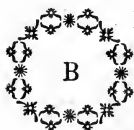
Page 12. Line 32. dele *such*.—p. 38. l. 2. read *rend*.—p. 44. l. 9. r. *orbit*.—p. 53. l. 32. r. *Polibius*.—p. 58, l. 27. r. *where*.  
 —Any literal error the reader will correct for himself.







O N T H E  
D E L U G E.



BEFORE I proceed immediately to the discussion of the subject I am to treat of, it may be proper to premise a few articles.

THE *Mosaic* description of the Deluge has been accounted by several to be too short and concise for the due relation of so important an event: but those who make this objection seem not rightly to understand the nature of the case; the proper stating of which will serve for a full answer to the objection.

FIRST then, Let it be considered that as at the time of the Deluge the Earth was destroyed, broken to pieces, reduced to its chaotic state, or *un-formed*, and afterwards, *formed again*; and this, its *second* Formation, answerable, both in the manner and means, to its *first* and original (for similar expressions are used, and the same causes are mentioned to have been employed, in both cases) and as a description had been

given at large of the manner of the first formation in the *Mosaic* narrative of the Original of things; so it would be needless to have enlarged on that point in the account of the Re-formation of the earth at the deluge; just mentioning the chief articles would be sufficient, as every judicious reader would naturally recur to the first and fuller description. Besides, As many of the effects of the Deluge are legibly written in the book of Nature, being engraved in the deepest characters in the hardest rocks all over the earth; so those, who would be at the pains to read this book, who *would go up as high as the hills, and down to the vallies beneath, and enter into the dark chambers of the earth* (carrying the divine light in their hands) should find the inestimable treasure, should see that the world had been destroyed, and formed again, and in what manner this surprising transaction had been effected; and would by this means have full proof—that there is a God,—Who that God is,—and that he governs the world. And they, who would not be at this pains (or listen to those that had been) did not deserve this peculiar proof and knowledge. Sufficient be it for God, and even gracious must we esteem it, that he informs us of such and such things in his Word, and gives us eyes to see the rest or another part of the evidence in Nature: and they who will neglect either or both of these proofs, may deservedly remain so far in ignorance. God indeed will do for us what we *cannot* do for ourselves; but we must not expect that he will do what we *can* do: This would be to undo what himself had before done, or give us power on purpose to take it away, and give it us again; and would also be encouraging sloth, idleness, and the disuse of our rational faculties. Therefore to spur up our abilities and quicken our diligence, he gives us That whereon we *may reason*, and then justly leaves us

to reason.—From what has been said then, two points I think are manifest; first, the *ignorance* and *inexcusableness* of those, who have spoken against the *mo-  
saic* account of the Deluge as *imperfect* and *deficient*; secondly, how *unqualified* those persons must be to give a *true account* of the Deluge, that have *not examined Nature*, but sat down at ease in their studies, drew lines upon paper, &c. vainly imagining that the form and inclination of Rocks, courses of Rivers, veins of Ore, and the situation of things in the solid earth, would shape and wind themselves according to their fancies.

ANOTHER article necessary to be settled, as preparatory to the subject I am to speak of, is, *in what manner* and *how far* the Divine Interposition is to be allowed in the Miracle of the Noachian Deluge, or in destroying and re-forming the earth at that time. For as in my interpretation of the account of the formation of the earth, I have had (because Scripture directed me) much recourse to the mediation of Natural Causes, or endeavoured to explain it *philosophically*, and I shall do the same, (because I think I ought) with regard to the Deluge, so I would obviate an objection, which an inattentive reader might make to such kind of explanations, as tho' they *took away* or *lessened* the *Divine Power* in the fact related. But I trust, upon examination, we shall find, that this way of explicating or unfolding Miracles, will manifest the *Wisdom* and *Goodness* as well as the *Power* of God, and in a manner too, far superior to any other. When an *extraordinary effect* is performed, to tell a person,—*that God did it*;—and there rest, without explaining the *end*, the *means* and the *manner* of doing it, is losing great part of the evidence of the miracle, and the intent for which it was performed; and is generally

spoken as a cover for our ignorance, or rather our pride, which is piqued at a difficulty we cannot solve. But GOD is a GOD of order, and when things are done for the sake of man, he adapts his operations to the state and circumstances of man. Now it is an allowed truth, that the situation of man in this world is such, that he is confined for his ideas, the foundation of his knowledge, to sensible or material objects; and it is also certain, that the prevailing *Idolatry*, both long before and long after the time of *Moses*, even almost from the creation of man to the coming of *Christ*, was the worshipping the *Natural Agents* or some Part or other of the System of Nature, instead of GOD the *Creator* and *Former* of all.<sup>a</sup> Such then being the state of man and such the peculiar circumstances of the former world, the most suitable method to *destroy this idolatry* would be, to *over-rule, suspend, or divert the common course* of the *Natural Agents*; which would undeniably prove, that they had a *Superior*, one who *could turn them, whithersoever he pleased*. And when such an act was performed, the *part of man* would be, to discover the *propriety* of the *Agent* or *Agents*, over-ruled or suspended, on *particular* occasions; and trace out how appositely the *Means* conduced to the *End*. I shall illustrate and exemplify my meaning from that publick and grand dispute between *JEHOVAH* and *Baal*, under the conduct of *Elijah* and *Baal's prophets*, recorded 1 *Kings* xviii. which the reader is desired to peruse. The Contest here was concerning the *true GOD*, whether *JEHOVAH* or *Baal*, or rather who was the *Ruler* (for that is the meaning of

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<sup>a</sup> Deut. iv. 19. xvii. 3. 1 *Kings* xi. 5. 2 *Kings* xvii. 9. xxiii. 4. &c. 2 *Chron.* xiv. 3, 5. *Job* xxxi. 26—29. *Jerem.* vii. 9, 18. viii. 1, &c. xix. 4, 5, 13. xxxii. xlv. *Ezek.* viii. 15, 16. xxiii. 30, 37. *Wisd* xiii. 1—4.

The Writings of the *Greeks* and *Romans* abundantly testify the same, as several Authors have shewn at large. Particularly *Parker* in his *Tentamina Physico-theologica de Deo*.

the word *Baal* in the Original) the *material Heavens* or *Agents*, or any *Being* above them. *JEHOVAH* had already shewed himself superior to the *Heavens* (at least, to every unprejudiced mind) by having *suspended* their *power* or *action* in *giving dew* or *rain* for above *three years*; (see *1 Kings xvii. & xviii. Luke iv. 25.*) but *Baal's* followers regarded not this; for all that time *they eat at the royal [Jezebel's] table*, and lived in plenty; verifying a common observation, that as long as men have enough of this world, they are not apt to be very solicitous about the *Governor* thereof. But the famine increasing more and more, the king and his servants are obliged to go from home, and seek in different places for food for themselves and cattle; and *GOD* at last out of compassion to his people sends *Elijah* to meet the king, and have the contest decided at once. That *Elijah's* *GOD* had power over the *Water of Heaven*, was pretty plain; he now proceeds further, and will shew that he has power over its opposite, the *Fire*, and can make it act or cease from acting just as he pleases; and from *Jerem. xix. 5.* it is evident that *Fire* (which is the most powerful operation of the *Heavens* or *Air*) was esteemed sacred to *Baal*,—*they have also built the high-places of Baal, to burn their sons with fire for burnt-offerings unto Baal.* The Test, agreed to on both sides then was,—that *the GOD which answereth by fire, and consumeth the offered victim, He should be GOD*: and if *Baal* could answer by any thing, it certainly must be by *one* of his *own emblems*. The place chosen for the scene of action was *Mount Carmel*, which probably these idolaters had made an *high-place* of to *Baal*; since we are told, *they had broken down the altar of JEHOVAH that was there.* Thus *Elijah* grants them every favourable circumstance. And when they had called upon their *GOD* *from morning even until noon* (when the *Heat*, the *greatest power* of the day, was come) and in their

furious fits of madness and despair had *leapt upon their altar, and cut themselves with knives and lancets; but neither voice came, nor any to answer, nor any that regarded:*—then *Elijab* repaired the altar of the LORD, and laid thereon a sacrifice; and to shew the mighty power of God, ordered a great quantity of *water* to be poured on the *sacrifice* and the *altar*, so as to fill a *trench* that was drawn round about it; and by this means render the sacrifice *less susceptible* of the action of *Fire*; and take off all possible suspicion of deceit. All things thus prepared, *Elijab* invokes his God to give the decisive proof of his Deity; and immediately, at his request, *Fire streams down from heaven, consumes the offered victim, and licks up all the water in the trench.* At which striking, *visible manifestation* of the Superiority of *Elijab's* God, *all the people fell on their faces, and cried out, JEHOVAH, He is GOD; JEHOVAH, He is GOD.* And a greater proof of Divine Interposition could not be desired, nor one more applicable to the purpose be given. Here the Heavens were made,—in a particular place, at an appointed time, in an interesting dispute,—to exhibit their strongest operation, *Fire*, and pour it down in honour of a sacrifice dedicated to JEHOVAH, and were withheld from doing the same on a sacrifice dedicated to themselves: and so themselves in fact forced to confess their own inability, bring confusion on their own votaries, and give glory to the true God.—Such also was the case at the Deluge. The grand object of false worship then was, the *Natural Agents* or *some part or other of the System of Nature*, as those words of God, *Gen. vi. 17.* (the prelude to that dreadful catastrophe) indicate: *And behold, I, even I, do bring a flood of waters, &c.* 'It is not said, *Let there be, or let the Agents which I have established, or let us bring; but I, even I, in direct opposition to all the Laws of Nature, or*

‘ powers established in Matter.’ But the *means* used in, and the *manner* of, the execution declare this plainer. As the *Corruption* of mankind before the flood was remarkably great, and the *Imagination of their heart only evil continually*, it could not well be in such a *general Apostacy*, but that many objects of false worship would be set up; some imagining one part, others another part of *Nature* to be *Supreme*. But from the manner of their punishment the three *principal Deities* seem to have been, the *Air*, the *Water*, and the *Earth*: the first, the heathen *Jupiter*; the second, *Neptune*; the third, *Terra*. Accordingly GOD to defeat this idolatry, and manifest his power over Matter, inverted the order and natural State of These in particular; he made the *Air* to descend into the place of the *Water*, that lay beneath the earth, and the *Water* to occupy the place of the air, and by the passing and re-passing of these two agents thro’ the *Earth*, the shell or orb thereof would be torn to pieces, its solid form reduced to fluid (of each of which effects more explicitly hereafter) and all the *idolatrous inhabitants* destroyed by the *very Means* or *Agents* they depended on for succour. Thus the *true GOD* demonstrated his power over *Matter*; and tho’ he made use of *material Means*, yet the Act was undeniably *supernatural*, above all the laws and powers of nature. The Natural Agents *could not*, or if they could, they certainly *would not*, have overturned their *own empire*, punished their *own votaries*, and suffered *themselves* to be made the *instruments* of punishing them. This *manner of working miracles* is eminently striking, and indeed irresistible; as it affords man *sensible* and *material evidence*, is level to the *conception of all*, and was *peculiarly adapted to the state of the world*, when such kind of miracles were wrought.

THUS much I have premised in general :

IN *particular*, with regard to his Lp. of *Clogher*, I propose not to attend him, step by step, in his account of the *deluge*, as I have done in his explanation of the Scripture account of the *Formation*; because replying to *one*, is much the same as answering the other; since the Deluge is a parallel act (only in an inverted order) to that of the first *Formation*, as I have observed already, and which will more evidently appear in the process of this treatise. I shall therefore only select one or two of the most exceptionable parts of our Author's account of the Flood, examine them, and have a principal regard to them in explaining that event. I hope also to lay down such a clear and full description of the deluge, that any one by comparing his Lp's tract with this, may determine for himself where the truth lies.

THE chief exceptions I have to his *Lordship's account* of the *Flood* relate to the *Extent* of it; first with respect to the *inhabitants* of the earth; secondly, with regard to the *Earth itself*, or its *solid, metallic, and mineral part*. In each of these points he is of opinion that the *effects* of the *Deluge* were *not universal*, but only *partial*.

‘ AND therefore (says he, p. 171, concerning the  
 ‘ first) altho’ I look upon that part of this [scripture]  
 ‘ narration, relating to the *destruction* of *mankind*,  
 ‘ and of *birds*, and of *beasts*, at the Deluge, to be  
 ‘ *literally true*, in respect ONLY of *that part* of the  
 ‘ world, in which *Noah* lived before the flood,  
 ‘ and which was afterwards peopled by his three  
 ‘ sons, *Shem*, *Ham*, and *Japhet*, yet I cannot but  
 ‘ acknowledge that this Deluge, which happened in  
 ‘ the time of *Noah*, must have been *general* in *some*  
 ‘ degree; as manifestly appears from the general  
 ‘ elevation of mountains over the whole world, and



' from the immense quantity of sea-shells, which are  
 ' frequently found in the most distant regions of the  
 ' earth. Nevertheless I cannot but suppose, that  
 ' *other parts* of the then habitable world, which by  
 ' the force of the Deluge were separated into islands,  
 ' and were divided from the continent whereon the ark  
 ' landed, were in some sort exempted from the com-  
 ' mon calamity; brought upon the rest of the world  
 ' by the Deluge; inasmuch as the *Continent of Ame-*  
 ' *rica*, and *many Islands* in the *East-Indies*, are at  
 ' present partly inhabited by wild beasts and noxious  
 ' animals, which it is not reasonable to imagine, that  
 ' any body could, or would, have imported thither  
 ' since that time. Therefore, I own, I cannot see  
 ' any other probable solution of this difficulty, than  
 ' to suppose them protected by the Providence of  
 ' God from the general destruction, in some extraor-  
 ' dinary manner, for the propagation of their own  
 ' species.' Which passage, I humbly apprehend, is  
 scarce consistent with itself; at least the position, that  
 is laid down therein, will not coincide with other parts  
 of the author's treatise; and is contrary to Scripture  
 and Reason. His Lp. seems to forget, that, accord-  
 ing to his System, but a very small part of the world  
 was, or indeed possibly could be, inhabited before  
 the flood, viz. that tract of land only which lay be-  
 tween the *Northern Tropic* and the *Arctic Circle* (see of  
 his Treatise, p. 74, 75) there being a great ' *belt of*  
 ' *water* under the equator (equal in extent to the  
 ' space between the two Tropics; see PLATE 3<sup>d</sup>.)  
 ' which separated one part of the earth from the  
 ' other; so that only one of the *Hemispheres* [if the  
 ' above-mentioned *tract* could be properly called an  
 ' *hemisphere*] was the seat of the habitation of the sons  
 ' of *Adam* before the Deluge, p. 65, 75.' If such  
 was the situation of mankind before the flood, had

even the far greater part of *America* been exempted from the effects of the deluge, no inhabitants of the former world would have been saved on it; much less could any have been saved by exempting the *Islands* of the *East-Indies* from that destruction; because they lay either *directly under*, or *quite on the other side* of the aforesaid great belt of waters; and so could not possibly have been inhabited before the flood. Besides; as according to his Lp. the falling down of this great belt of waters, or 'their rushing from under the equator [the higher ground] towards the poles' [the lower] (p. 155.) was one great cause of the deluge, so it could not but be, that such a violent efflux of water running in this direction would drive all the then inhabitants of the world towards the Northern Pole; where if they arrived, they must, according to himself, 'have perished on account of the Cold.' Nay, what is more, he asserts, that the waters thus rushing from under the equator 'would return to their natural and *original* situation of *overspreading the whole earth*,' p. 155, in the manner they did on the *first day* of the Formation, before the *least spot* of *Dry-land* had appeared. Now how we can reasonably allow, that any persons, in such an *universal flood* as this, could escape being drowned, I cannot conceive. But even let us suppose, that some of them were expert swimmers, and could live a long time in the water; yet according to our author's *further* description of the deluge, they certainly could not be able to weather out the whole storm, for thus dreadful was it, 'When the *fountains of the great Abyss* were broken up, and an immense hollow was excavated out of the earth from pole to pole, as a bed for the sea to lye in; when the rocks, and the sands, and the shells, and the earth, that were taken thereout, were thrown upon the land, and raised in mountain

‘ upon mountain, so as to assail the skies and invade  
 ‘ the region of the clouds: And when this heretoge-  
 ‘ neous mixture was *showered down* again upon the  
 ‘ earth, it did not only *rain*, but the water, and sand,  
 ‘ and earth, and rock, and shells, were poured down  
 ‘ *in cataracts* from heaven, for *forty days*, over the *face*  
 ‘ of the *whole earth*,’ p. 88, 153, 118. Surely in such  
 a terrible storm as this, neither the least, nor the  
 greatest, nor the strongest animal, could escape being  
 dashed to pieces, much less a poor, destitute, af-  
 frighted, naked man: So that it must have required  
 a *miracle*, far *greater* than That by which *Noah* and  
 his family were saved, to have preserved *one such* per-  
 son. And since God took so much care and allowed  
 so much time for the preservation of a *few just* souls,  
 we cannot imagine, that he would suffer, by a *more*  
*extraordinary miracle*, a number of *wicked* to survive;  
 for *whose sake*, and purposely to *destroy whom*, he  
 brought the deluge upon the world, and put even the  
*righteous* to a severe trial of their faith in and depend-  
 ence on him. This certainly is contrary both to  
 Scripture and Reason; as will be shewn more fully  
 hereafter.

But his Lordship imagines, that the *Text* will au-  
 thorise his supposing that *some* did escape; which there-  
 fore must be examined. He says, that the writers of  
 Scripture ‘ frequently put the *whole* for the *greatest*  
 ‘ *part*,’ p. 168. and would therefore conclude, that the  
 words *All* and *Every* used in the account of the flood,  
 as ‘ *All flesh died*, and *Every living substance was de-*  
 ‘ *stroyed*, &c. ought to be understood with certain li-  
 ‘ *mitations*,’ p. 170. and therefore we may suppose,  
 that *All* were not destroyed. That the words *All*  
 and *Every* are sometimes used in the Scripture to sig-  
 nify an *integral part*, is very certain; and I believe,  
 there is no language in which they, or synonymous

terms, are not so used. Since they are words which occur so often, and in such a variety of senses, it would have required much circumlocution to have defined, in every instance, their precise meaning; the Context therefore is always left to determine that point. Now, the sense, in which these words are used in the Scripture account of the Deluge, is so fixed and determined, that it cannot possibly be mistaken. *Moses* says (*after he had related, that the waters of the flood had risen to such a height, as to have covered All the high hills under the whole heaven*) *And ALL FLESH died, that moved upon the earth, both of FOWL, and of CATTLE, and of BEASTS, and of EVERY CREEPING THING that creepeth upon the earth, and EVERY MAN. All in whose nostrils was the breath of life, of all that was in the dry land died. And every living substance was destroyed which was upon the face of the ground, both man, and cattle; and creeping things, and the fowl of the heaven; and they were destroyed from the earth; and NOAH ONLY remained alive, and THEY that were with him in the ark, Gen. vii. 21.* Had *Moses* intended to declare that every individual living creature that was upon the Earth, before and during the flood, were destroyed by the flood, he could not have been more express and particular; he says, that every living substance, both man, and cattle, and creeping thing, and fowl of the air, that was upon the face of the ground, or in the dry land, died; and we know of but one ark which went upon the face of the waters, and so saved the men and the animals therein: of course, according to the Scripture account, there was no living creature upon the face of the whole earth, but ~~that~~ perished by the flood. And what shews this plainer is, that those, whom we know, were exempted from this, otherwise, universal destruction, are expressly mentioned to have been saved; and their preservation mentioned too in such a manner as to specify, that no

other persons or creatures were saved, And NOAH ONLY remained alive, and THEY that were with him in the ark. Nay, St. Peter describes this affair still more circumstantially, and fixes the very number that were delivered, 1 Epist. iii. 20. wherein [i. e. in the ark] FEW, that is, EIGHT souls, were saved by water; and again, 2<sup>d</sup> Epist. ii. 5. GOD spared not the old world, but saved NOAH the EIGHTH person. [who with his own wife, his three sons, and their three wives, was just the eighth person] bringing in the flood upon the WORLD of the UNGODLY. All the ungodly therefore must have perished. So that the words *all* and *every* in the above passages must be taken in the largest latitude, and extended to the utmost universality, with regard to the wicked. I may just add too, (for as many have urged the above objection against the Universality of the Flood, so I would willingly remove it by every means without being tedious) that *each* of the arguments, which will be hereafter brought, especially those from Scripture, in proof of the Universality of the Deluge, will shew also, that the words *all* and *every* are to be understood in the sense I contend for; because Scripture (as GOD was its author) must be consistent with *Itself*, and with *Truth*.—His Lordship's difficulty concerning the peopling of America, I propose to give an easy solution to hereafter, observing here by the by, that whether we could get over this difficulty or not, it would not invalidate the above arguing; which depends entirely upon the sense of Scripture, and which may be corroborated by many proofs from the natural state of the earth; and where these two concur to offer clear, express, and united evidence, there no event in nature, which may appear unaccountable to some, but may be easily accounted for by others, ought to set aside their superior authority.

THE other article which I am to consider, is our Author's supposition (p. 135.) that *only* the *upper surface* of the earth was *disturbed* or *destroyed* at the Deluge. For 'He does not suppose with Dr. Woodward, that the whole material world was, at the time of the deluge, reduced into a *soft pulp*, but allows that every thing continued in its *then state* of *solidity*.' And yet, he says, 'it must be acknowledged, that at the time of the breaking up of the fountains of the Abyss, a great part of the materials, which were scooped out of the earth, as well as those, which then lay on the surface of the sand and of the shore, would be loose, separate, and divided, and would float irregularly in that confusion of elements, which such a wonderful operation must have occasioned, not only when showered down in cataracts from on high, but also, when conveyed by the force of the waters of the sea, which gushed forth, as out of a womb, to the place destined for their abode,' p. 118. So that, if I rightly understand his Lp. his opinion is, that the *upper parts* of the earth only were moved at the flood; and these irregularly thrown about by the waters of the deluge, in large, loose or detached, *solid masses*; but were *not dissolved* or reduced to their original atoms; much less were the *strata*, that lay beneath the places from whence these parts were torn: for thus he says, p. 140. (where speaking of part of a skeleton of an elephant and of several horns of the moose-deer, that were found fossil in *Ireland*) 'It likewise hence appears, that some of the *low grounds* in *Ireland* have not been covered more than from *five* or *ten* feet thick with the *Slutch* of the deluge;—since it is not probable that at the time of the death of the afore-mentioned elephant and moose-deer, the places upon which they were found lying, were the *natural surface* of the *then habitable* earth; or as it is more clearly expressed,

' p. 104. *where* we may suppose the *surface* of this  
 ' earth was, when there were no mountains, but all  
 ' this world was an uniform globe, covered with water  
 ' (as at the creation) there the *strata* are *uniform*; and  
 ' the *several layers* of them, whether sand, clay, mi-  
 ' nerals, or gravel, are disposed in an *horizontal position*,  
 ' parallel to one another.' This last observation  
 (which is the only proof brought for his Lordship's  
 opinion, and is laid down upon the authority of *Mon-*  
*sieur Buffon*) is certainly false in fact; as I will venture  
 to affirm, every one will find that will but make  
 ten observations upon the regular strata of the earth,  
 in ten different places; it being far more common to  
 find the strata, which lye beneath the slutch and rub-  
 ble left by the waters of the deluge, upon the surface  
 of the earth, *inclined in various directions*, rather than  
*horizontally disposed*; which must undeniably prove  
 that *such strata* have been *moved or displaced*, and of  
 course, that the effects of the deluge reached *below* what  
 is called by some, the *fast-ground*, or what our Author  
 imagines to have been the *surface* of the Earth *before*  
 the flood. And I dare say, if he will have the earth  
 opened in the places, where the above mentioned  
 horns of the moose-deer, &c. were found, deeper  
 than ten feet, he will discover as many infallible marks  
 of the deluge, as the horns, &c. of the aforesaid  
 animals, such, for instance, as sea-shells, teeth and  
 bones of other animals, or plants, &c. At least  
 such are frequently found in *England*, beneath  
 what is commonly called *Slutch*; and I suppose *Ireland*  
 was not more favoured during the deluge than *Eng-*  
*land*. In short, what is called *Slutch*, is no more, (as  
 I observed before) than that matter, which the waters  
 in their retreat from the earth at the end of the deluge,  
 left on places fit to receive it, as the *flats* on the sides  
 of mountains, the bottoms of *dales*, *vallies*, &c. as

the substance of which this matter consists, and the manner in which it lies, evidently prove; it being generally of a mixed nature, consisting of various substances,—and lying, not in regular strata, as stone, chalk, &c. do, but in small seams or streaks, of unequal breadth in different parts, and in a train, just as the last sediment of water would naturally leave it. So that it is no wonder his Lp. cannot be of opinion that *all the metallic and mineral matter of the earth was dissolved or separated and reduced to its original atoms at the Deluge*, when it does not appear from his observations, that he *ever examined the earth below ten feet*, but judged of the *effects* of the Deluge upon the *whole body* of the earth, from what was transacted *only*, and that *very weakly*, on the *superficial part*. But I hope to make it evident, both from *scripture and nature*, that *all the strata of stone, coal, chalk, &c. and all the veins of ore in the antediluvian earth were actually dissolved*, their constituent corpuscles separated one from another, and when in this state of separation, were mixed with a large quantity of water, so that the whole was reduced to a *fluid colluvies*. But of this in its due place and order.

HAVING premised thus much; I shall now endeavour to lay before the reader a plain, clear, and full account of the Deluge; first, as described in Scripture; secondly, as confirmed by other historical evidence; and thirdly, as corroborated by the present natural state of the earth. And I hope to bring such proof of every material circumstance, that all, except those who *will* not see, shall be able to discern the manifold evidence for this wonderful transaction. And in explaining this event, I design to have particular regard to the two above-mentioned exceptionable articles of our author, not only because He has asserted



them, but because *many*, otherwise learned and judicious writers, as *Vossius*, Bishop *Stillingfleet*, &c. and some supposed to be learned, as *Dr. Burnet*, *Mr. Whiston*, &c. have maintained the same, and his Lp. has sheltered himself under some of their names.

WITH regard to the *Scripture account*, I begin with *Gen. vi. 13.* *And God said unto Noah, The end of all flesh is come before me: for the earth is filled with violence through them: and behold I will destroy THEM with the EARTH.* So that the *Earth itself*, as well as its *inhabitants*, was to be *destroyed*. *The Earth*, as we are told before, *was corrupt before God*; its *primitive goodness* and *fertility* had been abused and perverted by man, and instead of rendering him more dependent on and thankful to his Creator, caused him to assume independency, and even to deify the earth, the immediate producer of its fruits, and to forget GOD the original Author and Former of all.<sup>b</sup> So that GOD (in

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<sup>b</sup> *Gen. vi. 12.* *And GOD looked upon the earth, and behold it was corrupt; for all flesh had corrupted HIS WAY upon the earth, i. e. GOD'S way; for their own way was corrupt enough; and they could not properly be said to have corrupted That.* *Noah* we find, was exempted from the general destruction, because (*Gen. vi. 9.*) *he walked with GOD, i. e. he went in the true way, observed the precepts of the true religion, or did not depart from his GOD, CHRIST, (who is stiled THE WAY, John xiv. 6. and is the LIVING WAY, Heb. x. 20).* But all those who do depart, and set up other gods, other favours, new protectors, of what kind or sort soever, are termed *Idolaters, Apostates, Imaginers, Corrupters of the way, &c.* and such will be guilty of every evil work as well as thought; for as their perverted thoughts or imaginations lead the way, so bad practice will of course ensue. *Corrupting*, (says *Ainsworth* on the place) is in special applied to *Idolatry*, and *depraving* of GOD'S true service, *Exod. xxxii. 7.* *Deut. xxxii. 5.* *Judg. ii. 19.* as, the people are said to *do corruptly*, *2 Chron. xxvii. 2.* when they sacrificed and burnt incense in the high-places, *2 Kings xv. 35.* So *Idolatry* was their chief corruption here, as may also be gathered by *Gen. iv. 26.* see the *Annotations* there.

judgment always remembering mercy) determines to destroy by a flood of waters the *Earth that then was*, retrench its luxuriancy, and so take away the cause of the general corruption; that thus by altering the state of the earth, he might necessitate man to a greater degree of labour, shorten the period of human life, and demonstrate to the future race of men, their real weakness and absolute dependence on Him. Hence appears the necessity for the *destruction* of the *whole* globe. So that the opinion of those who have carried a *partial flood* to the *greatest* extent, and allowed that *all mankind*, except those in the ark, were destroyed;—imagining that *mankind* inhabited only a large *part* of the world; but the *brute-animals*, the *whole*; and that the deluge did not reach beyond the parts inhabited by *man* (for *whose sake alone* they suppose the flood to have been brought upon the earth) so that the *parts* inhabited by *beasts* only, as the Continent of *America*, &c. were exempted from the destruction, and the animals thereon preserved alive (by which they think they get over one difficulty, *viz.* the *replenishing the earth* with *animals* after the flood:)—even this opinion, I say, will not stand the test of the Scripture account; for the Deluge, we see, was not aimed solely at the *inhabitants* of the earth, but included also the *Earth itself*. Had *Man* been the *only intended object* of *destruction*, there were many ways to take him off; there was the *Famine*, the *Sword*, the *Pestilence*, *Fire*, *Wind*, and *Storm* at the *word* or *command* of *God*; and either of these might have been employed, without *unbinding the whole frame* of the earth, and *dissolving* all the *solid strata* thereof. But this last method was intended, was threatened, was executed, was necessary; and therefore the *Deluge* UNIVERSAL.

I PROCEED with the Scripture account, *ver.* 14, *Make thee an Ark of gopher-wood; (rooms shalt thou make in the Ark) and shalt pitch it within and without*

with pitch. And this is the fashion which thou shalt make it of; the length of the Ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits: (a window shalt thou make to the Ark<sup>c</sup>) and in a cubit shalt thou finish it above: (and the door of the Ark shalt thou set in the side thereof) with lower, second, and third stories shalt thou make it. And behold I, even I, do bring a flood of waters upon the earth to destroy all flesh, wherein is the breath of life, from under heaven, and every thing that is in the earth shall die. But with thee will I establish my covenant: and thou shalt come into the

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<sup>c</sup> I have included this sentence, together with one just before, and another almost immediately following, in parentheses, as the sense of the Context requires, and the Original fully justifies: for the word *it* in the next sentence, viz. *in a cubit shalt thou finish it above*, plainly refers to the *Ark* not to the *Window*; since the relative *it* is in the feminine gender, and the word for *Ark* in the feminine also, but the word for *Window* is in the masculine; so the sentence where *That is*, must be taken separately from the rest, or included in a parenthesis. And the sense is, *In a cubit thou shalt finish it (the Ark) above*, that is, the top part of the roof of the *Ark* was to be made a cubit high in the middle, and sloping on each side; on purpose I suppose that the rain and moisture, which might fall during the Deluge; should easily slide off, without damaging the *Ark*.

As Commentators have been much puzzled concerning what *this Window in the Ark* was, and I know but one Author that has properly explained it, and since his treatise is scarce, (viz. DICKINSONI. *Physica vetus & vera*) I shall lay down, and endeavour to prove the certainty of his explication.—The common opinion is, that *this Window* was a *Hole in the upper part of the Ark* about a cubit square, or a cubit in height; but how such a cavity as this could possibly afford light to the *three stories* of the *Ark* (one of which was doubtless under water) and to all the *separate partitions* in those stories, and to the *many passages* leading to those partitions, and this during the *night*, at least *some part* of the *night*, as well as in the *day*, is altogether inconceivable: so that this opinion, I think, cannot be true. But (2<sup>d</sup>ly.) the foundation on which it is built, viz. those words, *In a cubit thou shalt finish it above*, refer, as I have already shew'd, to the *Ark*, and not to the *Window*. So that (3<sup>d</sup>ly.) let the reader re-

*Ark; thou, and thy sons, and thy wife, and thy sons wives with thee. And of every living thing of all flesh, two of every sort shalt thou bring into the Ark to keep them alive with thee: they shall be male and female. Of fowls after their kind, and of cattle after their kind, of every creeping thing of the earth after his kind: two of every sort shall come unto thee, to keep them alive. And take thou unto thee of all food that is eaten, and thou shalt gather it to thee; and it shall be food for thee and for them. Thus did Noah; according to all that God commanded him so did he.*

WHAT *Forefight* and *Wisdom* were here requisite! I have already proved that the *Deluge* was a *supernatural*

member, there is no *precise outward form* ascribed to this *Window*. And (4<sup>thly</sup>) what is translated, *A window thou shalt make TO THE ARK*, if, render'd according to the Original, is, *for, or for the use of the ark*, LaTABE; so that a *window* in the common acceptance of the word, can scarcely be the meaning of the inspired writer.—5<sup>thly</sup>—The word JER (translated *window*) properly denotes a *clear light*, and as IJER signifying *oil*, comes from the same root, and both are derived from a verb, signifying to *shine bright*, so the command here given to *Noah*, in all probability was, to make a *clear shining substance*, or a *bright oleaginous matter*, for the use of the *Ark*. Now such would certainly be of great service by affording light to every separate room since it might be hung up in *small vessels*, or otherwise, as the circumstances of *time* and *place* required: this substance too might be of such a *salutiferous nature*, or send forth such vivifying rays, as would greatly conduce to the *health* of the animals in the *Ark*. That it is possible to make such a *self-shining matter*, either *liquid* or *solid*, the *hermetical Phosphor* of *Balduinus*, the *aerial and glacial Noctilucas* of *Mr. Boyle*, and the *Pantarba* of *Jarchus*, (which last 'shone in the day, as fire, and at night emitted a flame or light, as bright as day, tho' not altogether so strong') and many other preparations of the like sort sufficiently evince (see *Stackhouse's History of the Bible*, Vol. I. p. 130.); and that it might have been, or that many have been, of the above supposed *salutiferous nature*, *Widenfield* in his second *Book de Medicamentis* has plainly shew'd. And by the command here given to *Noah*, without any particular directions about preparing this substance, we may fairly collect, that he well knew of *what*, and in *what manner*, to make it.—6<sup>thly</sup>. The *Jewish Rabbies* seem to have had

act, and it is undeniably certain that no human knowledge, no natural experience, no deduction from causes or effects, could possibly have given mankind the least notice of such an event: of course a *revelation* (as *Moses* informs us) must have been made to *Noah*, in order that he might foresee and be provided against such a transaction. And not only a revelation of the Fact, but the Means also declared, by which he might avoid the consequences of it, and have time to take due care for the preservation of himself and family, and for replenishing the earth with a stock of its former inhabitants. As he was told that the *whole earth* was to be

some notion of the true meaning of the word under consideration? by supposing that it denoted a *large bright Carbuncle*, or *precious stone*, which *Noah* hung up in the middle of the Ark, to give light all around; but this certainly would not wholly answer the end, for such a stone (supposing there was such) could not emit light into every separate partition, and all the passages leading to the partitions, &c; so that some such *shining Substance*, as the above, which might be carried in the hand from place to place, or hung up, or &c. was certainly necessary and intended.—7<sup>thly</sup>. The *Chaldee Paraphrase* renders the word for *window* by one signifying simply *light*.—8<sup>thly</sup>. The *Septuagint Translators* (probably not knowing any word in the *Greek* that would answer to the *Hebrew* J E R) have omitted or else have substituted a verb (*επισυναλω*) for it, which conveys neither the idea of *light* nor *window*; and this certainly they would not have done, had they thought the word meant a *common window*.—9<sup>thly</sup>. But what adds great confirmation to the above exposition is that the *common word* for *window* [viz. HaLUN, which is derived from a verb signifying to *bore* or *cut thro'*, and properly denotes a *Hole* or *Window* in a building] is not used in this place; and yet it is used in the account of the Ark, *Gen. vii. 6.* where *Noah* is said to *have opened the Window of the Ark and let out a raven*. Here a *Window* as generally understood, is certainly meant, and the common and proper word [HaLUN, not JER] is used; which evidently shews that some other interpretation than that of *Window*, must be attributed to the word JER; and since the signification I have above contended for is so remarkably corroborated by such a number of circumstances, we may, I presume, justly conclude it to be the true.

destroyed by a flood of water, so the most he could pre-conceive concerning the impending danger (allowing he could conjecture thus much, which, unless Shipping had been in use before the flood, he probably could not) was, that a vessel of wood would be the most likely means of saving him, and all that was necessary to be secured: but of what *size* or *form* to make this vessel, that it might suitably contain the things that were to be taken in, and answer in all other respects, no human wisdom, I believe, could possibly adjust. Had man been left to himself to form a vessel that should conveniently hold a *certain number* of all the *various species* of birds, beasts, and creeping things in the earth, and contain also *proper* and *sufficient food* for them for the space of a *whole year*, (for so long the Deluge lasted) he probably would have made the vessel unnecessarily big, even so large as to endanger its safety: and this is pretty certain, from the objections which those who have laid claim to the greatest share of *human Reason* (*viz.* our wise *free* or rather *no-thinkers*) have made to the *Mosaic* account, supposing the Ark therein described to have been of too narrow dimensions. But *the wisdom of man is foolishness with God*, and every objection to Scripture proves nothing but the folly of the objector, which in this case is abundantly manifest; for after the strictest examination and most accurate survey, it has been proved by several learned persons, that the size of the Ark, as given by *Moses*, was exactly correspondent to the things that were to be taken in.<sup>d</sup> And tho' *Moses* could not but foresee; that such objections as these would be raised against

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<sup>d</sup> See BUTEO *de Arca Noë; cujus formæ & capacitatis fuerat.* Sir WALTER RALEIGH'S *History of the World*, Book I. Chap. 7. § 9. *That the Ark was of sufficient capacity.* Bishop WILKIN'S *Essay towards a real character and a philosophical language.* Part II. Chap. v. §. 6.

his account, yet he left it to stand the test, barely relating the fact, not anxiously explaining the reason of every thing; well knowing that he was directed in what he said by *Infinite Wisdom*, who would *order all things in measure, and number, and weight*; and quite satisfied that if man would but act the proper part and use his Reason aright, that is, not judge till he had well weighed and considered the subject, the justness and propriety of what he related would eminently appear. [Hence, by the way, we may see the great necessity of much natural knowledge in order to apprehend the philosophical parts of the Bible, and that *Moses* did not suit his descriptions of things to the capacities of the vulgar, but wrote for the most improved Understandings.]—Again; as it was necessary that *two* at least of *each species* of animals of the land and air, and these a *male* and *female* (for future propagation) should be taken into the Ark, so it was impossible that *Noah* and his family of themselves could have collected them together; many of the *creeping kind* are so small as to escape the human sight, unassisted by the best Glasses, and probably many there are that cannot be discerned even by the help of them, at least so far as to discover which are *male* and which *female*; others are of so swift a flight, or of so wild and rapacious a nature that they cannot be caught and tamed by man: God therefore must have directed the *several kinds* in *suitable numbers* to the Ark (probably in the manner he influenced them to come to *Adam*, when they were first named. *Gen. ii. 19.*) Agreeably to this *Moses* informs us that the same divine Person who forewarned *Noah* of the flood, assured him, that *two* [or rather as the word may be render'd *couples*; for more than two of some species were taken in] *of every sort should come unto him to be kept alive*, *Gen. vi. 20.*—All these articles were necessary to be known, all these preparations necessary to be made by those who could possibly be

saved, and answer the end of their salvation (by being able to replenish the Earth with a stock of its former inhabitants) in such a Flood as was That in the time of *Noah*. But these articles could not be known, nor could these preparations be made without *divine assistance*; such assistance therefore was *undeniably* given to *Noah*; and it is equally undeniable, that *all those* who had it not, perished. Hence our Saviour represents the Flood as coming upon the *ungodly* quite unexpectedly, *Matt. xxiv. 38. In the days that were before the flood, they were eating and drinking, marrying and giving in marriage, until the day that Noah entered into the ark, and KNEW NOT until the flood came and took them ALL away.* Surely then none either did, or could escape; for, if even a few had reached the highest mountains, yet as they had had no time to prepare themselves with food and the common necessaries of life, they must soon have perished thro' hunger.

AGAIN; had not the Deluge been universal, but *partial only*, and extended even over one half of the globe, there certainly had been no need of the Ark, *Noah* and his family might have retired from the destruction, in the same manner as *Lot* and his family did from that of *Sodom* and the countries adjacent, into some other part of the earth; and this might have been done in much less time and with far less care and trouble, than to have built so large a vessel as the Ark was, and prepared all the necessary things for the safety of the animals that were to be included. At least had the Deluge been partial, there had been no occasion of taking in animals of *every kind*, male and female of *every sort to keep seed alive upon the face of all the earth*; (*Gen. vii. 3.*) for had any islands or countries with the creatures peculiar thereunto, been exempted from the common calamity (as our Author supposes) it had been needless to have preserved *such* by means of the Ark; or indeed to have taken in *any* of the



*Brute-creation* at all, since they might have been conducted to those parts of the earth which the Deluge reached not, by the same means that they were brought to the ark to be saved thereby; many of the *beasts* such as are of the swift and wild kind, might easily have escaped thither; and the *birds* without difficulty, might have fled, from the approaching danger, into the most distant regions of the earth. But as all this precaution was taken, all these measures executed, it is certain that God *intended* that the *Deluge* should be *universal*; and we shall see hereafter from the *effects* of it, that it *really* was so.

FOR, as soon as *Noah* and the animals were entered into the ark, we are told, that

*All the Fountains of the Great Deep were broken up.*

THE Maker of this earth (who certainly knows its inward as well as outward structure) has inform'd us, that there is a *vast collection of waters within* it, characterised (to distinguish it from all *lesser Deeps, Seas, &c.*) under the name of the GREAT DEEP; it is called *Gen. xlix. 25. The Deep that lieth under, i. e. the earth; and Deut. xxxiii. 13. The Deep that coucheth beneath*: and in the *second commandment* is included under the term of *the Water under the earth*. From this reservoir all fountains and rivers receive their supplies as the wisest of natural Philosophers has told us, *Eccles. i. 7. All the rivers run into the Sea* [the general collection of waters, part high up, and part beneath, the earth] *yet the Sea is not full* [doth not reach the height of, or run over, its shores]. *Unto the place from whence the rivers came, thither they return again.*<sup>c</sup> The shell of the earth is represented as lying directly over this abyſs, or covering it as an

<sup>c</sup> This collection of waters I have designated by G. H. in the subsequent Plate, which the reader will consult, and also what is said in Note \*.

*Arch* stretched over an orb of water, so the *Psalmist*, xxiv. 1. *The earth is the LORD's*;—for he hath FOUNDED it UPON THE SEAS, and ESTABLISHED it UPON THE FLOODS; and again, cxxxvi. *O give thanks to the LORD of Lords, who alone doth great wonders*;—to Him (for this is a wonderful and very beneficial act) that STRETCHED OUT the earth above the waters: So of the first sediment, strata, and laying the foundations of the earth, *Prov. viii. 27. When he prepared the heavens, I was there; when he set a Circle upon the face of the Depth; when he appointed the foundations of the earth.* And *Job xxxviii. 4. Where wast thou when I laid the foundations of the earth? Whereupon are the sockets thereof fastened? Or who had laid the Corner-stone [the key-stone of the arch] thereof?* And ch. xxvi. 10. *He set a Circle upon the face of the waters.* So that the shell of the earth is of a circular form, comprehending (as the shell of an Egg contains the Fluid within) an orb of water, according to the delineation in the Plate, where F. denotes the crust of the earth, and G. H. the fluid within. Thus were things situated before the Flood, and thus indeed are they at present.

BUT before I can shew what the alterations were that were made in the terraqueous Globe at the time of the Deluge,—what Agents were employed,—and the Manner of their acting,—it will be proper to say something of the original formation of the earth.

THE first Agent that is mentioned to have had any effect towards reducing the formless mass of the earth into shape, is the Spirit, *Gen. i. 2. And the Spirit of GOD moved upon the face of the waters.* What this Spirit is may be judged of from similar passages in Scripture. The word rendered Spirit [RUE] is the same as is usually translated Wind, and denotes Air in motion, as *Isa. xl. 7. The grass withereth, the flower fadeth; because the Spirit of the LORD BLOWETH upon*

it: here certainly the natural motion of the wind is meant; as also it is in the following passage, *Psalin* cxlvii. 16. *He giveth snow like wool; scattereth the hoar-frost like ashes. He casteth forth his ice like morsels; who can stand before his cold? He sendeth out his Word [symbolically placed for the Light of the Sun; as his real Son is the Light of the world, and the Word of life] and melteth them: he causeth his Wind [RUE, his Spirit] to blow, and the waters flow.* So also, *Job* xxxvii. 21. *And now men see not the bright light which is in the clouds [more properly it means, in the skies]: but the Wind [the Spirit] passeth away and cleanseth them; i. e. by the motion of the air the sky is cleared, and the light rendered visible.* So again, ch. xxxvi. 16. *By his Spirit he hath garnished the Heavens.* But what more evidently confirms the above interpretation is, that at the time of the Deluge when the Earth was *totally dissolved*, and all things in the *same confused* state they were at the beginning of its first formation, the same Agent is mentioned to have been employed towards the reforming of it, *viz. Gen. viii. 1. And GOD made a Wind [RUE, the Spirit] to pass over the earth and the waters asswaged.* Here certainly a *motion in the air* is meant, and as certainly it is to be understood in the former case when we are told, *that the spirit of God moved upon the face of the waters; i. e. God by his immediate power caused a motion or raised an agitation in the (before) dark, stagnant Air around the earth, (and it is called His Spirit, because he alone did, or indeed could, produce such a motion) which* McReHPeT, *MOVED*; this word in the original, as his Lp. of *Clogher* observes (who also allows that the Spirit here spoken of is the *Air*<sup>f</sup>) signifies properly ‘a

<sup>f</sup> See his *Vindication of the histories of the old and new Testament*, Part II. p. 47. Many ancient writers have thus interpreted it, as

‘ *shivering* or *tremulous kind* of motion, such as a man  
 ‘ maketh, when he shaketh for fear; in which sense  
 ‘ the word is used *Jer.* xxiii. 9. or as a hen [*Deut.*  
 ‘ xxxii. 11. *an eagle*] useth when she expandeth her  
 ‘ body and wings [*fluttereth*] over her brood of  
 ‘ chickens [*her young ones*]. And therefore this word  
 ‘ is elegantly expressive of the *vibrating motion of the*  
 ‘ *Air.*’ This action of the air, we are told, was *upon*  
 ‘ *the face of the waters, i. e.* upon the *surface* of the *fluid*  
 ‘ *turbid mass* of the earth, and therefore would have  
 ‘ suitable effects upon it, *i. e.* by surrounding and com-  
 ‘ pressing the outside, would determine the earth to be  
 ‘ of a *spherical* or *orbicular* shape, as the action of the  
 ‘ Air upon any fluid body, suspended in it, at present  
 ‘ determines it to be. But the gross action of the Spi-  
 ‘ rit alone could not enter much beyond the surface  
 ‘ or cause any great alteration in the *Inside*; some other  
 ‘ therefore more subtle, penetrating Agent than this,  
 ‘ was requisite to form *the shell of the earth* or drive to-  
 ‘ gether the *solid atoms* thereof. Accordingly the  
 ‘ next thing we read of was the Production of Light.

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*Philo Judæus, Martain de Borhai, Joannes Mariana,* and two or three  
 of the Fathers were of this opinion, as his *Lp.* observes. And even  
*Hobbes* (whose opinion may please some persons better than any one’s  
 else) argues thus, (*Leviat.* p. 208.) ‘ *Gen.* i. 2. *The Spirit of God*  
 ‘ *moved upon the face of the waters.* Here if by *the Spirit of God*  
 ‘ be meant *God* himself, then is *motion* attributed to *God*, and con-  
 ‘ sequently *place*, which are intelligible only of bodies, and not of  
 ‘ substances incorporeal; and so the place is above our understanding,  
 ‘ that can conceive nothing moved that changes not place, or that has  
 ‘ not dimension; and whatsoever has dimension is body. But the  
 ‘ meaning of those words is best understood by the like places, *Gen.*  
 ‘ *viii.* 1. Where when the earth were covered with waters, as in the  
 ‘ beginning, *God* intending to abate them and again to discover the  
 ‘ dry land, useth the like words, *I will bring my Spirit upon the earth,*  
 ‘ *and the waters shall be diminished:* In which place by *Spirit* is un-  
 ‘ derstood a wind, (that is, an air or *spirit moved*) which might be  
 ‘ called (as in the former place) the *Spirit of God*, because it was  
 ‘ *God’s work.*’

*And God said [decreed, commanded] Let there be Light; and there was Light.*

HERE an Agent is introduced, the most subtle as well as most powerful of any in nature. We all know, that *Light* passes freely thro' the hardest and closest of terrestrial substances, and when its atoms are collected in a focus, will separate and dissolve the parts of the most compact body. Here then are two very powerful Agents; one that displays itself principally by *pressure*, the other by *penetration*. And what might not such Agents as these do, in the hand of the mighty Creator? No Command in Nature could be insuperable to such servants, under the direction of such a Master. We need not therefore wonder, if we should hear of great and mighty events brought about by these Agents in ever so short a space of time, nay, if the earth, from a *formless, fluid, confused mass*, should be made, within the space of a day or two, into a *solid habitable Globe*. To effect which, these Agents are put in commission by the following Command.

*And God said, Let there be a Firmament [Marg. Expansion] in the MIDST of the WATERS [the fluid, chaotic mass of the Earth, called Waters before, ver. 2.] and let it [there] divide the waters from the waters.* The reader then will remember that this whole transaction was to be *upon* or *in* the Earth, not in the *midst of the heavens* or in the Air at a vast distance from the Earth, as many Commentators have imagined, but the whole transaction was to be in *the midst of the waters* of the Earth. And the words plainly imply, as others in this chapter do, a Command to natural *Agents* to operate. Light had been formed, had reached and acted upon this Globe: and wherever Light and Spirit [or Air in motion] are, there would of course be a *struggle* between them, and this struggle would pro-

duce an *Expansion*, this expansion a division, and so on. The word for *Firmament*, RaQ10, explains what the Firmament is; the word signifies, as we see in the margin of our bibles, *Expansion*, and the meaning is, Let the *Light* and *Spirit* expand and diffuse themselves, and let them press into the mixture, called *Waters*; and let them act *in, among, or between* the *parts* of it, and drive the solid parts together, and thereby make a *separation*, and with the parts separated a *division* or wall between the waters; so that one moiety of the waters shall lie on one side of this wall, and the other on the other side. To explain how this was done: the Earth, we are told, was created *void*, (Gen. i. 2.) i. e. *hollow, empty within* (as the word means *Isa. xlv. 18.*) or with a *large central Hollow* (called, *Job xxxviii. 8.* the *womb* of the earth) filled *only* with *air*, as every *kollow* place in the earth at present is *filled*. As soon therefore as the light had reached this *central* or *inward* air, there would instantly commence a conflict between them, or a struggling this way and that as from a center; which is obvious to every ordinary capacity in the case of a bladder that is flaccid or half-filled with air, when held before the fire. The light, (which not even the closest-compacted substance can deny a passage to) issues forth from the fire, and penetrates the pores of the bladder, drives itself in amongst the gross air, which must force That to push itself every way outward, and distend the sides of the bladder that incloses it. Thus would the *inward* Expanse or expanding-air act *upwards* every way from the center to the circumference of the Chaotic mixture; while the *outward* Expanse or the light and spirit on the *outside* of this globe would act *downwards* on and through every part of it. And by these two equal and counter-acting agents the *earthly* or *solid parts* of

the chaotic mass would be driven together into a *spherical shell* at a considerable distance from the center of the earth, and there be sustained; and as the earthy or solid parts would be driven together into a close hard shell or crust, so by the same action would the *fluids* be permitted to slip between on *each* side of this crust. Thus would the *shell* of stone or *the Earth* be formed between *two orbs* of water; one orb would cover the *outward* surface; the other would cover, or by the force of the expanding air from the center, be pressed close to, the *inward* surface of the earth. Such being the situation of things, it will now be apparent to every one how the earth was *founded upon* and formed *between* the waters.—And as the shell or crust of the earth was driven together by the *expansive* power of the air, and formed between two orbs of water, so the *Firmament* acted the part it was commanded of *dividing the waters from the waters*.

AND as the Expansion had this power from the Creator (for He first caused the motion in the, before, dark stagnant air; that motion produced Light; that Light and that Spirit an *Expansion*, &c.) and as it was now immediately under the influence of its *Maker*, and acted according to his Directions; so (and to prevent the *Israelites* from imagining it to be a God, and not the work of God, as the idolatrous nations did) *Moses* adds,

*And God MADE the Firmament; and divided the Waters which were under the Firmament, from the Waters which were above the Firmament.*

THIS is a further description of things, in order to prevent our mistaking *where* the Waters divided, and *where* the *Airs* dividing, were; and to prepare the reader for what was to follow. The *Expanse*, as we have seen, acted from *above* and from *below*, and by forming the crust of the earth in the *midst* of the

waters, separated the waters from the waters; which waters, thus separated, would be in two distinct orbs; *one* covering the *outward* surface of the earth, which therefore would justly be designated by *the waters under the open Air, Heaven, Firmament, or Expansion*; in the same sense as *the hills* (Gen. vii. 19.) are said to be *under the heaven*; and as these waters then covered the whole surface of the earth, they were more immediately *under the heaven*. And as we have seen already there was a body of *expanding air* at and round the *center* of the earth, so the *waters* that were directly *above* this *inward* Expansion, *i. e.* those which were close to the *concave* surface of the earth, would properly be denominated *Waters above Air, Firmament, or Expansion*.<sup>2</sup>—That there was really a body of expanding air at and round the center of the earth (on which supposition the above interpretation depends; and ignorance of this has produced all the difficulty which this part of Scripture has been thought to labour under) is evident, not only from its being asserted that the earth was *created* comparatively *hollow*, or filled *only* with *air*; but from the text under consideration: For (1st.) here is express mention made of *two* Expanses, and the opera-

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<sup>2</sup> The reader may have an idea how things were situated at this time from the PLATE annexed (tho' not principally designed for this purpose) by a little mental alteration. Let D. denote the *outward* Expansion, surrounding, compressing and penetrating the mass of the Earth. Let the vacant Space, E. (encompassing the Earth) be supposed to be filled with the water H. as it was at this time, and then this water will signify *the waters under the* [outward] *Firmament* or Expansion. Let the Spaces designated by H. and I. be filled with the Air or Expansion E. and then this will denote the *inward* Expansion, acting upwards; and the orb of water G. will stand for *the waters above the* [inward] *Firmament* or Expansion.

And thus the shell of the Earth F. will be formed between *two orbs of water*, by the action of the *two* Expanses.



tion of each, as I have shewed already, was *on* or *in* this earth. It is allowed by all, that *one* Expanse acted on the *outward* or *convex* surface of the globe; the other therefore must be *within*, and act on the *inward* or concave surface. But (2dly.) had there not been an Expansion from within, or from *below*, as well as from *above*, there could have been no *separation of waters from the waters*, or the *shell of the earth* could not have been *formed between the waters*; for had the *outward* Expanse acted *only*, it would have driven the *solid parts* of the terraqueous mass quite down to the center, in the same manner as it now precipitates mud or any earthy solid substances through the waters of the sea; and in this case the earth would have been formed as a *solid ball*, or *kernel*, at the center; and all the water would have lain over it in *one united* mass, in the same manner as the atmosphere at present covers the earth. But there was a *Separation of waters from the waters*, by the *intervening shell of the earth*, formed by the *expansive power of the Air*; and therefore there was an *inward Expansion* as well as an *outward*.——And as there was an *orb of water*, separated from the *terraqeous mass*, by this *inward Expansion*, so it could be no otherwise distinguished than by being called (as it is) *Waters above the Firmament*, or *Expansion*.—But then a question may be asked, How should this inward orb of water be sustained, or kept close to the inward or concave surface of the earth, and so be prevented from falling down to the center?—I answer, by the same means that the outward orb of water was kept close to the outward or convex surface of the earth, or as the sea is at present prevented from falling down through the clouds (*especially* at our *antipodes*, to speak as the vulgar would most naturally think) or from returning again to cover the earth (though the earth be revolv-

ed so immensely swift on its axis)—all which is effected by the *compressure* of the *Expansion*, or the *Air* acting on the *outward* surface of it; which Agent might as well keep waters *above* it as *under* it; for there is no such thing as *innate gravity*, or *natural tendencies* of bodies to centers, &c. *All matter*, as our modern philosophers allow, is *dead, inert, inactive*, quite *indifferent* to every kind of motion; and therefore cannot possibly *move* unless *impelled*; and *which way soever* it is *impelled*, either upwards, downwards, or sideways, *thither* it must *move*. Sir *Isaac Newton* in several parts of his writings speaks of *Gravity* as being no more than *Impulse*, and attributes the *Cause* of it to an *ætherial medium*, or *subtile fluid*<sup>n</sup>; which way soever therefore such a fluid impels, that way must motion be. And with regard to *up* and *down*, or *above* and *below*, every child in philosophy knows that they are only *relative* terms, respecting our situation upon the earth. No such difference can properly be applied to the *inanimate* agents; which must of course act uniformly the same, *up* or *down*, just as they are placed, and have room to exert their power: And as at this time they were differently *situated* from what they are now;—there being a body of expanding-air at the center, as well as one upon the circumference of the earth, so each would produce the same effect on the side it acted against, *i. e.* *separate* and *support* an orb of water.

THE Earth being thus totally covered with water, the next requisite step would be to free its surface of this fluid, and permit *the dry land to appear*.

HENCE we read the next Command of GOD was, —*And GOD said, Let the water under the Heaven be gathered together unto one place [or be united], and let the dry-land appear.* The waters were before in *two*

<sup>n</sup> *Princ. Mat.* 3d. Edit. p. 147. 188. 488. *Optics* p. 323.—29.

places; one orb, covering the outward surface of the earth; the other, inclosed within its inward surface. The former of these must be gathered to the latter, that is, *the waters that were under the heaven* or open air (*viz.* those which were upon the outward surface of the earth, and which prevented the appearance of the dry-ground) were to be gathered together to *those beneath the earth*, which was the *only place* where there were *other waters*. The manner how this was effected by the Agents then in Commission may easily be conceived. As the matter of the heavens would be more and more melted down by the intense fire at the focus of the primæval light, so would the strength of the Expansion be increased, in proportion to the quantity of matter melted, and the degree of agitation; and how great its force must have been on this the *third* day, may be partly gathered from the extent of its sphere on the fourth, which reached by that time the other *orbs*, and even the *fixed stars*, as is evident from ver. 17. The Light and Spirit having such an immense sphere of action, and acting very powerfully near the earth (as is certain from the quick growth of *vegetables*, &c. on this, the *third* day) would press strongly upon the outward surface of it; and by the continual and new admission of light, through the shell to the central air, the *inward expansion* would be vastly heightened and increased (in the manner described p. 30.) and by this means would be made to act more forcibly against the inward or concave surface of the earth. This force continuing to act with increased vigour, would soon crack, cleave, and break the shell of the earth in many places, and so make room for the waters that covered the outward surface to descend, or be pressed down through these cracks; and as the inward air went out, the outward orb of waters would rush in, and supply its place; and so be mixed or united with *the waters that were beneath the earth*.

And thus by *the waters under the heaven* [*viz.* those that once filled the Space E] being gathered together to *those that were beneath the earth*, [*viz.* H. where was the *one place appointed* for them all, and when united in *this one place* they would constitute the *Great Abyfs*, G. H.] the *dry-land* would of course appear, and the *Command* be effected.

*And GOD called the dry-land* [that which was at first immersed in the waters, but now prominent above them] *EARTH*; and *the Gathering together* [the whole collection] of *the waters*, called *be* [under the general Name of] *SEAS*. And thus would the *Earth* be formed, much of the same shape it is at present, and as the Plate annexed represents it.

FROM the description here given how the Earth was at first formed, we may obtain an easy solution of the several seeming difficulties relating to the Deluge. For, first, we have here discovered where a body of water lies, (*viz.* G. H. the great Abyfs) sufficient to flood the Earth to an immense height, for but *part* of this water (*viz.* the orb G.) once covered its whole surface. And we have also discovered two very powerful Agents, *one* [*viz.* the *Spirit* or Air in a violent motion] capable of performing the grandest transactions by *pressure*; the *other* [*viz.* the *Light*] capable of displaying immense power by *penetration*.

We have seen that these two Agents (under God) separated the Solids from the Fluids of this globe, drove them together into a *hard circular shell*, and permitted the *fluids* to slip on *each side*; and by renewed vigour and redoubled power, cleaved, cracked, and broke this shell in various places and so opened a way for the water that covered the outward surface of it to descend, part into the inside, and part to occupy the large cavities it had made in the shell, and so constitute seas, lakes, and by this means so diversify the surface of this globe, with land and water, as to ren-

der it a commodious and a pleasant situation for its future inhabitants.

BUT as these inhabitants, about 1600 years after the formation of this beautiful feat, had greatly abused the goodness of the maker, forgot the original Author of it, and deified the Creature, instead of the Creator; GOD determined, by inverting the order of Nature, to destroy them, and demonstrate his power over the natural Agents to the future race of men, by bringing a flood of waters over the face of the whole earth, and so making the air descend into the place of the water, and the water ascend into and occupy the place of the air, and by this means destroy that wicked generation in the most dreadful manner.

ACCORDINGLY GOD publishes his Declaration, *Gen. vi. 17.* *And behold I, even I, do bring* [MEBIA, am the cause or instrument of bringing] *a flood of waters upon the earth to destroy all flesh, &c.*

AND as soon as *Noah* and his *righteous family* were entered into the Ark, we are told,—*The same day all the fountains of the Great Deep were broken up.*

WHAT the *Great Deep* is we have seen already, and also that the orb of the Earth surrounds it as a shell; and moreover have seen, that this shell was at first formed whole and entire by the *expansive power* of the *Air* or *Firmament*, and by an increased strength or redoubled force of that Power was cracked and broken in various places, in order to permit a quantity of water that covered its outward surface to descend into the inside.

Now, an Agent that could once by the direction of its maker, do this, could do the same at any time, when that divine Author pleased. The force of the natural perpendicular Pressure of the air upon the earth is known to be very great;\* and its lateral

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\* The *Weight of Air* on every *superficial Square Foot* is above "2000 Pound Weight."—And "since the Number of Square Miles on

or horizontal pressure, as in case of high winds and tempests, will rend the rocks, and elevate the waters of the Ocean to a prodigious height. So that the Power of this Agent being preternaturally increased, and its force exerted upon the water of the Ocean and of course upon that of the Abyfs (which is connected with it and lies immediately under it) would cause those waters to issue from their (before) confined station, burst open their common outlets or the passages for springs, fountains, &c. and flood the earth in proportion to the quantity of water emitted. The Consequence of such an extraordinary Pressure of the Air may be judged of from the *Effects* which a similar pressure of this Agent had upon the *waters* of the *Red Sea*, recorded *Exod. xiv. 21, 22. xv. 8.* When a *strong Wind* [RUE, a violent Spirit or Agitation in the Air] *drove back the waters* of that Sea, caused *the floods thereof to stand upright as an heap, and were a wall to the Children of Israel on the right hand and on the left as they passed through.* Now a Continuation of such a Force as this upon the waters of the Sea and those of the Abyfs would certainly break open *the fountains of the Abyfs*, and raise the water above the Tops of the highest mountains or to any height whatever. To one of the above acts the *Psalmist* alludes when he says, (*Psal. xviii. 15.*) *Then the springs of water were seen, and the foundations of the round world were discovered at thy chiding, O LORD, at the blasting of the breath of thy displeasure.* The effects also of a *strong Wind* or a *violent agitation*

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“ the Earth’s Superficies is computed 199250205, and in one Square  
 “ Mile are 27878400 Square Feet, the Square Feet on the Earth’s  
 “ Superficies will be somewhat above 5547800000000000; whence  
 “ the Weight of the whole Atmosphere, or its Pressure on the Super-  
 “ ficies of the whole Earth, is more than 110956000000000000  
 “ Pounds, or much about 5000000000000000 Tons; that is, the  
 “ Atmosphere compresseth the Earth with a Force, or Power, nearly  
 “ equal to that of *five-thousand Millions of Millions of Tons.*” See  
*Martin’s Philosophical Grammar.* Page 180, &c.

of the Spirit are described 1 Kings xix. 11. When *Iſaiab* had an exhibition of ſome grand diſplay of the Power of GOD, *And behold the LORD paſſed by, and a great and ſtrong Wind rent the mountains and brake in pieces the rocks before the LORD; and after the Wind* [as a conſequence of this violent agitation of the air] *an Earthquake*: And ſuch certainly there was at the *Diſruption* of the ſhell of the earth in the time of the deluge. A very terrible event this (ſays a certain Author) no leſs than the ſhell of ſtone broken up in many places, and ſhattered in all the reſt; all the Inlets, Under-Seas, Lakes, &c. made Fountains; and all the ſtrata which formed their ſides, and the ſides of the old Springs, thrown up unto the ſurface; ſpouts of vapours to darken the ſky, and vaſt ſpouts of water riſing like fountains, making a dreadful noiſe; riſing in the ſea, and running to the ſea, and the ſea riſing and driving the people, &c. to the mountain tops, their laſt ſhift; where they with fright, rain, or hunger, periſh'd; or thoſe who ſurvived 'till the waters came were deſtroyed by them. And thus alſo the beginning, proceſs, and completion of the deluge are deſcribed in the book of *Job*, ch. xxxviii. 8. *Who poured out* <sup>1</sup> (ſays GOD) *the ſea thro' doors, when it brake forth, as if it had iſſued out of the womb? When I made the Cloud* [groſs air] *the garment thereof, and thick darkneſs* [condenſed, ſtagnant air] *a ſwaddling-band for it* [this muſt have been at the time when the flood was at the higheſt, when the inward Air or Firmament (or the air which had preſſed upon and at laſt broke its way thro' the ſhell of the earth) had driven out great part of the water of the abyſs, occupied its place, and ſupported the remaining part of the water againſt the inward or concave ſurface of the earth; and when the outward Air or Firmament, ſurrounded and compreſſed the upper orb of water, cloſe to the outward ſurface of

<sup>1</sup> יָסַךְ from יָסַךְ *fudit, effudit, perſudit liquore aliquo.* MAR. CAL.

the earth]. *And then I brake up for it my decreed place, [i. e. the shell of the earth which I had formed and established between the waters; and by breaking this, permitted the upper waters to go to their appointed place; and when once retired thither] I set bars and doors, and said, Hitberto shalt thou come, but no further; and here shall thy proud waves be stayed.*

BUT what is more than all this, an effect greater than the *disruption of the fountains of the Abyss*, is That which follows,

*And the windows of heaven were opened.*

Mr. HUTCHINSON is the only Author I know of, who has properly explained these words, I shall therefore give the reader his explication; *Moses's Principia*, p. 70. 'The windows of heaven have been taken for 'imaginary falls of water from above the heavens, from 'the clouds, from the air turning into water, &c. 'Synop. Crit. Tom. 1. p. 97. 'Cataracta celi, &c. 'i. e. The Cataracts of heaven,—the windows, holes, 'openings or cataracts of HEAVEN, i. e. of the AIR, 'as Gen. i. 7. *Isai. xxiv. 18.*' Crit. Sacri, Tom. 1. 'p. 147. 'Nam Cataractæ teste Hieronimo, &c. i. e. For 'a Cataract, according to St. Jerom, is a hole in a 'wall, such as smoak gets through. *Isai. lx. 8.* as 'doves אל ארבתיהם (by Sym.) to their doors [θυρίδας] 'to their windows. *Isai. xxiv. 18.* The windows of 'heaven were opened;—li. 6. The heavens shall vanish 'like smoak.' 'Tis plain, *Cataractæ* signify windows, 'holes, sluices, or flood-gates, or cracks or chinks in 'walls or buildings, such as smoak passes through 'out of one house into another, or windows such as 'pigeons go in at, or cracks or holes in the walls of 'great buildings or rocks, such as pigeons creep into 'and harbour in. This word is most clearly compared, 'and is the very same they say it is. The *Airs*, and 'the *Abyss of waters*, are each called God's *Storehouse*; 'and the wall between them is the *sphere* of the earth or



‘ Shell of the Strata of stone, in which there are innumerable  
 ‘ cracks, through which the fumes or vapours or mix-  
 ‘ tures with air, like smoak, continually pass at the  
 ‘ same passage, sometimes up for rain, &c. and some-  
 ‘ times down.’\* [So that the phrase *windows of heaven*

\* Mr. HUTCHINSON, in his *Observations in the year 1706*, (1st. edit. p. 93.) remarks, (long before, I believe, he had any thought of interpreting the passage under consideration in the manner he has done) ‘ Through the cracks in the strata, the water also passes to springs.—In fair clear weather, when there is any wind stirring and motion in the Air above, the air below in mines passes so sensibly at these cracks, as sometimes to blow out a candle. But when the rains are rising, the moisture expels the air, and causes such a scarcity of it, or else a want of circulation of that air, that the candles will not burn; and withal such a sensation of heat to men, as scarcity of air, in other places, does.—It is plain, the air will be thus expelled out, and return alternately into these cracks, as the Steams that supply rain, fill and quit them.’ The same is remarked by Dr. Woodward; and the free intercourse between the Air below and our Atmosphere or the air above, through every cranny in the earth, is fully proved; and the alterations or the rise and fall of the mercury in the Barometer are shewn to depend thereon; vid. his *Nat. Hist. of the Earth illus. &c. Translator’s Introduction*, p. 109—153. See also *Lowthorp’s Abridgm. of the Phil. Trans.* Vol. II. ch. iii. and *Gessendi animad. in 10<sup>um</sup> librum Diogenis Laertii*, Vol II. p. 1052.

I may here observe, with regard to the text under consideration, that the word ארבת (translated *windows*) is derived from the verb ארב which signifies to lie in wait, to lurk privily in a den, to watch in a hole, under cover; as Psalm x. 9. יארב he lieth in wait secretly as a lion in his den. Job xxxviii. 40. The young lions abide in the covert to lie in wait. And the word ארב signifieth a den, or hole, or cave in the rock, as Job xxxvii. 8. Then the beasts go into dens [ארב]. And even the Septuagint Translation of this word, καλαραλαι, includes much of the meaning of the Hebrew, as καλαραλαις is derived from καλαρααισω to issue out, to break through; and may be rendered the place of rupture or breaking through; it also signifies a Gate, see *Scap. Lexi.* So that the same idea of a hole, cave, passage, opening, &c. is preserved in all the above places, the context in each place determining the precise meaning of the word. Hence other passages, which seem to differ, may be reconciled to this explication, as 2 Kings vii. 2. where, on account of an extreme famine, a Nobleman for disbelieving the word of Elifba, (who had foretold that there should soon be a great plenty of flour and barley)—says, If the LORD would make windows

may here be rendered *the passages of the Airs.*]—‘ In  
 ‘ the narrowest acceptation the *passages of the Airs* are  
 ‘ through *every fissure*, and between *every fragment* of  
 ‘ Stone, and they are *so many*, that most sorts of Stone  
 ‘ are divided by *great cracks*, into pieces of perhaps a

[*openings, passages*] in [not of] *heaven*, [and thro’ them pour down  
*flour and barley*, as he had heretofore *rained down manna upon the*  
*children of Israel*, Psalm lxxviii. 23, 24 ] *might this thing be?*—And  
 again, Malachi iii. 10. where God, accusing the *Jews for robbing*  
*him in his tithes and offerings*, promises (if they would repent)  
 that *he would rebuke the destroyer that he should not destroy the FRUITS*  
*of their ground*, and says, *Prove me now,—If I will not open you the*  
*windows of heaven [the passages of the Airs] and empty out a blessing,*  
*that there shall not be room enough to receive it.* Here is the very  
 same phrase used as in the text under consideration, and must be un-  
 derstood in the same sense. The *Abyss* is called *GOD’S storehouse* ;  
 and the *fruitfulness of the earth* or *Vegetation*, depends much upon  
 the *influences* thereof, or *water sent from thence*, as any one may be  
 convinced by consulting the *Authors* just referred to, but I shall con-  
 fine myself to *Scripture*. Ezekiel comparing the proud *Affyrian* to a  
*flourishing Cedar in Libanus*, nourished by the *subterranean waters*,  
 says, (xxx. 4.) *The WATERS made him great, the DEEP set him up on*  
*high with HER rivers [so rivers proceed from her, the Deep] running*  
*about his plants, and sent out her little rivers unto ALL THE TREES*  
*OF THE FIELD: therefore his height was exalted above all the trees*  
*of the field, and his boughs were multiplied, and his branches became*  
*long, BECAUSE OF THE MULTITUDE OF WATERS, when he shot*  
*forth.* And the *Blessedness* or *Fruitfulness* of a land is attributed to  
 the *Deep below* as well as to the *Heaven above*, Deut. xxxiii. 13.  
*Blessed of the LORD be Joseph’s Land for the precious things of hea-*  
*ven, for the dew, and for the Deep that coucheth beneath.* And  
 Gen. xlix. 25. we have express mention of *the Blessings of the Deep*  
 or *Abyss*. So that, with-holding or closing up the *passages* in the  
 earth, thro’ which the *waters, steams* and *kindly vapours* arise for  
*moistening the Earth*, and *nourishing its plants*, would certainly ren-  
 der a land *dry, barren, and desolate* ; and on the contrary, *opening*  
 these *passages*, and permitting the vapours to ascend, would greatly  
 conduce to the *fruitfulness* or *blessedness* of a land. The reader by  
 viewing the *irregular black strokes* in the figure of the shell of the  
 earth, represented by F, in the subsequent plate, may have a still  
 clearer idea what *these passages of the Airs* are, and how the *Abyss*  
 is the *Storehouse* from whence they are supplied.

‘ tun weight, &c.—How far the parts were divided, and the cracks opened at first, is not to be determined; but they were opened, and the fragments distanced so wide, or in so many places, that the Airs went down into the Abyss as fast as the Waters came up, quantity for quantity. But the *Continuance* and *Repetition* of this force would by degrees reduce them smaller and smaller. If we carry this expression of *the passages of the Airs being opened to the utmost extent*, the *Waters*, much more the *Airs*, pass *between the grains or sands of most sorts of stone*; and perhaps it will at some time appear that the parts of the Airs *pass between every atom of stone*, and then the words imply a DISSOLUTION, as it really was, though executed by degrees, as men, &c. were destroyed.’

As there are other texts which mention the *Dissolution* of the Earth, it may be proper to cite them; *Psalms* xlv. 1. *God is our refuge;—therefore will we not fear, though the Earth be removed [BEMIR be changed, be quite altered, as it was at the Deluge] and tho’ the mountains be carried into the midst of the sea; though the waters thereof roar, and be troubled, tho’ the mountains shake with the swelling thereof;—God uttered his voice, the earth MELTED [THEMUG, flowed, dissolved to atoms<sup>1</sup>]* So *Job* xiv. 19. which I shall translate nearly according to *Pagninus’s* version; that being the nearest of any other to the original; *For truly the falling mountain dissolved, and the rock [the strata of stone] was removed out of its place. The waters dashed the stones to pieces; and washed away the products of the dust of the earth: and thou destroyedst the hope of man.* Again; *Chap.* xxviii. 9. in which also I shall chiefly follow *Pagninus’s* version, *He sent his band [the Expansion, his Instrument or the Agent by*

<sup>1</sup> MAR. CALAS. 215 est *Dissolutio* & *Diminutio*.

which he *worked*] against the Rock; he overturned the mountains by the roots; he caused the rivers to burst forth from between the rocks [or broke open the fountains of the abyss]. His eye [symbolically placed for the Light] saw [passed through or between] every minute thing [every atom; and so dissolved the whole]. He (at last) bound up the waters from weeping [i. e. from pressing through the shell of the earth, as tears make their way thro' the orb<sup>e</sup> of the eye; or, as its related Gen. viii. 2. he stopped the fountains of the abyss and the windows of heaven]. And brought out the Light from its hiding-place [i. e. from the inward parts of the earth from between every atom, where it lay hid, and kept each atom separate from the other, and so the whole in a state of dissolution; his bringing out these parts of the light which caused the Dissolution would of course permit the Agents to act in their usual way, and so re-form the earth]. 2 Esdras. viii. O Lord, whose service is conversant in Wind and Fire; whose word is true;—whose look drieth up the depths, and indignation maketh the mountains to melt away, which the Truth witnesseth, [which the word of GOD, and present natural state of the Earth bear witness to].

VER. 12. And the Rain [the vapours which were carried high up into the Atmosphere, and formed into rain] was upon the earth [falling and subsiding] forty days and forty nights.—And the waters increased, and bare up the ark;—and the waters prevailed and increased greatly upon the earth; and the ark went upon the face of the waters. And the waters prevailed exceedingly upon the earth; and all the high hills, that were under the whole heaven, were covered; fifteen cubits upward did the waters prevail, and the mountains were covered.<sup>m</sup>

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<sup>m</sup> From mention being here made of Mountains, as subsisting under the waters of the deluge, some have imagined that They were not,

So that, there was *no high Hill or Mountain* upon *any part* of the earth which was *before* covered with *air*, but what was *now* covered with *water*; of course the *Deluge was universal*. But an irrefragable argument may be drawn from these words against a *partial Flood*, or an *universal* one effected by *partial* means, if I may so say, that is, by the waters first washing over one part of the earth, and then the same water proceeding on and overflowing another, and so successively, 'till in the end the whole was drowned. For, according to Scripture, the water rose *gradually* and *equally*, and at last *covered all the high hills and mountains* at *one* and the *same time*, so that the Flood could not have been of the above-mentioned *wandering* nature, as some, for want of knowing where a sufficient quantity of water lay for flooding the whole earth, have falsely imagined. Besides, it is altogether impossible to conceive, that the waters could have risen to the height of *any high bill* under heaven, and not at the same time to have been of *equal height* over the *whole earth*; for the parts of water are diffusive, having no tie or connection with each other; so that as they mounted upwards they would *spread* and *extend* themselves *equally* on *all sides*; and *at the same time* that they covered *one* high hill, they would of course cover *all others* of *equal height* over the *whole face* of the earth. For we are not to imagine

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and of course that the *whole earth* was *not, dissolved* during the flood. But such seem not to consider that the *Dissolution* (as observed above) was executed *by degrees*, as men, &c. were destroyed. It is said indeed that *on the day* that *Noah* entered into the ark *ALL the fountains of the Great Deep were broken up*, but it is not said, that *ALL the windows of heaven* or *all the passages of the airs* were opened on that day, and it does not appear that they were *all* opened or the earth totally dissolved 'till the *third and last prevalence* of the waters, or the event mentioned *ver. 24*, was effected; as the comment on that verse will shew.

without a miracle of a most astonishing kind (which in this case is not to be admitted, because not mentioned) that ‘ a huge mass of water could have hung about any particular part of the earth, as if congealed; or stood upon the middle of it like one great drop, or a trembling jelly, and all the places about it dry and untouched,’ as an author observes; and then that this said mountain of water should be removed, or rolled to another place, and so on, ’till at length it had covered the whole earth. This shift to avoid one real miracle, is only multiplying a number of others that never were effected; and I may just add here the observation of a judicious Divine, ‘ that no man departed from the common faith upon pretence of avoiding any absurdity therein supposed, but that he ran himself upon the necessity of believing greater absurdities than any he pretended to avoid.’

WHAT is related above,—that *the waters prevailed fifteen cubits upwards, and* (or according to the translation of Jun. and Tremel. after) *the mountains were covered,*—does not seem to be spoken to determine the precise height of the waters, but only to denote that *all living creatures must have perished in such a flood;* For it immediately follows,

*And all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the Earth, and every man;—Noah only remained alive, and they that were with him in the ark.*

VER. 24. *And the waters prevailed upon the earth an hundred and fifty days.*

As this is mentioned *after the mountains are said to have been covered fifteen cubits* (which was only related to denote the means by which *all flesh perished*) we may reasonably suppose, that *the waters prevailed anew* or continued to prevail for *some time* at least *after the*

*mountains were covered fifteen cubits*; especially if we consider that there is no mention yet made of *the fountains of the Abyfs* or *the passages of the Airs being closed*; so that the waters were still pressed upwards, and reached in their real altitude far above *fifteen cubits* higher than the mountains; as many appearances in and on the earth undeniably evince.

It may be proper to remark here, that the word rendered *prevail*, signifieth somewhat more than the *bare increase* or *augmentation* of the waters, (tho' that idea is also included) for a distinct, and very proper word for the increase of the waters is used ver. 17 and 18, *and the waters increased* [1REBU, were multiplied]. And the word which we render *prevail*, very justly has that meaning; it denotes *power, strength to prevail, get the better of, to subdue*; so that by *the waters prevailing upon the earth* may be meant (especially as this *prevalence* is mentioned *three times*, ver. 18, 19, and 24) the *total Subduing* or *Dissolution of the earth by the waters*: *Moses* by this expression giving us to understand, that the *waters had acted upon the earth in such a manner and effected it to such a degree*, as to have reduced it, like *itself*, to a *fluid, loose state*; at least, this must have been the consequence of such a prevalence of the waters; for, as the *Passages of the airs* are said to have been *opened* and the *fountains of the Great Deep broken up*, BEFORE this *Prevailing of the waters*, it could not but be, that the waters, as they rose upwards from the Abyfs, would make their way thro' *these Passages*, and by continuing and repeating this action, would separate and widen the pores of the earth, and at last reduce it to its *original principles* or *unformed, fluid, chaotic condition*, mentioned *Gen. i. 2.* So that the Earth must *now* have been *totally dissolved* in the *water*.

VENGEANCE having been thus executed upon the wicked, a polluted earth destroyed, and cleansed by water; the next procedure would be to form it again. Accordingly we are told ch. viii. 1. that God (who delights not in seeing things in disorder, but pities when he distresses) *remembered Noah, and every living thing, and all the cattle that were with him in the ark.*

*And God made a Wind [RUE, the Spirit] to pass over the earth, and the waters asswaged.*

THE same word that is here rendered *Wind* is translated *Spirit* in the account of the first Formation of things, (as I have already observed) *Gen. i. 2. And the Spirit of God moved upon the face of the waters.* And as the motion then raised in the air by the *immediate power of God*, was the *primum mobile* or chief Cause of bringing the Earth out of its chaotic state into its intended beautiful form, so the same Agent is here employed in order to re-form the earth after its destruction or dissolution during the deluge: and of course the same effects followed.——The Waters were before *increasing and prevailing upwards*, but now they are *asswaged*, and prevented from extending their orb by the *passing of the Spirit over them*. The Spirit had before acted *through* the earth, and by its impulse *broke open the fountains of the Abyss and the windows of heaven*, but it was now made to act in its *usual way of pressing only or chiefly upon the surface*: things therefore would now be returning to their former course, and the same effects ensue as had been largely described in the account of the first Formation, and so needed not to have been repeated here.

HENCE we read in the next verse, *The fountains of the Deep, and the windows of heaven were stopped, and the rain from heaven was restrained.*

THIS was no more than a consequence of setting the Powers of Nature to work, as at the first. The earth



had been dissolved, and all the atoms of the strata of stone floating loose and irregularly in the waters; but as soon as the natural agents began to operate, as soon as the outward and inward Expanse [*i. e.* the Light and the Air *without* and *within* the earth] began to act, to *make a division between the waters*, they would drive all the *solid parts* of the earth together (much in the same manner as the same Agents at present separate and impel the particles of slime and mud in dirty water) into a *shell or crust* and permit all the *Fluids* to slide between; so that there would be *two orbs of water* and *one shell of stone or the crust of the earth* between them; as things were circumstanced on the *second day* after the creation, Gen. i. 6, 7. When, by the *interposition of the solid shell of the earth, the waters were divided from the waters*, and the earth would be in the situation it is described to be in by St. Peter; (2 Epist. iii. 5.) during the *height of the Flood, And the Earth standing out of the water and in the water; whereby the world that then was, being overflowed with water, perished.* The account of the *destruction* of the earth and of its *Re-formation* illustrate and confirm each other: in order to *destroy* the Earth the *fountains of the Great Deep were broken up, and the passages of the Airs through the strata opened*, but at the *Re-formation*, Moses tells us, they were *both stopped or closed*, and even the *vapours for rain* prevented from rising. So that the solid shell of the earth permitted neither the waters to descend, nor the vapours to ascend: and of course the *Shell* must *before* have been *dissolved to atoms*; for had it been only *broken or fractured into large pieces*, it could not have been *so closed or joined together*, but that both *waters and vapours* would have *passed through*; and in this case it could not have been said, that *the passages of the Airs were stopped.*

THE *shell of the Earth* having been thus *consolidated and formed anew*, did not, and indeed could not, remain long whole and entire. For, as the Expanse or Firmament had now received its full, if not new, powers of acting, the Light (which penetrates all terrestrial bodies) would soon make its way through *the waters and strata of stone* to the *comparatively thinner medium or air* at the center of the earth (for it must be remembered that the air or that part of our Atmosphere, which at the beginning of the deluge, was forced down into the Abyfs, drove out the waters from thence, and elevated them over the surface of the whole earth, would there continue as long as that elevation lasted, and so constitute an *inward Air or Firmament*) cause there a rarefaction, and so increase the force of the inward Expanse, which by this means would act more strongly against the concave part of the shell of the earth, and by continuing to exert and extend its power on all sides from the center, would by degrees make small cracks and crevices in the shell, and at last by receiving new strength and increased vigour open and widen these cracks, so as to permit the water, that covered the surface of the earth, to be pressed down through them into the Abyfs by the force of the outward Expanse, as was the case at the first Formation. Hence it follows in the next verse

*And the waters returned from off the earth continually.*

IN the verse preceding, *the fountains of the abyfs and the windows of heaven were closed*, so that neither vapours nor waters could pass; but here we find that the *waters are returning* i. e. going back to the place from whence they came; they came, we saw, from the Abyfs, so that new inlets or apertures into the abyfs must now have been made for the descent of the waters, otherwise they could never have returned from whence they came; or have been *gathered into*

one [and their former] place. They returned from off the earth CONTINUALLY, or as translated in the margin, *in going and returning*, in flowing backwards and forwards, in fluctuating here and there; for as the Airs began to ascend before the Waters began to descend, they would of course impede and in part drive back the waters and so cause a fluctuating or reverberating motion in them; and by this means also the waters would be prevented from rushing down too fast and from tearing the shell of the earth too much.

VER. 4. *And the ark rested—upon the mountains of Ararat.* As antiquity, and the tradition of the country at present, testify.<sup>a</sup>

VER. 8. *And Noab sent forth a dove from him, to see if the waters were abated from off the face of the Ground: but the dove found no rest for the sole of her feet and she returned unto him into the ark. Again he sent forth the dove out of the ark. And the dove came into him in the evening, and lo, in her mouth was an olive-leaf [or branch; an emblem of peace<sup>o</sup>] pluckt off: so Noab knew*

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<sup>a</sup> See Universal History, Vol. I. p. 239, &c.

<sup>o</sup> Some have imagined from the circumstance of the Dove's bringing Noab a leaf or branch pluckt from a tree, as a proof of the decrease of the waters, that this Tree must have been standing upright or in its original position: otherwise a branch pluckt from it could not have served for such a proof; and therefore, if the Tree was thus standing on the ground, it must follow, that the earth was not total'y dissolved during the Deluge. But such seem not to have considered that whether the earth was dissolved or not (but that it was, I think, I have abundantly proved above) it had been impossible for any thing upon the surface, such as Houses, trees, &c. to have withstood the prodigious torrents of water that must have rushed down from the mountains, *after* they had been covered *far above fifteen cubits high*; but of all things, far less capable were *trees and vegetables* of withstanding these torrents, because as the waters had been out upon the surface of the earth for *several months*, it could not be, but that, by their irregular motions in flowing backwards and forwards, they must soon have dissolved, liquified or *dissipated*

that the waters were abated from off the earth. And he staid yet other seven days, and sent forth the dove; which returned not again unto him any more.

VER. 13. And Noah removed the covering of the ark, and looked, and behold, the face of the ground was dry.

So the dry-land appeared by the return of the waters to the place from whence they came, in the same manner as they had done at first, when God commanded that the waters under the heaven should be gathered together unto one place (the abyss) and the dry land appear.

VER. 15. And God spake unto Noah [as God had ordered Noah to enter into the ark at a particular time, so Noah waits the divine command for his coming out] saying, Go forth of the ark, thou and thy wife, and thy sons wives with thee. Bring forth with thee every living thing that is with thee, of all flesh, both of fowl and of cattle, and of creeping thing that creepeth

the vegetable mould and all the loose parts on the upper surface of the earth; so that all trees would have fallen of course, as the ground, on which they stood, gave way: hence Noah could not but conclude (had he ever seen a common storm, attended with violent rain) that—in such an inundation as was that in his time, when God assured him, he would destroy the whole earth; all trees, &c. must have been thrown down upon the surface; and therefore if the Dove brought him a leaf from one, it must have lain along upon the ground; and so be as full a proof of the abatement of the waters, as if it had been standing upright. And that the olive-tree did thus lie, seems evident from the present state of things on and near the earth's surface; it being very common to find prodigious numbers of trees lying just beneath the vegetable mould, in such a manner as the waters rushing from the neighbouring mountains would naturally leave them.

But there is another solution to this difficulty, which, considering the emblematical style of Scripture and the circumstances of the case, may be thought more just than the former; tho' very reconcilable with that interpretation. As it is particularly mentioned that Noah staid just seven days before each time of sending out the Dove, so in all probability the day on which he sent her out was the Sabbath; and the time of the day, just after he had performed religious service; as he might most reasonably think that would be the best for

upon the earth; that they may breed abundantly in the earth, and be fruitful and multiply upon the earth. And Noah went forth and his sons and his wife, &c. And God blessed Noah and his sons, and said unto them, be fruitful and multiply, and replenish the earth.

HERE the same blessing for replenishing the earth with men is bestowed upon Noah and his family, as was pronounced upon the first pair of the human species; and a similar declaration made with regard to the brute-animals that came out of the ark to be fruitful and multiply upon the earth, as had been done at their first formation: whence it must follow, that the earth, after the flood, was as entirely void of any living creature of the land or air (except those that were preserved by the ark) as it was before any such were in being. And therefore the *Deluge*, in this respect, was unquestionably *universal*.

expecting a blessing or a favour from heaven: Accordingly, at the second return of the Dove the *divine signal* was brought,—an *Olive-branch*, an emblem of peace, in token that the waters were abated and the fury of God's wrath upon a wicked world was ceasing, and that joy and comfort would soon succeed to the afflicted righteous. And unless this branch be looked upon as a *divine signal* and *providentially given*, it will be difficult to say what could induce the Dove to bring any branch at all,—and why an *Olive-branch*,—and that this should be particularly mentioned; when saying that a leaf or branch was brought, had been sufficient, without specifying the tree from whence the branch was taken; unless something particular had been intended thereby. And, that the *Olive-branch* was an emblem or sign of Peace, Friendship, or Abatement of Anger, Discord, &c. throughout almost the whole world. See *Virgil's Æneid*. Lib. viii. 116. & Lib. xi. 101. *Livy*. Lib. xxix. 16. *Polybius*, Lib. iii. And we learn from *Columbus's Voyages*, chap. 101. that this Symbol was used even in *America*. So then Noah as soon as he saw the *Divine Signal*, deciphered the meaning thereof, and knew that the waters were abated. In this view, it does not at all signify, whether the tree, from whence the branch which the Dove brought was pluckt, was lying down or standing upright; for the particular species of tree spoke its own meaning.

## An Explanation of the COPPER-PLATE,

REPRESENTING

The internal structure of the terraqueous Globe, from the Center to the Circumference, and the Air around it.

- D. The *outward Expanse* or the open Firmament of Heaven.
- E. A *circular Space* filled with water during the height of the Deluge, but now with the Air that came from the central Hollow of the earth; and at present constitutes what we call our *Atmosphere*.
- F. The *shell of the earth* broken into innumerable *apertures* and *fissures*, of various shapes and sizes; the *larger* of which, f. f. f. f. f. being filled with the water that descended from the surface of the earth, form *Seas* and *Lakes*; the *lesser* (which branch from the former, or pass immediately from the under-part of the shell of the earth to the tops of the highest mountains) serve as canals for the water which supplies *Springs* and *Rivers* to run in; the *least* of all (denoted by the *irregular black strokes* in the solid shell of the earth) represent the cracks thro' which *vapours* principally ascend.
- G. H. The *Great Abyss* of water within the earth; with which all Seas, Lakes, Rivers, &c. communicate; and from whence they receive their supplies. G. H. are divided from each other by a dotted circle, because *one of them* represents the water that, during the Deluge, covered the whole surface of the earth, but which was afterwards forced down, thro' the above-mentioned larger apertures and fissures, to its original place, as the inward Air was forced out thro' the lesser and oblique fissures: and the *other of them* represents that part of the Abyss which, during the Deluge, remained beneath the earth.
- I. A *solid Ball* or *Nucleus* of terrestrial matter, formed from what the water in its descent from the surface, and passage through the strata of the earth, tore off, and carried down with it into the Abyss, and repositied at the lowest place, the center of the earth.
- So that the Opinion of the Ancients concerning the Earth's resembling an *Egg* has great propriety in it: for the Central *Nucleus*, (I.) by its innermost situation and shape, may well represent the *Yolk*; the *Abyss* of water, (G. H.) which surrounds it, and is in a middle position, may stand for the *clear Fluid* of the *White*; the *Crust of the Earth* (F.) (allowing only for its breaks and cracks) by its roundness, hardness, uppermost situation, and little inequalities on its surface, is justly analogous to the *Shell*. And on this account the term *the shell of the earth* is frequently used in this treatise.

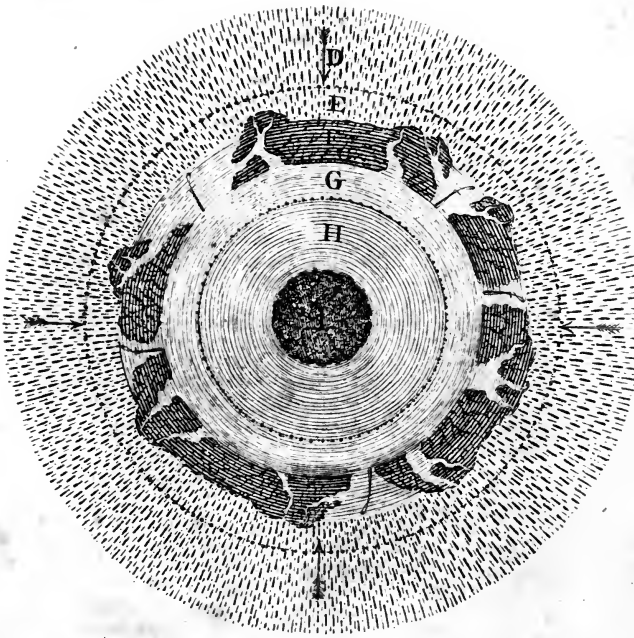


Fig. 11. La Cave de l'oeuf.





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A  
C O L L E C T I O N  
O F T H E

Principal *Heathen* Accounts of the Flood.

HAVING given at large an explanation of the  
 H *Mosaic* History of the Deluge; I shall now  
 subjoin the testimonies of several Heathen Nations in proof of the same fact. For, it may justly be supposed, that did any such event really happen, it could not be but that all or most nations upon the earth must have retained some knowledge or tradition of it. And if upon enquiry it should appear that the same of the Deluge has gone throughout the whole world, that almost every nation upon earth has some story or other to relate concerning it; it will certainly follow, that there has been such an *Event*, and that it was *universal*. But of such deductions and corollaries as these hereafter.

To collect all the evidence that might be produced on this occasion would be endless and needless; I shall therefore select here and there particular accounts from the most eminent nations; and in gathering these, shall travel quite round the world.

I BEGIN with the great and famous nation of the *Romans*. Many of their writers, both Poets and Historians, make mention of an universal Flood; but one may speak the voice of all. I shall take That of *Ovid*; who, purposing to relate some particular circumstances of the history of mankind from

the beginning, regularly proceeds from the formation of man, thro' the several ages of the world, to the time of the Deluge; the *cause* and *manner* of which (after having related the height of impiety and wickedness that reigned upon the earth during the *iron-age*) he thus describes, *Metam. Lib. 1.*

*Neve foret terris securior arduus æther, &c. i. e.*

‘ Nor were the Gods themselves more safe above;  
 ‘ Against beleaguer’d Heaven the *Giants* move;  
 ‘ Hills pil’d on hills, on mountains mountains lie,  
 ‘ To make their mad approaches to the sky.  
 ‘ Till *Jove* no longer patient, took his time  
 ‘ T’avenge with thunder their audacious crime;  
 ‘ Red lightning play’d along the firmament,  
 ‘ And their demolish’d works to pieces rent.  
 ‘ Sing’d with the flames, and with the bolts transfix’d,  
 ‘ With native earth their blood the monsters mix’d;  
 ‘ The blood, indu’d with animating heat,  
 ‘ Did in th’ impregnant earth *new sons* beget.  
 ‘ They, like the *seed* from which they sprung, accur’d,  
 ‘ Against the Gods immortal hatred nurs’d;  
 ‘ An impious, arrogant, and cruel brood;  
 ‘ Expressing their Original from Blood.

‘ Which when the KING of GODS beheld from high—  
 ‘ He sigh’d; nor longer with his *pity* strove;  
 ‘ But kindled to a *wrath* becoming *Jove*.—

“ *Mankind’s a monster, and the ungodly times*  
 “ *Confederate into guilt, are sworn to crimes.*

“ *All are alike involv’d in ill, and all*

“ *Must by the same relentless fury fall.*”<sup>q</sup>

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<sup>p</sup> This answers to the *Scripture* account of the *Giants*, the *Apostates* (those rebels to the *Will of Heaven* or *Word of God*) that were before the *Flood*, and to the *children*, the *Sons*, that sprang from them, who were worse than their *Fathers*, see *Gen. vi. 1—5.*

<sup>q</sup> *Gen. vi. 12. And God LOOKED UPON the earth, and BEHOLD it was corrupt; for all Flesh had corrupted his way upon the earth.*

' Thus ended he ; the greater Gods assent,  
 ' By ciamours urging his severe intent ;  
 ' The less fill up the cry for punishment.  
 ' Yet still with *pity* they *remember man*  
 ' And *mourn* as much as *beav'nly Spirits can*.  
 ' ————— But *Jove*  
 ' Concludes to pour a *watry Deluge* down,  
 ' And what he durst not burn, resolves to drown.  
 ' The Northern breath, that freezes floods, he binds,  
 ' With all the race of cloud-dispelling winds.  
 ' The South he loosed, who night and horror brings ;  
 ' And fogs are shaken from his flaggy wings.  
 ' With rain his robe and heavy mantle flow,  
 ' And lazy mists are lowring on his brow.  
 ' The skiës from pole to pole with peels resound,  
 ' And *show'rs enlarg'd* come pouring on the ground.  
 ' ————— *Impetuous rain* descends.  
 ' Nor from his patrimonial Heav'n alone  
 ' Is *Jove* content to pour his vengeance down,  
 ' Aid from *his Brother of the seas* he craves ;  
 ' To help him with auxiliary waves.  
 ' The watry Tyrant calls his *brooks and floods*,  
 ' Who roll from mossy caves (their moist abodes) ;—  
 ' The floods, by nature enemies to land,  
 ' And proudly swelling with their new command,  
 ' Remove the living stones, that stop'd their way,  
 ' And gushing from their source, augment the sea.  
 ' Then with his mace their Monarch struck the ground  
 ' With *inward trembling* earth receiv'd the wound,  
 ' And *rising streams* a ready passage found.

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*And it REPENTED, the Lord that he had made man on the earth, and it GRIEVED him at his heart. And the Lord said, I will destroy man whom I have created, &c. and bring a FLOOD OF WATERS upon the earth to destroy all flesh, &c.* The reader, as he proceeds, may make many such striking resemblances as these between Scripture and Heathen History.

‘ Th’ expanded waters gather on the plain ;  
 ‘ They float the fields and overtop the grain ;  
 ‘ Then rushing onwards with a sweepy sway,  
 ‘ Bear flocks and folds and lab’ring hinds away.  
 ‘ Nor safe their dwellings were, for sap’d by floods,  
 ‘ Their houses fell upon their household gods.  
 ‘ The solid piles too strongly built to fall,  
 ‘ High or’e their heads behold a watry wall.  
 ‘ Now Seas and Earth were in confusion lost ;  
 ‘ A world of waters, and without a coast.—  
 ‘ The most of mortals perish in the flood ;  
 ‘ The small remainder dies for want of food.

‘ A *mountain* of stupendous height there stands  
 ‘ Betwixt th’ *Athenian* and *Bœotian* lands,  
 ‘ *Parnassus* is its name ; whose forky rise  
 ‘ Mount thro’ the clouds, and mates the lofty skies.  
 ‘ High on th’ Summit of this dubious cliff,  
 ‘ *Deucalion* wafting, moor’d his little *skiff*.  
 ‘ He with his wife were *only* left behind  
 ‘ Of *perish’d man* ; they *two*, were *human kind*.  
 ‘ The mountain Nymphs and *Themis* they adore,  
 ‘ And from her *Oracles* relief implore.  
 ‘ The *most upright* of mortal men was he,  
 ‘ The *most sincere* and *holy woman*, she.

‘ When *Jupiter*, surveying earth from high  
 ‘ Beheld it in a lake of water lie ;  
 ‘ That were so many millions lately liv’d,  
 ‘ But two, the best of either sex surviv’d ;  
 ‘ He loos’d the *Northern Wind* ; fierce *Boreas* flies  
 ‘ To puff away the clouds and purge the skies :  
 ‘ Serenely, while he blows, the vapours driv’n  
 ‘ Discover Heav’n to Earth, and Earth to Heav’n.—

DRYDEN.

FROM *Rome* let us proceed to *Greece*. I shall here  
 take the testimony of *Lucian* or the author of the book  
*de Dea Syria*, as it will include that of the *Scythians*,

*Syrians*, and *Arabians*, as well as *Grecians*. - Οἱ μὲν  
 οὖν πολλοὶ Δευκαλιωνα, &c. i. e. 'Many say that this  
 ' temple [that at *Hierapolis* in *Syria*] was built by  
 ' *Deucalion*, the *Scythian*. That *Deucalion*, I mean,  
 ' in whose time the greatest inundation of waters was.  
 ' I have heard in *Greece*, what the *Grecians* say con-  
 ' cerning this *Deucalion*. The story they relate, is as  
 ' follows: The present race of men was not the first,  
 ' for they totally perished; but is of a second genera-  
 ' tion, which being descended from *Deucalion*, in-  
 ' creased to a great multitude. Now of these former  
 ' men they relate this story: they were insolent, and  
 ' addicted to unjust actions; for they neither kept  
 ' their oaths, nor were hospitable to strangers, nor  
 ' gave ear to suppliants; for which reason this great  
 ' calamity befel them: on a sudden the earth poured  
 ' forth a vast quantity of water, great showers fell,  
 ' the rivers overflowed, and the sea arose to a prodi-  
 ' gious height; so that all things became water, and  
 ' all men were destroyed: only *Deucalion* was left unto  
 ' a second generation, on account of his prudence  
 ' and piety. He was saved in this manner: he went  
 ' into a large ark or chest which he had, together  
 ' with his sons and their wives; and when he was in,  
 ' there entered swine, and horses, and lions, and ser-  
 ' pents, and all other creatures which live on earth,  
 ' by pairs. He received them all, and they did him  
 ' no hurt; for the Gods created a great friendship a-  
 ' mong them; so that they sailed all in one chest  
 ' while the water prevailed. These things the *Greeks*  
 ' relate of *Deucalion*. But, as to what happened after  
 ' this, there is an ancient tradition among those of  
 ' *Hierapolis*, which deserves admiration; viz. that  
 ' in their country a great chasm opened, and received  
 ' all the water; whereupon *Deucalion* erected altars,  
 ' and built the temple of *Juno*, over the chasm.

‘ This chasm I have seen, and it is a very small one  
 ‘ under the temple ; whether it was formerly bigger,  
 ‘ and since lessened, I cannot tell ; but that which I  
 ‘ have seen is little. In commemoration of this his-  
 ‘ tory, they do thus : Twice in every year water is  
 ‘ brought from the sea to the temple, and not by the  
 ‘ priests only, but *all Syria and Arabia*, many come  
 ‘ from beyond *Euphrates* to the sea, and all carry  
 ‘ water, which they first pour out in the temple and  
 ‘ afterwards it sinks into the chasm ; which, tho’ it  
 ‘ be small, receives abundance of water. And when  
 ‘ they do this, they say *Deucalion* instituted the cere-  
 ‘ mony in that temple, as a memorial of the cala-  
 ‘ mity, and of his deliverance from it.’

WE will next pass to *Egypt* ; whose ancient inhabi-  
 tants have retained the knowledge of the *Deluge* under  
 the histories of *Osiris* and *Typhon* ; as is evident from  
 what *Plutarch* says concerning them in his *Isis* and  
*Osiris*. For first he informs us p. 30, (of *Squire’s* edi-  
 tion) that they relate, ‘ that when *Osiris* was born, a  
 ‘ voice was heard, saying, *The Lord of all the earth is*  
 ‘ *born,*’ and p. 42. that ‘ in their funeral-lamentation  
 ‘ over him, they bewail’d him, *who was born on the*  
 ‘ *right side of the world, and who perished on the left.*’  
 P. 17. ‘ He is said to have been put into a chest,’ and  
 they particularly assert, that it was on the 17th day of  
 the month *Atbyr* [see *Gen. vii. 11*] and *thrown into*  
*the sea.*” After these things *Osiris* is said to have re-  
 turned from the *other world*, and to have appeared to  
 his son *Orus*.---The person who thus used *Osiris* is said  
 to have been one *Typho*,\* which name the *Egyptians*

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\* *LUCIAN de Dea Syria*, Tom. 11. p. 882. Vid *Univer. History*  
 Vol. I. p. 203.

\* The name *Typho* according to some learned men signifies a *De-  
 luge or Inundation*; see *JURIEU’S Doctrines and worship of the church.*  
 Part. III. Tr. IV. And *Typhon*, or as the Latin Poets call him

explain by interpreting it the *Sea*, and they call *the salt of the sea, Typho's foam*, p. 42. and p. 54, agreeable to this interpretation is what we are further told, ' that *Typho* was once in possession of the *portion* or *province* which belonged to *Osiris*; by which they mean, ' that *Egypt* was once covered with the *Sea*. Which ' opinion, say these philosophers, is probable enough, ' from that great number of sea-shells, which are not ' only dug out of their mines, but found likewise upon ' the tops of their mountains; and hence likewise it ' is, that their fountains and wells, though many in ' number, have all of them a brackish or saltish taste, ' with them, as containing the vapid relics of the sea- ' water, which once covered their whole country.'

FROM *Egypt* we will proceed to *Babylon*, and see what the *Chaldeans* relate of the *Deluge*. I shall cite their testimony as preserved by *Josephus*, in the first book of his *Jewish Antiquities*, p. 10. Τῆς δὲ κατὰ κλυδισμόν τοῦτον, &c. i. e. ' But of *this* [the *Noachian*] *Deluge* ' and the *ark* all the *heathen historians* make mention; ' among whom is *Berosus* the *Chaldean*, who, relating the particular circumstances of the *Deluge*, ' writeth thus, ' It is reported, that part of the ship ' as yet remaineth in *Armenia* on the mountain of the ' *Cordyæans*; and that some persons taking off the ' asphaltus [bitumen or pitch] carry it away; and ' that men make use of that which is thus taken off, ' by way of charm, to avert evil.' And again, in ' his dispute with *Apion*, he publickly appeals to the ' testimony of the same *Berosus*, as being agreeable to ' that of *Moses* (Book the 1st. p. 1044.) Οὐκ ἔστι τοῦτον

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*Typhæus*, is represented as a monstrous Giant warring against heaven; and who was at last overcome by *Jupiter*, and as one says, *lies now submersed in water*. APOLL. ARG Lib. 2. The *Arabs* at this day express the general *Deluge* by the word *al tufan*; UNIVERSAL HIST. Vol. I. p. 200.

ἰ Βηρωσοῦ, &c. ‘ Now this *Berosus* following the most  
 ‘ ancient records, writeth the history of the Deluge,  
 ‘ and of the destruction of mankind therein, just as  
 ‘ *Moses* hath related it; and also of the *Ark*, in which  
 ‘ *Noah*, the Chief or Leader of our race, was saved  
 ‘ when it was carried to the tops of the *Armenian*  
 ‘ mountains.’ And if the *Babylonian Antiquities*,  
 that now pass under *Berosus*’s name, be truly trans-  
 lated from the Original (and I see no reason to  
 imagine that they are not, since, as far as they re-  
 main, they are consistent with, at least do not con-  
 tradict, what *Josephus* and other writers have quoted  
 from the Original) his account of the Deluge is as  
 follows, ‘ *Ante aquarum cladem famosam, &c. i. e.*  
 ‘ Before that famous devastation of waters, in which  
 ‘ the whole world perished, many ages had passed,  
 ‘ which were faithfully remarked by our *Chaldeans*.’  
 ‘ They write that in those times there was a great  
 ‘ city of Giants, called *Æno*, situated near *Libanus*,  
 ‘ who governed the whole world, from the rising to  
 ‘ the setting of the sun. These trusting to the great-  
 ‘ ness of their bodies and strength, and having in-  
 ‘ vented arms oppressed all, and being slaves to their  
 ‘ lust found out musical instruments, and all kind of  
 ‘ delights. They devoured men, and procured abor-  
 ‘ tions on purpose to dress them for food; they pro-  
 ‘ miscuously lay with mothers, daughters, sisters,  
 ‘ men and brutes; and there was no kind of wicked-  
 ‘ ness which they did not commit; they were de-  
 ‘ spisers of religion and of the Gods. Then many  
 ‘ foretold and prophesied, and carved out upon

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\* I think what his Lordship says on this head in the *first part* of  
*his Vindication of the histories of the Old and New Testament*, p. 121  
 —128. justifies this assertion. *Berosus* was a *Chaldean* Priest;  
 and lived about 270 years before the birth of CHRIST.



' stones the things relating to that destruction which  
 ' was soon to come upon the world. But they,  
 ' following their old course, derided all such admo-  
 ' nitions, tho' the anger and revenge of the Gods  
 ' were ready to fall upon them for their impiety and  
 ' wickedness. There was one among the Giants who  
 ' revered the Gods and was more wise and prudent  
 ' than all the rest; his name was *Noa*; he dwelt in  
 ' *Syria*, with his three sons *Sem*, *Japet*, *Cham*, and their  
 ' wives the great *Tidea*, *Pandora*, *Noela*, and *Noegla*.  
 ' This man, fearing the destruction which he foresaw  
 ' from the stars would come to pass, began, in the se-  
 ' venty-eighth year before the inundation, to build a  
 ' ship covered like an ark. Seventy-eight years from the  
 ' time he began to build this ship, the Ocean of a  
 ' sudden broke out, and all the inland seas, and the  
 ' rivers and the fountains bursting from beneath, (at-  
 ' tended with most violent rains from heaven for  
 ' many days) overflowed all the mountains; so that  
 ' the whole human race was buried in the waters;  
 ' except *Noa* and his family who were saved by means  
 ' of the ship; which being lifted up by the waters,  
 ' rested at last upon the top of the *Gordyeen* moun-  
 ' tain; of which, it is reported, there now remaineth  
 ' some part, and that men take away the bitumen  
 ' from it, and make use of it, by way of charm or  
 ' expiation, to avert evil.——We must therefore  
 ' allow from these premises, that which both the  
 ' *Chaldeans* and *Scythians* write of, that, after the  
 ' earth was dried from the waters, there were no  
 ' more than the above-mentioned eight persons in  
 ' *Armenia Saga*, and that from these all men upon  
 ' earth sprung; and for this reason it is, that the  
 ' *Scythians* justly say and call *NOA* the *father of all the*  
 ' *greater and lesser Gods*, the *author of the human race*,  
 ' the *Chaos*, and *seed of the world*.

FROM the *Babylonians* we will go to the *Affyrians*. For whom let *Abydenus* speak, whose authority is thus cited and publickly appealed to by *Eusebius*, Prepar. Evang. Lib. ix. Cap. 12. ‘Μεθ’ ον άλλοι τε ηρξαν, καὶ Σεισιθρος, &c. After whom others reigned, and then *Sisitrus*; to whom *Saturn* foretold that there should be a great flood of waters (or many showers) upon the fifteenth day of the month *Desuis*; and ordered him to hide whatever writings he could find, in *Heliopolis*, a City of the *Sippari*. *Sisitrus* having performed this, immediately sailed towards *Armenia*; and instantly after, those things which GOD had foretold came to pass. And on the third day, when the tempest was ceased, he made a trial, by sending out birds, to see if they could espy any land uncovered of water. But they finding nothing but the immense Ocean, and not knowing which way to direct themselves, returned to *Sisitrus*; and after these he sent out others. That the third time it answered, for the birds returned with their feet all mudded. But as for *Sisitrus*, the Gods took him from among men. And the Ship was carried to *Armenia*, and afforded the people of the country amulets of wood, to dispel diseases.<sup>u</sup>

FROM *Affyria* we will pass into *Persia*. Dr. *Hyde*, in his *Historia religionis veterum Persarum*, p. 171. writes thus, ‘*Veterum Persarum orthodoxi credunt—*

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<sup>u</sup> That by the *Floods* of *Deucalion* and *Sisitrus*, as also that which is said to have happened in the time of *Ogyges*, the ancients could mean no other than the general *Deluge* in the time of *NOAH* is abundantly evident from the relations themselves, but if the reader is desirous to see it circumstantially proved, he may consult the following Treatises, Bp. *STILLINGFLEET*’s *Origines sacrae*, Lib. iii. ch. 5. §. 5. *GALE*’s *Court of the Gentiles*, Part I. Book 3. ch. 6. *RAY*’s *Three Phys. Theol. Discourses*, p. 66. *KIRCHER*’s *Arca Noe*, Lib. 2. cap. 6. *GROTIUS* *de Verit.* Lib. I. cap. 16. *HEIDEGGER*’s *Hist. Patriar.* Exer. xviii. §. xliii.

*diluvium*, &c. ‘ The orthodox among the ancient *Per-*  
‘ *sians* believe a *Deluge*, and that it was *universal*, and  
‘ overwhelmed the whole earth. But as they have  
‘ various opinions and sentiments concerning all those  
‘ things which are so remote in antiquity, they differ  
‘ somewhat among themselves and run into fables.  
‘ For *Ibn Shabna*, the Arabian, in his book *de Primis*  
‘ & *Postremis* asserts, That there are some among the  
‘ *Magi* who deny a *Deluge*;—others he says, acknow-  
‘ ledge it; but say that it was not universal, and that  
‘ it did not reach beyond the top of a mountain near  
‘ *Hulvan*; a city situated between the confines of *Af-*  
‘ *syria* and *Persia*. From the opinion of *Zoroaster*  
‘ they maintain, that there had not been a *Deluge*,  
‘ neither had the world been drowned, but for the  
‘ iniquity and diabolical wiles of that most wicked of  
‘ mortals, *Malcus*.—In the Book *Pbarb. Sur.* the  
‘ famous mountain, where *Noah* dwelt when the wa-  
‘ ters of the deluge broke out from it, is mentioned;  
‘ and *Zala-Cupha* is said to be the name of the old wo-  
‘ man, from whose oven the waters first issued out.’

FROM *Persia* we will enter the *East-Indies*, which  
country being vastly extensive, the inhabitants nu-  
merous, and of different sects and orders, it is no  
wonder that some (as is asserted) deny a *Deluge*, and  
others affirm that there has been one. But if the tra-  
dition of it has reached this part of the world, it will  
be sufficient for our purpose. LORD in his *Discourse*  
of the *Banian Religion*, c. 6 & 7. informs us, ‘ That  
‘ the *Bramins* say, that the four tribes or casts, of  
‘ which the first race of men consisted, degenerating  
‘ from their primitive innocence,—the Priest neglect-  
‘ ing his piety, the Soldier becoming insolent and ty-  
‘ rannical, the Merchant practising deceit in trade,  
‘ and using false balances, and the Artizan spending  
‘ the profits of his inventions in riot and excess;—their

' impiety and wickedness grew at length to so insuffer-  
 ' able an height, that God's indignation was justly  
 ' provoked, and he sent a *Flood*, which *destroyed all*  
 ' *nations without exception*. After which God, to re-  
 ' pair mankind, created three persons of greater ex-  
 ' cellency than those of the former generation; to one  
 ' of whom named *Bremaw*, he gave the power of cre-  
 ' ating men and animals, which he executed according-  
 ' ly: the first human pair proceeding, one from his  
 ' right side, the other from his left. The man was  
 ' called *Manow*, and the woman *Ceteroupa*, and by  
 ' them was the earth replenished.\* Father *Bouchet*,  
 speaking of the *Indians*, especially those that live about  
*Maduras* and *Carnate*, writeth more largely thus,<sup>x</sup>  
 ' They say, that *Parabaravasion*, i. e. *the Supreme God*,  
 ' has created three inferior Divinities, viz. *Bruma*,  
 ' *Vicknou*, and *Routren*. To the first he has given  
 ' the power of *creating*; to the second of *preserving*;  
 ' and to the third, that of *destroying*.——The God  
 ' *Routren*, who is the grand destroyer of all created  
 ' beings, resolved one day to drown all mankind, pre-  
 ' tending he had just reasons to be dissatisfied with  
 ' their behaviour. This design was not kept so secret,  
 ' but it was found out by *Vicknou*, Preserver of all  
 ' creatures, who discovered the very day on which the  
 ' Flood was to happen. Though his power did not  
 ' extend so far as to suspend the *execution* of what the  
 ' God *Routren* had resolved upon, yet, as he was the  
 ' God-preserver of all created beings, this gave him a  
 ' right to prevent, if possible, the pernicious effects  
 ' of it. The method he took for that purpose was as  
 ' follows. He one day appeared to *Sattivarti*, his

\* Univer. Hist. Vol I. p. 229.

<sup>x</sup> See his *Letter* to the Bishop of *Avranches*, printed in *Picart's Cerem. abrid.* p. 379.

great confident, and privately assured him, that an universal Flood would soon happen; that the earth would be covered with water, and that *Routren's* design was no less than that of thereby destroying all mankind, and every kind of animal. He nevertheless assured him that he himself need not be under the least apprehensions; for that in spite of *Routren*, he would find opportunity to preserve him, and to take such measures, that the world should afterwards be re-peopled. His design was to make a wonderful bark rise up on a sudden, at a time when *Routren* should least suspect any such thing, and to store it with a large provision of souls and seeds of beings, eight hundred and forty millions at least. As for *Sattivarti*, he, at the time of the Flood; was to be upon a very high mountain, which he pointed out to him very exactly. Some time after, *Sattivarti*, as had been foretold him, perceived a numberless multitude of clouds drawing together, but beheld with unconcern the storm which was gathering over the heads of the guilty, when the most dreadful rain that had ever been seen, poured down from the skies; the rivers swelled, and spread themselves with rapidity over the surface of the whole earth; the sea broke its appointed bounds, and mixing with the rivers, which now had left their channels, soon covered the highest mountains. Trees, animals, men, cities, kingdoms, were all drowned; in a word, all animated beings were instantly destroyed. In the mean time, *Sattivarti*, with some of his penitents, had withdrawn to the appointed mountain, where he waited for the succour which God had promised him. However, this did not prevent his being seized with some short intervals of terror. As the water gathered strength continually as it rolled, and each moment drew nearer to his *Asylum*, he was every now

‘ and then in a panic. But that very instant which  
 ‘ he thought would be his last, he beheld the bark  
 ‘ that was to save him: No sooner did he set his eyes  
 ‘ upon it, than he immediately got into it, with all  
 ‘ the devotees in his company, and also the eight hun-  
 ‘ dred and forty millions of souls and seeds of beings.  
 ‘ The difficulty now was how to steer the bark, and  
 ‘ to preserve it from the impetuosity of the waves,  
 ‘ which raged with prodigious violence; but *Vichnou*  
 ‘ took care of this; for immediately assuming the  
 ‘ shape of a fish, he steered the ship with his tail, as  
 ‘ though it had been a rudder. The God who was  
 ‘ now both fish and pilot, played his part so well,  
 ‘ that *Sattivarti* waited very quietly in his *Afylum*, ’till  
 ‘ such time as the waters were run off from the surface  
 ‘ of the earth.’

WE come now to *China*. Among whose Inhabi-  
 tants we find the knowledge of the Deluge still re-  
 maining; only some assert that it was but *partial*;  
 tho’ others maintain that it was *general*. The authors  
 of the *Universal History*, Vol. I. p. 204. (quoting  
*Anciennes relations des Indes, & de la Chine*, p. 67.)  
 write thus, ‘ An *Arab*, who travelled into *China* about  
 ‘ the beginning of the ninth century, giving an ac-  
 ‘ count of a conversation he had with the Emperor,  
 ‘ among other things, says, that mentioning the  
 ‘ Flood to that Prince, on occasion of a picture of  
 ‘ *Noah* which he shewed him, and telling him, that  
 ‘ that prophet, and those that were saved with him  
 ‘ in the ark, peopled the whole earth; the Emperor  
 ‘ laughed, and said, ‘ Thou art not deceived as to  
 ‘ the name of *Noah*; but as to the *universal Deluge*,  
 ‘ we know nothing of it. It is true, that the *Deluge*  
 ‘ [so even these allow a *Deluge*] did drown a *part* of  
 ‘ the earth; but it did not reach so far as *our country*,  
 ‘ nor yet to the *Indies*.” Which last circumstance

is just as probable, as what, *those* among the *Persians* who denied the *universality* of the Deluge, asserted, viz. that it reached no farther than *Hulvan*, a city on the confines of their country (p. 65.). But we have already shewed the *impossibility* of *such* a Deluge; (p. 45.) and therefore this confession must be the remains of the Flood in the time of *Noah*. And that it really is so, or that the tradition of the Flood as held by some of them is the same with *Noah's*, seems certain, because (as *Martinius* observes, *Sin. Hist.* Lib. I. p. 12.) ‘ The *Chinese* history of the Deluge ‘ falleth in nearly with the *time* of the *Noachian*, for ‘ it preceded the common christian æra about three ‘ thousand years.’ Besides; many reasons may be given to prove that their first king, *Fohi*, was no other than the scripture *Noah*. For *first* (to use the words of *Dr. Shuckford* on this occasion in his *Connect. of Sacr. & Prof. History*, Vol. I. p. 29, 102.) ‘ The ‘ *Chinese* antiquities reach no higher than the times ‘ of *Noah*, for *Fohi* was their first King. Their wri- ‘ ters in the general agree, that *Fohi* lived about 2952 ‘ years before *Christ*: the Author *Mirandorum in Sina & Europa*, computes him to reign but 2847 years ‘ before our Saviour, and *Alvarez Sevedo* places his ‘ reign not so early, imagining it to be but 2060 ‘ years; and all these computations agree well enough ‘ with the time of *Noah*; for *Noah* was born, accord- ‘ ing to Arch-bishop *Usher* 2948 years, and died ‘ 2016 years, before *Christ*; so that all the several ‘ computations fall pretty near within the compass of ‘ *Noah's* life. And therefore we may conclude *Moses's* ‘ *Noah* and the *Chinese Fohi* to be the same person. ‘ But, 2dly. They say *Fohi* had *no father*, i. e. *Noah* ‘ was the *first man* in the postdiluvian world; his an- ‘ cestors perished in the Flood, and no tradition there- ‘ of being preserved in the *Chinese* annals, *Noah* or

' *Fobi* stands there as if he had had no father at all.  
 ' 3dly. *Fobi's* mother is said to have conceived him  
 ' encompassed with a rainbow; a conceit very probably  
 ' arising from the rainbow's first appearing to *Noah*,  
 ' and the *Chinese* being willing to give some account  
 ' of its original. 4thly. *Fobi* is said to have carefully  
 ' bred seven sorts of creatures, which he used to sacri-  
 ' fice to the supreme Spirit of heaven and earth; and  
 ' *Moses* tells us, that *Noah* took into the ark, of every  
 ' clean beast by sevens, and of fowls of the air by sevens.  
 ' And after the flood built an altar, and took of every  
 ' clean beast, and every clean fowl and offered burnt-  
 ' offerings. 5thly. The *Chinese* derive the name of  
 ' *Fobi*, from his oblation, and *Moses* gives *Noah* his  
 ' name upon account of the grant of the creatures for  
 ' the use of men, which he obtained by his Offering.  
 ' Lastly, the *Chinese* history supposes *Fobi* to have  
 ' settled in the province of *Xeusi*, which is the North-  
 ' west province of *China*, and near to *Ararat* where  
 ' the Ark rested.'

FROM *China* we will pass into *America*; an immense  
 tract of land unknown to us 'till lately; and yet when  
 first discovered, the people thereof almost universally  
 retaining the knowledge of the *Deluge*. *Acosta* in his  
*History of the Indies* (one of the first Treatises printed  
 on the subject) Lib. 1. c. 25. speaketh thus in general,  
 ' They [the American Indians] make great men-  
 ' tion of a *Deluge*, which happened in their country:  
 ' but we cannot well judge, if this *Deluge* were the  
 ' universal (whereof the Scripture makes mention) or  
 ' some particular inundation of those regions where  
 ' they are. Some expert men say, That in those  
 ' countries are notable signs of some great inundation,  
 ' and I am of their opinion which thinke that these  
 ' marks and shewes of a deluge, was not that of *Noe*,  
 ' but some other particular, as that which *Plato*



' speaks of, or *Deucalion's* Flood which the poets sing  
 ' of: whatsoever it be, the Indians say, *That ALL*  
 ' *men were drowned in this Deluge.* And they re-  
 ' port, that out of the great lake *Titicaca*, came one  
 ' *Viracocha*, which staid in *Tiaguanaco*, where at this  
 ' day there are to be seene the ruines of ancient and  
 ' very strange buildings, and from thence came to  
 ' *Cusco*; and so begane mankind to multiply. They  
 ' shew in the same island a small lake, where they  
 ' saie that the Sunne hid himself, and so was pre-  
 ' served, and for this reason they make great sacri-  
 ' fices unto him in that place, both of sheepe and  
 ' men. Others report that six, or I know not what  
 ' number of men, came out of a certaine cave by a  
 ' windowe; by whom men first begane to multiply;  
 ' and for this reason they call them *Pacaritampo*. And  
 ' therefore they are of opinion, that the *Tambos* is the  
 ' most ancient race of men. They say also, that *Man-*  
 ' *go Cupa*, whom they acknowledge for the founder  
 ' and chiefe of their *Inguas*, was issued of that race,  
 ' and that from him sprang two families or linages;  
 ' the one of *Havan Cusco*, the other of *Hurni Cusco*.  
 ' They say moreover, that when the Kings [*Inguas*]  
 ' attempted warre and conquered fundrie provinces,  
 ' they gave a colour and made a pretext of their en-  
 ' terprize, saying, That all the world ought to ac-  
 ' knowledge them; for all the world was renewed by  
 ' their race and country: and also, that the true reli-  
 ' gion had been reveiled to them from heaven.'

BUT as *America* may be looked upon as a little  
 world of itself, it may be expectèd that I should be  
 somewhat more explicit than giving a single *general*  
 testimony; I shall therefore traverse it throughout, as  
 I have done in relation to other parts of the earth.

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\* See Note \* p. 64, and what follows shews that it was a tradition  
 of the *Universal Flood*.

AND first, for the upper or Northern part of *America*. HENNEPIN in his *new discovery of a vast country in North-America*, (vid. *Continu. of the new Discovery*, &c. p. 54.) says thus, ‘ Other Savages upon the same continent, are of opinion, that a certain Spirit, called *Otkon* by the *Iroquois*, and *Atabauta* by the other barbarians at the mouth of the river *St. Lawrence*, is the Creator of the world, and that one *Messou* repaired it after the *Deluge*.—They say, that this *Messou* or *Otkon* being a hunting one day, his dogs lost themselves in a great lake, which thereupon overflowing, covered the whole earth in a short time, and swallowed up the world. They add, that this *Messou* or *Otkon* gathered a little earth together by the help of some animals, and made use of this earth to repair the world again.’

FROM the nations of the *Iroquois*, &c. we will descend southward to *Cuba*. ANTONIO DE HERRERA in his *History of America from the first discovery thereof; with the best accounts the people could give of their antiquities; collected from the Original relations sent to the Kings of Spain, translated from the Spanish, by Capt. John Stevens*, Decad. I. Book ix. C. II. informs us, ‘ That the people of *Cuba* knew that heaven, the earth, and other things had been created: and said they had much information concerning the *Flood*, and that the world had been destroyed by water, by three persons that came three several ways. Men of above seventy years of age said, that an old man knowing the *Deluge* was to come, built a great ship, and went into it, with his family and abundance of animals, that he sent out a crow, which did not return, staying to feed on the dead bodies; and afterwards returned with a green branch; with other particulars, as far as *Noab*’s sons covering him when drunk, and the other scoffing at it; adding, that

‘ the *Indians* descended from the latter, and therefore  
 ‘ had no coats nor cloaths: but that the *Spaniards*  
 ‘ descending from the other that covered him, were  
 ‘ therefore cloathed and had horses. What has been  
 ‘ here said, was told by an *Indian* of above seventy  
 ‘ years of age to *Gabriel de Cabrera*, who one day  
 ‘ quarrelling with him, called him *dog*, whereupon he  
 ‘ asked, Why he abused and called him *dog*, since  
 ‘ they were brethren, as descending from the two  
 ‘ sons of him that made a great ship, with all the rest  
 ‘ that has been said above. The same he repeated  
 ‘ in the presence of several *Spaniards*, after his master  
 ‘ had reported it.’

FROM *Cuba* we will pass to *Terra-Firma*, the first  
 country of *South-America*. The last cited Author ac-  
 quaints us, *Decad. II. Book I. chap. iv.* that the  
 inhabitants of *Castilla del Oro* (in *Terra-Firma*) said,  
 ‘ That when the *universal deluge* happened, one man  
 ‘ with his wife and children, escaped in a canoe, and  
 ‘ that from them the world had been peopled; as also  
 ‘ that there was one LORD in heaven, who sent the  
 ‘ rain and caused all the celestial motions. That  
 ‘ there was likewise a very beautiful woman in heaven,  
 ‘ with a child; but they went no farther, nor did  
 ‘ they know any thing of their own original.’

BORDERING upon *Terra-Firma* is *Peru*. ‘ The an-  
 ‘ cient *Indians* (says the above cited Author, *Decad. III.*  
 ‘ *Book XI. chap. I.* speaking of the *Peruvians*) report-  
 ‘ ed, they had received by tradition from their an-  
 ‘ cestors, that many years before there were any *Ingas*  
 ‘ [*Kings*], at the time when the country was very  
 ‘ populous, there happened a great Flood; the sea  
 ‘ breaking out beyond its bounds, so that the Land  
 ‘ was covered with water, and all the people perish-  
 ‘ ed. To this the *Guancas* inhabiting the vale of  
 ‘ *Xausca*, and the natives of *Chiquito* in the province

‘ of *Collao*, add, That some persons remained in the  
 ‘ hollows and caves of the highest mountains, who  
 ‘ again peopled the land. Others of the mountain-  
 ‘ people affirm, that all perished in the Deluge, only  
 ‘ six persons being saved on a float; from whom de-  
 ‘ scended all the inhabitants of that country.’

FROM *Peru* we will pass into *Brazil*. NIEUHOFF in  
 his *Voyages, &c. to Brazil*, p. 150. writes thus: ‘ The  
 ‘ most barbarous of the *Brazilians* inhabiting the  
 ‘ inland countries scarce knew any thing of religion or  
 ‘ an almighty being. They have some knowledge  
 ‘ remaining of a general *Deluge* it being their opinion,  
 ‘ that the whole race of mankind were extirpated by  
 ‘ a general Deluge, except one Man and his own  
 ‘ sister, who being with child before, they by degrees  
 ‘ re-peopled the world.’ But *Monf. Thevet* speaking  
 of the *Brazilians* that lived near the *sea-coast*, viz. at  
*Cap de Frie* or *C. Frio*, gives their account of the De-  
 luge very circumstantially thus (*Cosmographie univer-*  
*selle*, Tome quatrieme, Livre xxi. cap. iiiii.) ‘ *Le*  
 ‘ *Deluge* donc, que ces Barbares chantent & duquel m’ont  
 ‘ souventefois parlé, &c. The *Deluge* which these Sa-  
 ‘ vages talk so much about, of which they spoke  
 ‘ often to me, was in their opinion *universal*; they  
 ‘ say, that *Sommay*, a Carribee of great dignity,—had  
 ‘ two children, the name of one was *Tamendonare*,  
 ‘ the name of the other *Ariconte*, who were of differ-  
 ‘ ent complexions and natures, and therefore mortally  
 ‘ hated each other.—*Tamendonare* (they say) was a  
 ‘ good œconomist, having a wife and children, and  
 ‘ took great delight in cultivating the earth: *Ariconte*,  
 ‘ on the contrary, regarded not this, being solely  
 ‘ bent on war, and desiring nothing but to subdue by  
 ‘ his power all the neighbouring nations, and even  
 ‘ his brother. It happened as this warrior returned  
 ‘ one day from the battle, he brought the arm of

his enemy to his brother *Tamendonare*, telling him  
 with great haughtiness, go, coward as thou art, I  
 shall have this wife and children in my power, thou  
 art not strong enough to defend thyself. *Tamendo-*  
*nare* hearing his brother speak thus, was very much  
 grieved at his pride, and said to him, If thou wert  
 so valiant as thou boastest, thou wouldst have brought  
 thine enemy entire. *Ariconte* incensed at this re-  
 proach, threw the arm against the door of his bro-  
 ther's house: but at the same instant, the whole vil-  
 lage, where they were, was carried up into the sky,  
 and they remained on earth. *Tamendonare* seeing  
 this, whether out of astonishment or passion, struck  
 the ground, so violently, that out of it issued a great  
 source of water, which flowed so high, that in a  
 short time it reached the hills and mountains, and  
 seemed to exceed the height of the clouds, and which  
 continued till the earth was entirely covered. The  
 two brothers seeing this, and solicitous to save  
 themselves, ascended the highest mountains of all  
 the country, and with their wives got upon the trees  
 that were thereon. *Tamendonare* climbed up a tree,  
 named *Pindona*, (of which there are two sorts; one,  
 whose fruit and leaves are much larger than the  
 other) taking with him one of his wives: *Ariconte*  
 with his wife climbed up another tree, named *Geni-*  
*par*; that they might see if the waters were abated.  
 Whilst they were there, *Ariconte* offered some of the  
 fruit of his tree to his wife, saying, break off a  
 piece of this, and let it fall down; which being  
 done, they knew that it was not yet time to descend  
 into the vallies, and that the waters were yet very  
 high. They assert, that by this deluge all mankind  
 and all animals were drowned, except the two bro-  
 thers and their wives: from whom afterwards sprung  
 two different people, called *Tonassearres*, surnamed

‘ *Toupinambaux*, and the *Tonaiatz Hoyanas*, furnamed *Tominous*, who live in perpetual discord and war: hence also it is that the *Toupinambaux*, when they are desirous of praising themselves as above their neighbours, say, we are descended from *Tamendonare*, and you from *Ariconte*; as if by this they would infer, that *Tamendonare* was a better man than *Ariconte*.’

THUS I have travelled quite round the world, and shewed that the fame of the Deluge has gone throughout. I am now to draw some conclusions or corollaries from what has been advanced. These shall respect principally the *certainty* that there has been a *Flood*,—that it was *universal*,—that the *Mosaic account* is *true* or written by one inspired by GOD, the author of the Event.

FIRST, with regard to the *certainty* of the Flood, I may argue in the manner of *Aristotele*, ‘ What seems true to some wise men is *somewhat probable*; what seems so to most or to all wise men is *very probable*; what most men, both wise and unwise, assent unto, doth still *more resemble truth*; but what men generally consent in, hath the *bighest probability*, and approaches near to *demonstrable truth*.’ Surely then, what men *universally* agree in, what, I may say, *all nations* (otherwise differing in opinion, customs, language, religion, and even ignorant of one another’s existence) have, throughout all known ages, assented unto, may well pass for an *establish’d axiom* and a *demonstrable truth*. And such I have shewed is the state of the case with regard to the knowledge of the deluge.

AGAIN; the report of the Flood must have come from some quarter or other, and when or wheresoever it was first published, the relation of a fact so extraordinary, would naturally raise the curiosity of the first hearers, and excite them to inquire into the truth of

it. Now if they discovered that the report was false or groundless; the history would have been immediately discredited, and the relater and his story no more heard of: But the tradition prevailing *universally*, it is certain that such an *event* did happen;—and moreover that it was *universal* in its effects, else it could not have been universally believed.

WHICH (*second*) article is further evident from the afore-cited testimonies themselves; for in all those that are tolerably full and explicit, we find a method mentioned by which a few escaped out of the general destruction, from whom the world was afterwards peopled; which is a plain confession, that according to their opinion the *whole race* of mankind (except the few allowed to be saved) was *destroyed*; and so the deluge *universal*.

BUT farther yet; an *universal deluge*, is not an article of mere speculation, or a point, the certainty of which, might be proved only by properly examining the asserter thereof, but is an *Event*, a *Fact in Nature*, and of such a *peculiar kind* that did such ever happen, it could not but have left undeniable marks of its existence on every part of the earth; and so the relater of such an event might have been confuted or his adversaries convinced on the spot. Especially was this confutation or confirmation easily to be established in the first ages of the world; or rather, This is a point which could not but be then settled. For as men began to multiply after the flood, they would of course separate and divide, and so re-people the earth; and as they thus separated they could not fail of knowing whether the Flood was universal or not. For, if they could find no human inhabitants in the countries to which they came, nor any marks of their former works, as houses, palaces, temples, gardens, &c. and could see nothing but ruin and devastation in the things that

did remain, they would certainly conclude that the deluge was universal: On the contrary, if, as they dispersed or endeavoured to disperse, they found the neighbouring countries still full of inhabitants, the lands cultivated, &c. they would as certainly conclude that the deluge had not been universal. And from this *infallible* and *unavoidable* means of knowing the truth, the relation of the flood would have been handed down to posterity; but posterity all over the world speak of it as universal; or allow that there has been a deluge, which comes to the same thing; for had it been partial or extended only over a few countries, the remaining part of the world would have been utterly ignorant of such an event, or at least if they spoke of it, they would not have acknowledged, as they generally do, that it happened in their *own country*, and have supposed that a king or an eminently righteous person of their *own nation* (including some others) was preserved from the destruction. All this abundantly proves that the deluge was *universal*.

THE *certainty* and *universality* of the flood appearing thus evident, I shall now, (*thirdly*), make some observations concerning the Truth, Perfection, and Divinity of the *Mosaic* account.

FIRST, as Truth is the purer the nearer to the fountain head, so *Moses* has the advantage of all other historians in this respect; none can presume to equal him in antiquity; he is allowed by all learned men whatever to have wrote a considerable distance of time before them all.

AND as he lived nearer the event than any other writer, so is his relation more full and express; nay, if you take all the above-mentioned heathen accounts together, and collect from them every different part, you cannot exceed the *Mosaic* in fulness of description;



far less can you do this, if you add to it the consideration I have mentioned p. 1.

AND not only in fulness of matter does *Moses* surpass, but in justness of thought and diction, and in the consistency of the scheme he delivers. In the heathen historians there are many imperfections of this kind, some failing in more, some in fewer articles. But *Moses* tho' he extends the duration of the Deluge far beyond what any of them do, and asserts its Universality in the highest degree, has yet provided against all exigencies; he safely embarks the numerous creatures in the ark, prepares every thing necessary for their being and well-being there, and as safely lands them.

As the heathen accounts differ more or less from the *Mosaic*, which was confessedly prior to them all, so we may assert of the relaters of them, as *Scaliger* is said to write of the *Greek* historians, 'They ought rather to be pitied for not having had the advantage of authentic antiquities and records, to set them right, than to forfeit their authority for such deviations from the truth of the story, as render their confirmation of the truth of the Sacred History much stronger, because much less to be suspected, than if they agreed with it in every circumstance.' So that the imperfect and in many respects false accounts of the Heathen bear witness to the truth and perfection of that of *Moses*.

BUT what distinguishes the *Mosaic* writings, and sets them in an eminently conspicuous light, and intimates their high Antiquity and Divinity, is, that in them there is no reference made, for the truth of what they contain, to any prior traditionary accounts, histories, or records, as is the usual manner with other historians; which kind of proof all mere human writers are glad to embrace, thinking nothing more

venerable and true than that which has been delivered down to them from their forefathers. But *Moses*, as greatly superior to them in time, so much more in dignity and authority, demands audience from us as from GOD himself; he refers, for the truth of what he says, to an immediate Inspiration from the Deity, the Author and Disposer of all events; I AM, says he (*Exod. iii. 14.*) *hath sent me*, JEHOVAH HIMSELF commissioned him to act, and a *Thus saith the LORD* authorised him to write.

AND had not *Moses* been thoroughly persuaded, that he was inspired by GOD in his writings, he certainly never would have ventured the truth of all he says upon the assertion of a most improbable and astonishing fact, *viz. That the whole world had been destroyed by a flood of waters*;—a Fact, which he could not by any natural means have had proof of, unless he had travelled all over the world, or had received his information from one that had, which I believe no person will suppose any one to have done in those early ages;—a Fact too, the truth or falsity of which could not but have been discovered, as mankind dispersed to re-people the earth, or as commerce had opened a correspondence throughout;—a Fact also, which *Moses*, as a human writer, does not appear to have been under any necessity of mentioning at all; or if he thought proper to record it, he might not have made it so extensive as he has done, and yet in all probability have saved his credit as an author. But, instead of all this, conscious of Truth and of the unerring Wisdom of his Inspirer, he openly declares the *Universality of the Flood*, and that *the whole world was destroyed*, and leaves the issue to Providence and the disquisition of the truth of his assertion to future ages.

BUT what sets *Moses* in the highest point of view, and his writings on the firmest foundation, is his exerting supernatural powers, performing MIRACLES<sup>2</sup> and delivering PROPHECIES, in proof of his divine Inspiration: some of which are remaining at this day. I shall mention *one*, respecting the affair of the *Deluge*. *Moses* writes thus, *Gen. ix. 12.* *And GOD said, This is the token of the Covenant which I make between me and you, and every living Creature, for PERPETUAL GENERATIONS: I do set my Bow in the Cloud; and it shall come to pass, when I bring a cloud over the earth, that the Bow shall be seen in the cloud: and I will remember my Covenant which is between me and you, and every living creature of all flesh; and the waters shall no more become a flood to destroy all flesh.* This Token we see is frequently exhibited, so that this faithful Witness in heaven<sup>3</sup> is still preserved. No flood has really yet happened (since that on account of which this promise was made) in which the whole earth has been drowned. Now if there be any God superior to *Moses's* GOD, it behoves him to destroy this Prophecy by annihilating the sign of it out of heaven, or the remembrance of it

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<sup>2</sup> That the miracles asserted in the Bible to have been performed by *Moses*, were really transacted as there related, and of course that the doctrines delivered upon the authority of those miracles are indisputably true or were of divine Inspiration, the Reader may see a regular and succinct proof of in the Rev. Mr. A. S. CATCOTT'S *Sermons* p. 531—48. It would be too tedious to introduce such a proof here, and therefore the Author rests the evidence of *Moses's* Inspiration upon a Prophecy, relative to the Subject he is treating of, and which is existent at this day, and affords ocular Demonstration of *Moses's* Mission from the Divine Being.

<sup>3</sup> That these words of the *Psalms* (*Psal. lxxxix. 37.*) are really to be understood of the *Rainbow*, (and not of the *Moon*, as usually interpreted) appears to be sufficiently evident from what the Author of *An Essay on the proper Lessons, appointed by the Liturgy of the Church of England*, &c. says on this text, Vol. II. p. 87.

out of the mind of man, else it will remain an indubitable proof of *Moses's* Mission from the Supreme Being,—the God of Heaven and Earth, the Creator, Former, and Preserver of all Things in this world.—If it be said, that the *Rainbow was existent before the flood*; therefore the argument will not stand good. I reply, that supposing it to have been so, it could not have existed as *a Sign from the Supreme Being*, that a flood of waters should never cover the earth (because such did cover it) and therefore it will not in the least affect the argument here used; which does not respect its bare *natural State*, but its *super-natural use* and *divine appointment*. And lest it should be imagined, that *Moses* assigned this token as of himself, and to shew the folly of such imaginations when men presume to make appearances in heaven signs or tokens of things upon earth, without a divine direction, I shall here quote a Fact recorded by *Gassendus* in his *Animadversions* on the *tenth book* of *Diogenes Laertius*, Tom. II. p. 938. ‘*Memorable certe est, &c. i. e.* It is really worth remarking, what is written in the histories, and in almost all the books of the last age: When the Astrologers, by reason of the many great conjunctions of the Planets, and not a few of them happening in the watry Constellations foretold, that in the month of *February* in the year 1524, there would be a general Deluge, and so great a devastation of things, as was never heard of before. So that numbers of persons in *France, Spain, Italy, and Germany*, being terrified with these apprehensions, had prepared Ships, or had got together what provisions they could, and other necessaries, and made to the highest places: But so it happened, that the whole month of *February* was the most serene and fair weather ever known; apparently, as if it had been so ordered on purpose for refuting the predic-

‘ tions of these Astrologers (when otherwise it is very  
 ‘ unusual, that the month of *February* should be with-  
 ‘ out rain;) which even *Cardan* and *Origan* [two noted  
 ‘ judicial Astrologers of that time] could not deny;  
 ‘ greatly grieving that this Judgment concerning the  
 ‘ Deluge was declared by *Stæfler* so much to the in-  
 ‘ famy of Astrology.’ As long then as the above  
 Appeal to the true God, and Challenge to all false  
 Deities remains, so long will each succeeding age  
 have undeniable proof, nay ocular Demonstration of  
*Moses’s Mission* from, and *Inspiration* by, the GOD of  
 all truth, power, and wisdom. And when we con-  
 sider that this bold Appeal has been recorded in writ-  
 ing, already above three thousand years, and no de-  
 tection yet made that it was false or unauthorised by  
 the true GOD, we may justly suppose it will remain as  
 long as the Heavens themselves shall endure, *i. e.* to  
 the Consummation of all things.

AND this I think a proper place (before I have  
 quite done with Scripture and ancient History) to take  
 notice of his Lordship’s objection to the *Universality*  
 of the Flood drawn from the *peopling of America*, and  
 its being *inhabited with wild beasts, &c.* when we first  
 discovered it. To account for which he supposes,  
 ‘ that some parts of the habitable ante-diluvian world,  
 ‘ which by the force of the Deluge were separated into  
 ‘ islands, and were divided from the Continent where-  
 ‘ on the Ark landed, were in some sort exempted from  
 ‘ the common calamity brought upon the rest of the  
 ‘ world, &c.’ But how inconsistent this supposition  
 is with his own description of the Deluge and with the  
 truth of Scripture, I have shewed already (p. 9, &c.);  
 and also observed, that supposing we could not solve  
 this difficulty, yet a seemingly unaccountable event in

Nature (or rather that which may appear unaccountable to some, but not so to others) ought not to set aside the united evidence of Scripture, Reason, and Fact, concurring in all other respects to prove the Point under consideration.

BUT to shew *how* or *by what means* *America* became inhabited by men and other animals.

AND here it will be necessary to premise a few things, introductory to the discussion of this article.

FIRST, then, *America* was peopled *after* the Flood. This is certain from the inhabitants thereof having the knowledge of that Event.

SECONDLY, Since the Tradition of the Flood was universally spread throughout that vast tract of land, and acknowledged by the several nations thereof to have been delivered down to them from the highest antiquity, we may reasonably suppose, that it was peopled *soon after* the deluge; whilst the knowledge of the Fact was fresh and lively upon the minds of the original inhabitants.

AND since, when this part of the world was first discovered by the *Europeans*, the inhabitants were found to be ignorant of the art of *writing with letters*, and could record things only in the *ancient hieroglyphical* way, by signs and emblems,<sup>b</sup> it seems also hence evident that it was peopled *early*.

WHICH will further appear from their ignorance of the art of *working iron* into useful tools or warlike weapons, 'till the method was discovered to them by the *Spaniards*. For tho' there is plenty of iron-ore in *America*, yet the ancient inhabitants were ignorant of the use which the *Asiatics* and *Europeans* make of it; and instead thereof used shells, bones, or generally hard

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<sup>b</sup> Purchas's Pilgrimage, p. 811. quoting *Acoffa*, *Gomara*, *Peter Martyr*, &c.

stones, which with immense labour and trouble they shaped by grinding or whetting, into the utensils or weapons they wanted,<sup>c</sup> And tho' the art of manufacturing iron, was known before the flood (*Gen. iv. 22.*<sup>d</sup>) yet it seems to have been lost *soon after*; and the loss was probably owing to these two causes; first, that as all the metallic and mineral bodies that were in the earth before the Deluge were destroyed and even dissolved during that Catastrophe (as will be shewn hereafter) so of course all the instruments and utensils that were made of these bodies perished likewise; which would certainly tend much towards obliterating the memory of such instruments in the post-diluvian world. And secondly, since, for some considerable time after the flood, the inhabitants of the new earth would be employed and their time wholly taken up in providing and securing the common necessaries of life at first hand, or when they came to separate from one another in travelling and seeking out agreeable countries to inhabit, so the art of mining and working metals, and such like knowledge, (among their cares and concerns for many things immediately needful and absolutely necessary) might be forgotten. And it seems certain that this art was lost, 'till some time after the flood; for there are found, even at this day, in almost all parts of the world many instruments, such as axes, chisels, heads of arrows, &c. consisting wholly of *Stone*,<sup>e</sup> generally of the hardest kind; which certainly were made before the use of iron was reco-

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<sup>c</sup> Dr. WOODWARD'S *Letters, relating to the method of Fossils*; Letter III.

<sup>d</sup> And *Zillah*, she also bare TUBAL-CAIN, an instructor of every artificer in brass and iron. From this person's Name and Office was derived the fictitious VUL-CAN of the *Latins*.

<sup>e</sup> *Woodward's Letters*.

vered after the deluge, for they are neglected and disused wherever iron is known. And since when we first discovered the *Americans* they had no other tools or weapons but such as were formed out of Stone, &c. it is evident, that they departed from us before the working of iron was in practice after the Flood; for had they ever known this useful art, it is not probable that they would ever have lost it, any more than ourselves; and since we have retained it for these several ages back, even from time immemorial, it is certain that the *Americans* departed from us even before that early time.

ANOTHER Consideration which may be brought in favour of the early peopling of *America*, is, that the inhabitants were ignorant of that noble and useful Structure the *Arch*, and even of building with *mortar* or any kind of *Cement*;† and yet their edifices consisted of Stones great beyond imagination,‡ and these Stones were so artificially wrought, and placed upon one another, that in many places their joinings were not visible: ‘And that which is most strange (says *Acosta*), these Stones not being cut nor squared to join, but contrariwise very *unequal* one with another both in *form* and *greatness*, yet did they join them together without cement, after an incredible manner: all this was done by the force of men, who endured their labour with an invincible patience.’ Certainly if they had known the use of mortar or cement, they would never have taken such a tedious method as this. Now the first post-diluvian account we have of Cement being used in building was *at the Tower of*

† See *Acosta's History of the Indies*, Book vi. chap. 14.

‡ *Acosta* measured one of these Stones in a building, and it was 38 feet long, 18 broad, and 6 thick; which I think, vastly exceeds any of those that are now remaining in our ancient *Druidical* Temples.



*Babel* (*Gen. xi.*); but as this in all probability was that pitchy substance, called *Asphaltus*, with which that Country particularly abounds, so unless the *Americans* had discovered a substance of a similar nature in their new land, they might not think of making use of any other, and be as much at a loss for what we now call *mortar* as if they had never heard of any thing like it. So that indeed we cannot conclude from hence that they departed from us before the Building of *Babel* but only before the *general use* of Mortar or Cement; and even this was very early, as the remains of the oldest Buildings in the world such as the *Pyramids of Egypt* &c. testify, in which the mortar is visible at this day.<sup>h</sup>

THE last circumstance I shall mention, tending to prove the *Antiquity* of the *American Colonies* (for I might enlarge upon several, as their ignorance of coined money, the plough, the bellows, &c. all which would serve to shew that they departed from us in the very infancy of the post-diluvian world, before these arts were known to mankind) is, that they were ignorant of *Shipping* or the art of making large vessels with Sails &c. till they first saw ours; knowing before no other kind of vessels than small *boats*, made of the bark of trees, skins of fishes, &c. or *canoes*, consisting of a single trunk of a tree hollowed out by means of fire, and these to be directed only by the help of oars or a paddle.<sup>i</sup> From whence I would

THIRDLY observe, that *America* must have been peopled *by land*: for had the original inhabitants been carried thither in a Ship, either by distress of weather or designedly (both which are suppositions

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<sup>h</sup> Dr. SHAW'S *Travels*, p. 415.

<sup>i</sup> PURCHAS'S *Pilgrimage*, p. 750, 755 &c. HEYLYN'S *Cosmographie*, p. 1016.

that can scarcely be allowed when we consider the difficulties attending them) they certainly would never have forgot that useful part of shipping, the *Sail*; even supposing that fabricating a large vessel might be inconvenient or impossible to them when they first arrived on their new land, and therefore the knowledge of it be lost to their posterity; yet, I say, the use of the *Sail* would in all probability have remained among them, since it would have been of such service in navigating their small canoes.

BUT what seems most to confirm the opinion, that *America* was peopled, or at least stocked with animals, *by land*, is, that that vast Continent is every where inhabited by wild beasts and the most noxious creatures, such as Lions, Tygers, Rattle-snakes, &c. which we cannot imagine that any persons would be at the trouble, or expose themselves to the danger, of conveying over thither in Ships, and at the same time leave behind them such useful creatures as the Horse, the Camel, &c. which were not known in the *West-Indies* 'till transported thither from us.<sup>k</sup> Nay, what is most remarkable, *America* has creatures peculiar to itself, such at least as are not known to exist in any other part of the world; which therefore cannot be supposed to have been carried from hence thither: and besides they are of such a nature that of themselves they could not have crossed the Seas, and therefore must have come thither by land.<sup>k</sup>

It appearing then thus clear that *America* was peopled *early* and *by land*, the next question to be solved is, *by whom* or *from what land*?

IN order to solve which, Let it be observed, that the sacred and most ancient Historian informs us, in his account of mankind after the flood, that *the whole earth*

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<sup>k</sup> PURCHAS p. 732—35. HEYLYN, p. 1017—19.

was overspread by the descendents of the three Sons of Noah, —Shem, Ham and Japhet, who went forth of the Ark. Gen. ix. 19. From whence it is certain, that no part of the world could have been peopled by any other anti-diluvians than those that went out of the Ark; and of course that *America* was peopled *after the Flood*, and by the Posterity of *Noah*.

SECONDLY, Let us consider, that *Moses* proceeds next to give us the *names* of the first descendents of these three Sons, and to mention the *names* of the *Countries* which the principal of them inhabited, especially those whose affairs would afterwards be mixed, or have some connection, with the Transactions related in the Bible, particularly with the *Israelitish* Nation. But as for the rest he takes little or no notice of them.

So that, Thirdly, we cannot expect that any great notice should be taken of the inhabitants of so distant a part of the world (from that where *Moses* wrote, and the intent of his writing) as the Continent of *America*; and yet, one would be apt to imagine, that as He, who inspired *Moses* in his account, *saw all things from the beginning to the end* (and *who had made of one blood all nations of men for to dwell on all the face of the earth, and had determined the times before appointed, and the bounds of their habitation*, Acts xvii. 26.) so He would, in speaking of the migration of mankind towards re-peopling the earth, make some mention, let drop some few words concerning the manner by which so large a part of the world, as the Continent of *America*, became inhabited.

AND such there is reason to think he has done, and left recorded in the following remarkable passage (the event denoted by which, was so singular as to give name to one of the post-diluvian Patriarchs; and is twice repeated in Scripture) viz. *Gen. x. 25. 1 Chron.*

i. 19. *And the name of one (of Heber's sons) was PELEG, for in his days was the earth DIVIDED* [NePeLeGE] On which words, that celebrated Biblical Critic *Bengelius* thus occasionally remarks in his *Ordo Temporum*, p. 54. ' *Peleg a divisione terræ nominatus est, &c. i. e. Peleg was named from the division of the earth* [which happened *in his days*];—The earth after the deluge was divided *by degrees*, by a *genealogical and political* division, which is expressed by the words נִפְצָה<sup>k</sup> and נִפְרְדוּ.<sup>l</sup> But a very different kind of Division is meant by the word נִפְלְגָה [NePeLeGE], namely, a *physical and geographical* division, which happened *at once*, and which was so remarkable, and of such extent, as suitably to answer the naming the Patriarch therefrom. By this word [PeLeG] *that kind of Division* is principally denoted, which is applicable to *Land and Water*. From whence in the *Hebrew* tongue פְּלִיג [PeLeG] signifies a *River*, and in the *Greek* ΠΕΛΑΓΟΣ [PELAGOS] the *Sea*;<sup>7</sup> [and in the *Latin*, *Pelagus* denotes the same]. From this precise meaning of the word then we may conclude, that the Earth was *split or divided asunder* for a very great extent, and the *Sea came between*, in the days of *Peleg*. Now surely when any person views the situation of *America*, and considers how it stands disjoined from this part of the world, and what an immense Sea divides it from us, he will not be backward in allowing, that *This* was the *grand Division* intended by the Passage under consideration. And therefore we may justly suppose

<sup>k</sup> As Gen. ix. 19. *These are the three Sons of Noah: and of them was the whole earth OVERSPREAD* [נִפְצָה].

<sup>l</sup> As Gen. x. 5. *By these were the islands of the Gentiles DIVIDED* [נִפְרְדוּ] *in their lands; every one after his tongue, after their families, in their nations; so also ver. 18, and 32; and ch. xl. 9. From thence [from Babel] did the Lord SCATTER THEM ABROAD* [הִפְצִיחַ] *upon the face of all the earth.*

with the above-mentioned writer, ‘ That, soon after the Confusion of tongues and the dispersion of mankind upon the face of the whole earth, some of the sons of *Ham*<sup>m</sup> [to whom *Africa* was allotted] went out of *Africa* into that part of *America*, which now looks towards *Africa*; and the *earth* being *divided* or *split asunder in the days of Peleg*, they with their posterity (the *Americans*) were for many ages separated from the rest of mankind. This separation of the human race, by means of so large a sea, prevented in like manner any evil and pernicious conspiracy, as the Confusion of tongues did.’

AND if this account can be seconded by any similar event related in ancient Heathen History, our supposition may deserve a greater degree of credit. And such an event we have recorded by *Plato* in his Dialogue named *Timeus*; in which he treats of *Nature* or *the System of the Universe*, its generation or beginning, and the *Nature of Man*. And as a prelude to his Subject he makes mention of a Fact that happened in the most early ages, the nearest of any known to the beginning of the world; and that is of a vast Tract of land or an Island greater than *Libya* and *Asia*, situated beyond the bounds of *Africa* and *Europe*, which, by the concussion of an earthquake, was swallowed up in the Ocean. *Plato* introduceth this fact, as related by *Solon* (one of the first of the seven wise men of *Greece*) who, while he was in *Egypt*, had heard it of an old *Egyptian Priest*, when he discoursed with him concerning the *most ancient* events. This Priest tells *Solon*, that the *Greeks*, with regard to their knowledge in antiquity, *had always been children*; and then informs him of the history of this famous Island (which they knew nothing

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<sup>m</sup> From what the *Indian* says to the *Spaniard*, p. 72, it appears, that the *Americans* themselves retained some kind of tradition that they were descended from this Son of *Noah*.

of before). The description of which and its catastrophe is as follows (which in itself is so remarkable, that there must have been some ground in nature for the tradition of it), ‘ There was formerly an Island at the entrance of the Ocean, where the pillars of *Hercules* stand [and so beyond the then supposed bounds of *Europe* and *Africa*]. This island was larger than all *Libya* and *Asia*; and from it was an easy passage to many other islands; and from these islands to all that Continent which was opposite, and next to the true sea [*αληθινον ποιλον*]. Yet within the mouth, there was a gulf, with a narrow entry. But that Land, which surrounded the Sea called *Πελαγος* [*PELAGOS*, where the *Division* was made] might justly be called a *Continent*.—In after-times there happened a dreadful earthquake and an inundation of water, which continued for the space of a whole day and night, and this island *Atlantis*, being covered and overwhelmed by the waves, sunk beneath the ocean, and so disappeared: Wherefore *that Sea* [*Πελαγος*] is now unpassable, on account of the slime and mud that has been left by the immersed island.’

THIS passage of *Plato* may receive some illustration, and the point I am upon, some degree of confirmation, from what occurs in the 18th ch. of the third book of *ÆLIAN’S History of various things*. ‘ *Theopompus* relates a certain discourse that passed between *Midas* the Phrygian and *Silenus*. This *Silenus* was the son of a Nymph, and was inferior to the Gods, but superior to mortals. When these two had discoursed of many things, *Silenus*, above all, tells *Midas*, ‘ That *Europe*, *Asia*, and *Libya*, ought to be considered as Islands, which the Ocean wholly surrounded; and that that part of the world, which lay beyond this, ought only to be esteemed the *Continent*: as it was of an immense extent, and nourished very different,

“ and vastly larger, kinds of animals than this side  
 “ of the world ; and the men, that inhabited it, were  
 “ twice as big.”

FROM what has been offered, I think, we may conclude, that *Africa* and *America* were once joined, or at least separated from each other but by a very narrow gulf ; and that some time after the Flood the earth was divided or parted asunder, probably by means of an earthquake, and then this middle land sunk beneath the Ocean.

ACCORDING to Scripture this event came to pass *in the days of Peleg*, for we are told, that IN HIS DAYS the earth was divided. From whence some have imagined, that this division fell out exactly at the time of *his birth* ; but the extensive expression of *his days* rather implies the contrary, and denotes that it happened when he was in an advanced age, when he had seen *many days*, not when he had seen but *one*. So that his name must have been given him *prophetically*, in the same manner as was *Noah's*, under which was predicted an event which did not come to pass 'till some hundreds of years after his birth (*Gen. v. 29. viii. 21*). Several other of the Patriarchs also had such prophetic names.

Now it appears from *Gen. xi. 10—17*. that *Peleg* was born in the 101<sup>st</sup> year after the flood, and lived 239 years : so that if the circumstance that caused his name to be given him, happened, when he was in an advanced age, we may fairly suppose that it fell out about 300 years after the flood.

ALLOWING this distance of time, we shall find upon calculation, that there must have been a sufficient number of mankind upon the earth to have re-peopled it abundantly. In order to shew this, and also in what manner the post-diluvians may be justly supposed, even in a natural way, to have separated and

dispersed, and re-peopled the globe, I shall transcribe  
 some lines from the *Abridgment* of PICART's *religious*  
*Ceremonies*, p. 279. 'Tis very probable, that *Ameri-*  
*ca* was as populous a few centuries after the deluge  
 as it is at this time; after which States and King-  
 doms were soon formed: However this was done  
 progressively, according as Families separated, and  
 that the children themselves becoming Parents of a  
 numerous progeny, were obliged to quit their na-  
 tive countries. These Separations gave rise to  
 States, in which ambition and a desire of superiority  
 might even in those ages have had some share. Ne-  
 vertheless 'tis probable that *Asia* did not send out any  
 colonies, 'till after having been forced to drive out  
 such young people as were capable of subsisting by  
 themselves. But these Settlements were very easily  
 made in those times: Husbandry was then the only  
 employment; mankind then spent their lives in lead-  
 ing their flocks to pasture; and 'tis by the opportu-  
 nities which rural occupations gave to people whose  
 passions were as yet but in their infancy, that the  
 first conquests were made in *Asia*, and the sending  
 out of the first Colonies. A Shepherd, who was at  
 the head of a numerous family, master of several  
 flocks, and who found himself well settled in *Chaldea*,  
 sent one of his Children or Dependents, several  
 leagues off, with a detachment of oxen, asses and  
 camels. The flock went gently on, grazing in their  
 passage, and insensibly drew farther from the true  
 owner. In the mean time the Detachment grew more  
 numerous; from this flock there sprung another.  
 The Shepherd, who at first was no more than a de-  
 puty, became himself the Master and Father of a  
 family: He then also separated part of his wealth,  
 and gave it as an inheritance to that Son whom he  
 intended should settle in a foreign country, or to



' some dependent that was going to settle further off.  
 ' We presume that in this manner an hundred years  
 ' was time sufficient to people *Europe, Asia, and Afri-*  
 ' *ca*, very considerably; and an hundred more to peo-  
 ' ple the Continent of *America*. Let us suppose for  
 ' this purpose, that at the flood *Shem, Ham, and Ja-*  
 ' *phet* had each 12 children,<sup>n</sup> and that all these chil-  
 ' dren were fit for marriage about 15 or 18 years af-  
 ' ter the flood. 'Tis very probable, that after they  
 ' had been married 12 years, they might see a posterity  
 ' of four hundred and thirty-two persons. In this  
 ' manner *Noah* might have been at the head of above  
 ' five hundred descendents in the space of thirty years;  
 ' and if we then suppose that every one of *Noah's* great  
 ' grand-children had ten children, these four hundred  
 ' thirty two persons might have begot four thousand  
 ' three hundred and twenty children in ten years time.  
 ' All this might have happened in the space of half a  
 ' century; so that multiplying them always by ten,  
 ' and leaving an interval of about twenty or twenty-

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<sup>n</sup> Left the subsequent Calculation should seem unreasonable, the  
 reader is desired to attend to the following, which is founded upon a  
 Scripture-matter of fact, ' It is evident from sacred History, [*Exod.*  
 ' xii. 37.] that in the space of about 266 years, the posterity of  
 ' *Jacob* alone, by his [twelve] sons, amounted to six hundred thou-  
 ' sand males above the age of twenty, all able to go forth to war.  
 ' Now by Mr. *Graunt's* observations on the bills of Mortality it ap-  
 ' pears that about  $\frac{3}{100}$  are between the ages of sixteen and fifty-six;  
 ' which may be near the proportion of males numbered, to the en-  
 ' tire number of them all. So that as 34 is to 100, by the Golden  
 ' Rule, must six hundred thousand be to the entire number of the  
 ' males of *Israel* at that time: which was therefore one million seven  
 ' hundred sixty-four thousand and seven hundred. To which add fe-  
 ' males, near  $\frac{1}{5}$  fewer, as suppose, to make the sum even, one mil-  
 ' lion six hundred thirty-five thousand three hundred, the Total is,  
 ' Three millions and four hundred thousand; add forty-three thousand  
 ' for the *Levites* (not included in the former accounts), the entire  
 ' sum will at least amount to three millions, and four hundred forty  
 ' three thousand souls.' *WHISTON'S Theory*, p. 250.

five years between one generation and another, *Asia*,  
*Europe*, and *Africa* may have been peopled with *four*  
*hundred thirty-two millions* of inhabitants, an *hundred*  
*and fifty years* after the flood. Methinks this could  
 not be disputed, were we only to have regard to the  
 ordinary methods of propagation. 'Tis true indeed,  
 that we suppose every Head of a family to have  
 had ten children, when probably several of those  
 Chiefs might not have had near so many. But then  
 how many do we see in our days who have more  
 than ten; and if we consider what Bp. *Burnet* has told  
 us concerning Mess. *Tronchin* and *Calandrin* of *Geneva*;  
 the former of whom at the age of seventy five, had  
 one hundred and fifteen children, or persons married  
 to his children, that could call him Father; and the  
 other, at the age of forty seven, had one hundred  
 and five persons who were all his nephews or  
 nieces by his brothers or sisters." If, I say, we  
 consider these two instances, 'twill be found that  
 our computation is modest enough, for an age  
 when poverty and the cares of life had not yet  
 destroyed man's vigour, nor reduced him to the  
 necessity of refraining from marriage (the lawful  
 method of propagation) for fear of not being able  
 to support his family. But although the increase  
 of our species had for one hundred and  
 fifty years been much less than we have supposed  
 it, and that only *four hundred millions* of  
 people had come into the world; nay farther,  
 tho' we were still to subtract *thirty millions* from  
 that sum, for the immature and violent deaths,  
 diseases and wars, which in all probability were  
 not so bloody in those ages as they have been  
 since, 'tis very natural to think that some *millions*  
 might detach themselves from the remaining *three*  
*hundred and seventy millions* in order to seek their

' fortunes in *America*. And tho' we afterwards sup-  
 ' pose, that propagation may have been very much  
 ' prejudiced by reason of the fatigues they laboured  
 ' under in their voyage, and from the change of  
 ' climate, &c. we shall nevertheless find that *ten*  
 ' or *twelve millions* of people may have been able  
 ' to furnish *America* with *forty millions* of souls, in  
 ' *fifty years time*. What is here advanced ought  
 ' not to be looked upon as a paradox, nor should  
 ' any difficulties be raised with respect to our cal-  
 ' culation; difficulties which are founded only on  
 ' the length of man's life in *our days*. Mankind in  
 ' those ages had not invented all those pernicious arts,  
 ' which at the same time that they shorten life, do also  
 ' lessen propagation.' And if to all this we add the  
 consideration of what we are told in *Gen. ix. 1.* viz.  
 That God, immediately after the deluge, *blessed Noah*  
*and his sons; and said unto them, Be fruitful and multi-*  
*ply and replenish the earth;* if, I say, we add to the  
 above observations the consideration of this divine  
 Blessing, and injunction, we cannot doubt that the  
 Progeny of *Noah* and his Sons was very much increased  
 soon after the Flood, and sufficiently numerous to re-  
 people the earth.' And, when we farther consider,  
 that after the *Confusion of Babel* (which happened about  
 an hundred years after the deluge) it is said, *Gen. xi.*  
*9. And from thence did the Lord scatter them [i. e. the*  
*Projectors of Babel] abroad upon the face of the*  
*whole earth;* I say when we consider this, that those  
 who were reluctant to God's design were forced to go,  
 and doubtless many co-operated with the divine inten-  
 tion willingly, and as mankind, within two or three  
 hundred years after the flood, were abundantly suffi-  
 cient for re-peopling the whole earth, so we may fairly  
 conclude, that within that space of time they actually  
 peopled it.

WITH regard to the brute part of the world, they certainly complied with the divine injunction, *Gen. viii. 17. and were fruitful, multiplied upon the earth, and bred abundantly.* And with respect to their dispersion, their peculiar qualities and instincts would prompt them to seek such countries and climates as would be most suitable to their natures; in the same manner as many of them now pass from one country to another, to immense distances, when the alteration of the season affects them. Add to this, that the mild and meek kind of animals, such especially as were designed to be the prey of others, would naturally avoid the wild and rapacious, and the last would as naturally pursue; so that both would be induced to get as far from the place where the ark landed, as they conveniently could: and by this means the whole globe would be soon re-supplied with animals.

THUS then, within two or three hundred years after the Deluge, the whole Earth would be re-peopled with men, and stocked with other animals. And as about this time the *Earth* was *divided* or split asunder, and we may justly suppose that the land, which united *Africa* and *America* together, suffered in *this division*, was disjoined from the two Continents, and sunk beneath the Ocean;—so would both Continents be still inhabited; tho' for the time forward the inhabitants of each would be separated from the other.

THUS we have discovered an easy way by which *America* might have been, and I apprehend, the true way, by which it really was supplied with inhabitants after the flood; a way this, that affords a very convenient passage (thro' a warm and fruitful climate) for the most tender and delicate animals, and such as could not endure any great degree of Cold, and of course a very easy one for robust man.

## N A T U R A L P R O O F S

O F T H E

## Scripture Account of the Deluge,

Deduced from a great variety of circumstances,  
on and in the terraqueous globe.

AM now come to lay before the reader  
I what natural proofs may be deduced,  
from the present situation of things in  
the earth, in favour of the *Mosaic* de-  
scription of the Deluge.

AND here, I shall select four Particulars, which  
if I can evince, the truth of the whole will, I believe,  
be readily admitted, *viz.* if I can prove,—

I. THAT there is a quantity of water in the earth  
abundantly sufficient for flooding it to the height re-  
presented in Scripture ;

II. THAT this water did actually thus overflow it ;

III. THAT, during this Flood, the solid structure  
or compages of the earth was dissolved, all the mineral  
and metallic matter reduced to its original corpuscles,  
and assumed up into the water ; so that the  
whole constituted one fluid mass or colluvies ;

IV. THAT all this matter, together with the animal  
and vegetable bodies inclosed within it, subsided again,  
and formed the present solid strata of the earth.

IF, I say, I can prove these four points, the truth  
of the *Mosaic* description of the Flood cannot, I  
think, well be disputed.

AND I. to shew, That there is a sufficient quantity of water in the earth for covering *all the high mountains under the whole heaven*, or rather the *whole surface* of the Earth above the height of the highest mountains.

THIS has been thought the main and principal hinge on which the whole affair of the Deluge turns, the *Causa sine quâ non* of solving that grand catastrophe; for unless we can procure sufficient materials for the work, it would be idle to attempt the solution of the effect. And all nature, both from above and from below, has been ransacked by several writers on this subject to find out a place where there lies a quantity of water sufficient for flooding the earth; which, considering the light that writers in general have looked upon the deluge in, namely as a flood of waters barely overflowing the terrestrial parts of the globe, is a matter of some surprize that they should be at a loss to find a suitable quantity: for let any one but cast his eye over a map or globe of the earth, and he will at once perceive that the Ocean and Seas greatly exceed the terrestrial parts, and if he will take a nearer and more accurate survey and add to the account the spaces occupied by all the rivers and lakes upon the earth, he will find, that the *dry land* comprehends not more than, if so much as, one *third part* of the earth's surface. And as it is well known, that the sea is unfathomable in many places, and that its depth is equal to the height of the mountains;° so it is evident, and manifest to sense, that there is a quantity

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° See VARENIUS's *Geographia*, by SHAW, Vol. I. p. 123, 195, 8. As I shall have occasion to quote this Treatise hereafter, it may not be amiss to acquaint the reader with its authority and character. Sir *Isaac Newton* thought it so judicious and useful a work, that he reprinted an accurate *latin* edition of it at *Cambridge*, for the use of the Students in that University. This edition meeting with a quick sale,

of water in the earth capable of covering all the high mountains under the whole heaven. But as this act of *barely covering* the mountains will not answer the description of the Flood as given in Scripture, nor suit with the *effects* of that Flood as they are now discernible upon and in the earth (of which hereafter) so we must find out a quantity, even greater than this. But what I have said may serve to pave the way, and lessen the wonder the reader may conceive concerning the quantity of water requisite for such a grand transaction.

THE Prelude to which mighty event was, according to *Moses*, *The breaking up of the fountains of the Great Deep*. What this *Great Deep* or *Abyss* is has been shewn already, namely, that it is an immensely large Reservoir of water lying beneath the circular shell of the earth, communicating with all lesser Deeps or Seas, and affording supplies for the numerous rivers upon the earth. Such is the Scriptural account of this Abyss, see p. 25, &c.

LET US now see what reason there is to believe, from a view of the structure and parts of this globe, that there is such a subterraneous magazine of water.

I. THE *first* argument which I shall bring in proof of this Abyss is (to speak in the words of Scripture wherever we can) *That all the rivers run into the Sea, and yet the Sea is not full*, or does not reach the height

and consequently soon becoming scarce, Dr. Bentley importuned Dr. Jurin to print another edition, and to affix an appendix of later Discoveries. Mr. Dugdale published an *english Translation* from Jurin's edition, with several additional notes; which has since been revised, corrected and re published by Dr. Shaw. And I scarce know a more useful Book for a Student in Philosophy to begin with.

See also *Histoire Physique de la mer* par Comte de MARSILLI, p. 11. This also is a valuable Treatise, and the Author of it so well known for his indefatigable industry, judgment and accuracy in making experiments and observations upon the tops of the highest mountains, the deepest caves, and even the bottom of the Sea, that I need only to mention his name to gain credit to his book.

of, or run over, its shores. This is a fact as surprising as it is apparent; but, like other common truths, the obviousness of it lessens the wonder, and takes off the weighty considerations deducible therefrom. But the Event in itself is truly wonderful, and deserves our particular notice on the present occasion. To enumerate and describe all the rivers upon the earth would be endless and impossible. I shall therefore mention some of the largest; in order that we may form a judgment of the quantity of water poured into the Sea by all of them. The *Danube*, after it has ran a course of above *two thousand miles*, and received by the way sixty rivers, (thirty of which are so large as to be navigable) throws itself, by five or six great streams, with such rapidity into the *Euxine Sea*, that its water continues fresh and unmixed with the salt for *twenty leagues*. Its depth, in most places, is *two hundred feet*.<sup>p</sup> The *Volga*, after it has taken an irregular tour of *two thousand nine hundred miles*, and increased its stream by the addition of two hundred rivers and brooks, discharges itself by *twenty five mouths* into the *Caspian Sea*, and makes that Sea less brackish for *many leagues*.<sup>q</sup> The *Oby*, a river in *Siberia*, in some places half a league, and in others a whole league broad, runs for about *two thousand four hundred miles* (without reckoning its windings) and then empties itself by *six mouths* into the *Icy Sea*.<sup>r</sup> To which we may add the *Jenisa*, about ten weeks journey distant from the former river, and equal, if not superior to it, both in *length* and *breadth*.<sup>s</sup> The *Croccæus* or *yellow river* of *China*, after having flowed thro' several Provinces for more than *two thousand miles*, falls at length

<sup>p</sup> COLLIER'S *Historical, Geographical, &c. Dictionary*.

<sup>q</sup> *Atlas Geographus*, Vol. I. p. 164. *Varenius*, p. 291.

<sup>r</sup> *Atlas Geog.* p. 165. *VARENIUS'S Geography*, Vol. I. p. 349.

<sup>s</sup> *Varenius*, *ibid.*



into the East-Sea.<sup>1</sup> Not far from this is the *Kiam*, remarkable for its *depth*, being unfathomable in several places, so that the Chinese have a proverb among them which says, *The Sea hath no bounds and the Kiam hath no bottom.* This impetuous river (which is so very rapid when the torrents from the mountains increase its stream, that it frequently bears away the islands that lye in its channel, and buries them under its waves) after having ran a course of *twelve hundred miles*, disburthens itself into the East-Sea of *China*.<sup>2</sup> The *Ganges*, famous for its length, breadth and depth, being near *fifteen hundred miles* long; and in its narrowest places *eight miles* broad, in the most open parts *twenty*; and seldom so shallow but that its depth measures an *hundred feet*.<sup>3</sup> The *Euphrates*, after having ran a course of about a *thousand miles* joins that remarkably rapid river the *Tigris* (after the *Tigris* had passed a course of about *five hundred miles*) and both of them, about *sixty miles* beyond their union, exonerate themselves into the *Persian Gulph*. The *Nile* takes its rise in 12 deg. of N. Lat. and having flowed *fifteen hundred miles*, nearly from South to North, divides into two branches, and then falls into the *Mediterranean Sea*.<sup>4</sup> The *Niger*, the longest river in *Africa*, after a course of *two thousand four hundred miles*, empties itself by six great streams into the *Atlantic Ocean*.<sup>5</sup> The *Zaire*, another river in *Africa*, which, though it does not equal any of the above in the length of its course, yet exceeds them all in its breadth, being at

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<sup>1</sup> LE COMTE'S *Observations made in a Journey thro' the Empire of China*, p. 108.

<sup>2</sup> *Ibid.*

<sup>3</sup> SALMON'S *modern Gazetteer*: HEYLYN'S *Cosmography*, p. 379.

<sup>4</sup> SALMON'S *present state of all nations*, Vol. V. p. 10.

<sup>5</sup> VARENIUS, p. 349. COLLIER'S *Dict.*

its mouth *twenty eight miles* broad, and rushes into the *Ethiopic* Sea with so great a force, as to preserve its waters pure and fresh for *ten miles* commonly, for *fifteen* at other times.<sup>z</sup> But if we pass into *America*, we shall find rivers exceeding any yet mentioned. The river of *St. Laurence*, after having ran through, and been fed by, several great Lakes, and taken a course of *one thousand five hundred miles* (and its source yet unknown) discharges itself into the gulph of *St. Laurence*; being at its mouth between *seventy* and *eighty miles* broad, and *two hundred fathoms deep*.<sup>a</sup> The *Paria* or *Oronoque* is navigable for a *thousand miles* by ships of burden, and *two thousand* by boats and pinnaces; and having received into its channel an *hundred rivers*, openeth into the sea with *sixteen mouths*, which part the earth into so many islands.<sup>b</sup> *Rio de la Plata*, in length from its first fountain *two thousand miles*, in breadth at its fall into the Sea *sixty miles*; and of so violent a stream that the Sea for *many leagues* together altereth not the taste of it.<sup>c</sup> The River of the *Amazons*, esteemed the greatest in the world; *Orellana* is reported to have sailed in it *five thousand miles*, including the several turnings and windings he took; in many places it is so deep as to be unfathomable; and, at the time of its highest risings, the Current is *an hundred and eighty miles* broad, and rushes into the Sea with such impetuosity as to preserve its natural taste and colour for more than *thirty miles*.<sup>d</sup>——Now to the above let any one make an addition of all the remaining rivers upon the earth, and then conceive within himself

<sup>z</sup> HEYLYN'S *Cosmog.* p. 989, 995.

<sup>a</sup> COLLIER'S *Dict.*

<sup>b</sup> HEYLYN'S *Cosmography*, p. 1056.

<sup>c</sup> *Ibid.*

<sup>d</sup> *Ibid.* Cook's *Voyage to the South Sea, &c.* p. 254.

what an immense profusion of water must be poured into the Ocean, I need not say, *yearly, monthly, but daily, or even hourly?*—It was the opinion of that accurate Geographer *Varenius*,<sup>c</sup> [and to which I believe, every one upon mature consideration will consent, as *Bp. Stillingfleet, Dr. Plot, Stackhouse,* and others have done] that *each* of the larger sort of rivers, (and such, every one of those that I have mentioned above, may well be esteemed, and many others that are not mentioned) empties into the Sea, in one year's time, a *quantity of water sufficient to cover the whole surface* of the earth. And if *several* rivers, *singly* considered, throw in *such a quantity*, and *some* of them a *far greater*, What must *all* of them added together effund?—In order to see what a quantity this would amount to, and to what an height, if it was poured upon the earth, it would arise, Let us suppose, that the *mouths* of all the rivers, or the places where they enter into the Sea, were stopped and dammed up so high, that their currents were diverted from rushing into the sea, and turned back upon the dry-land; and how soon would the highest mountains be covered?—For, if one river, in one year's time, produces a quantity sufficient to effect this, (or rather twice as much as would be sufficient, for the *Dry-land* occupies but one *third part* of the earth's surface) and there are many such rivers, and several much larger, and if all the lesser streams were united, they would exceed the larger already mentioned, How soon, I say, in this case, must the highest mountains be covered? Surely, not many *days, it hours*, would be requisite for such an inundation.——Now when we consider, that such an inconceivably great quantity of water is *daily, or at*

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<sup>c</sup> *Gen. Geograpy*, p. 299.

least *weekly* discharged into the Sea, and yet *the Sea is not full*, nor even any visible increase produced thereby, What an immensely large receptacle must there be beneath the Ocean and the Land for containing such an assemblage of water? Well might it be called in Scripture THE GREAT DEEP, as all lesser Deeps or Seas are nothing in comparison to it.

ALLOWANCE indeed must be made in the above calculation, for the quantity of water that is raised from the Ocean in vapour by the heat of the sun, &c. which some have been so extravagant as to imagine to be equal to That which is poured into the Ocean by all the rivers upon earth; and therefore they suppose, that what the Sea gets by the rivers, it loses by evaporation; and so a mutual and equable interchange is preserved.

But surely this Hypothesis can never stand the examination of common sense or experiments.

For 1<sup>st</sup>. it is well known, that the vapours and rain fall upon the Sea, as well as upon the land; and the *surface of the Ocean* is full as large again as That of the Dry-land; so we may justly suppose that two thirds of what is raised in vapour returns from whence it came, without falling upon the Dry-land.

2<sup>dly</sup>. Besides, as, it has been observed 'This is a *Summer reason*, and would pass very ill in winter, especially in our Northern climate, when the heat of the Sun is much less powerful;' and yet our Seas have no such sensible diminution in Summer, or overflowing in winter, as might be expected, if their increase and decrease depended so much upon *vapours*.

And, 3<sup>dly</sup>. I may add too, This is a day reason, and will not hold in the night; when the vapours frequently fall nearly as fast as they rose in the precedent day. But, 4<sup>thly</sup>. since the favourers of this hypothesis suppose, That the supply of all the rivers upon earth is owing to the vapours that are raised from the

Sea, carried from thence by wind, and condensed against the sides of mountains, and so trickling down thro' the crannies of the rocks, enter into the hollow places thereof, form collections of water, &c. from whence they issue out at the first orifice they can find, and by this means constitute *Springs* and *Rivers*; since, I say, they hold this hypothesis as a *consequence* of the former, it should follow, That as the evaporations are greater in Summer time than in Winter, so the Springs and Rivers, which depend upon the quantity of these evaporations, ought to be higher and fuller in Summer than in Winter; the contrary to which is well known to be fact, at least in our Northern regions; unless when the vapours happen to be congealed and frozen into Snow, as soon as they fall; and then they of course (in their *frozen* and *confined* state) cannot afford any supply for the augmentation of rivers; and in this case, or in such places where this happens, the rivers generally remain of the *same height* in *Winter* as in *Summer*. Which last consideration will furnish another argument against the opinion of those who ascribe the origin of Springs and Rivers to the condensation of vapours against the sides of mountains, &c. for it is observed by Mr. Ray, (who himself travelled over the *Alps*) ' That the tops of the *Alps* above  
 ' the fountains of four of the greatest rivers in *Europe*,  
 ' the *Rhine*, the *Rhofne*, the *Danube*, and the *Po*, are  
 ' for about *six months* in the year *constantly covered with*  
 ' *Snow* to a *great thickness*; so that there are *no vapours*  
 ' all that while that can touch those mountains, and be  
 ' by them condensed into water: there falls nothing  
 ' there but Snow; and that continuing all that while  
 ' on the ground *without dissolution*, hinders all access of  
 ' vapours to the earth, if any rose, or were by winds  
 ' carried so high in that form, as I am confident there  
 ' are not. And yet for all that *do not* those *Springs*

‘fail, but continue to run all winter, and it is likely too, without diminution.’ But, Lastly, this Hypothesis—that the origin of Springs and Rivers is owing to vapours condensed into water and rain, and that the quantity of water which is evaporated from the Ocean is equal to that which is poured into it by all the rivers upon the earth,—has been so fully examined and confuted by Dr. *Gualtieri* in answer to Dr. *Valisnieri* (who maintained the above hypothesis) and this too, by making the most reasonable or rather over-reasonable allowances to the favourers of this hypothesis, That I shall only transcribe part of what Dr. *Gualtieri* has said on this head, as it is *abridged* in the *Memoirs of Literature* for Aug. 1725. ‘After this, ‘Dr. *Gualtieri* undertakes to prove the impossibility of ‘ascribing the origin of Springs and rivers to rain-‘water, &c.——To demonstrate this impossibility, ‘it ought to be proved that the quantity of rain-water ‘is far from being sufficient to keep up the continual ‘course of springs and rivers. And to set that pro-‘position in its full light, one must determine by a ‘calculation the quantity of rain-water, and the quan-‘tity of the water of those rivers that fall into the sea: ‘and if one exceeds the other considerably, the ques-‘tion will be decided. It results (says the Author) ‘from the observations made by the Paris-Academy, ‘for the space of *nineteen years*, that the mean quantity ‘of rain, that falls at *Paris*, is about 18 or 19 inches ‘high every year.’ To find how much it rains in

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‘ It may be proper to make a few remarks here, 1<sup>st</sup>. That it has been now determined by a course of observations that have been successively continued by the Professors of the Academy for no less than *fifty five years*, that at a medium, or one year with another, there falls no more than 16 inches, and 8 lines of rain; see TEMPLEMAN’S *Extracts from the memoirs of the Academy at Paris*, Vol II p. 327; just printed. 2<sup>dly</sup>. That under the term *Rain* is also included all the

‘ *Italy* during one year, the Author requires that the  
 ‘ whole surface of that country be reduced to an ob-  
 ‘ long rectangular parallelogram; the length whereof  
 ‘ be of 600 miles of *Bologna*, and the breadth of 120.  
 ‘ In the next place, he supposes that all the water fall-  
 ‘ ing upon that extent of ground, in the space of one  
 ‘ year, is kept in, without being able to run out.  
 ‘ That water, in this supposition, will rise, according  
 ‘ to the observations of the Academy, to the height of  
 ‘ *one foot and a half*; and if the whole be calculated,  
 ‘ it will appear to amount to the sum of two trillions,  
 ‘ seven hundred billions of cube feet of water, that  
 ‘ fall in one year upon the surface of all *Italy*. Now,  
 ‘ in order to know the quantity of water carried into  
 ‘ the sea by all the rivers of that country in one year,  
 ‘ we must suppose a canal of a depth and breadth pro-  
 ‘ portionable to the dimensions of those rivers, where-  
 ‘ of those that fall into the sea, are *two hundred* in  
 ‘ number, without reckoning the other rivers, brooks,  
 ‘ fountains, subterraneous canals, &c. Dr. *Gualtieri*,  
 ‘ before he determines the length and breadth of such  
 ‘ a canal, observes that the *Po* is near a *mile broad* at  
 ‘ its entrance into the sea. If we add to the waters of  
 ‘ the *Po* those of *eighteen* other *great rivers*, can we al-  
 ‘ low to a canal that should contain them all, less than  
 ‘ *one mile* or, 5000 feet in breadth, and 20 feet in  
 ‘ depth? If we add still the water of the small rivers,  
 ‘ and of all the fountains and springs, that fall into  
 ‘ the sea; Can any one believe that those waters col-  
 ‘ lected can be contained in such a canal? [Doubtless

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water that falls in *snow, dew, vapours, &c.* 3<sup>d</sup>ly. That this quan-  
 tity is measured almost as soon as it falls, and the sum total determined  
 from these several lesser measurements; and no allowance made for  
 what would otherwise have been carried off by *winds, by exhalation,*  
 consumed in *vegetation, imbibed by the earth, &c.*; which, if taken  
 into the account, would greatly lessen the above estimate.

' not]. However the Author is willing to reduce the  
 ' breadth of that canal to that of 1250 feet, which is  
 ' only the *fourth* part of 5000, and its depth to that  
 ' of 15 feet. [This certainly is an over-reasonable  
 ' allowance given to his adversary]. After this re-  
 ' duction, the author following the calculation of  
 ' Dr. *Guglielmini*, finds that the quantity of water con-  
 ' tinually carried into the sea by a canal of that di-  
 ' mension, during 366 days, would be equal to the  
 ' sum of five trillions, five hundred twenty two billions,  
 ' three hundred ninety one millions of cube feet of  
 ' water. But all the rain-water, that falls in *Italy*  
 ' during one year, amounts only to the quantity of  
 ' two trillions, seven hundred billions of cube feet of  
 ' water. Therefore all the rivers in *Italy* carry into  
 ' the sea *two trillions, eight hundred twenty two billions,*  
 ' *three hundred ninety one millions of cube feet of water*  
 ' ABOVE that which the rain affords in one year. From  
 ' whence comes that overplus, if it be not from the  
 ' sea itself [or rather from the Abyfs that lieth within  
 ' the earth]?—————The Author confirms this  
 ' proof by another sort of supputation, *viz.* by that  
 ' of the *quantity of water*, which evaporates daily.  
 ' 'Tis well known, (says he) by several experiments,  
 ' that from a surface of water ten inches square, a cube  
 ' inch of water evaporates in 24 hours. A square  
 ' mile of water contains twenty five millions of square  
 ' feet of water, which make three billions, six hundred  
 ' millions of square inches: from whence it follows  
 ' that from a surface of a square mile, three hundred  
 ' sixty millions of cube inches of water evaporate in  
 ' 24 hours, which make 208 thousand, 333 cube feet.  
 ' Allowing the Mediterranean Sea to be 3000 miles  
 ' long and 420 miles broad, its whole surface will be  
 ' of one million, 260000 square miles, which number  
 ' being multiplied by that of 208 thousand, 333 cube



feet, we shall have the number of 262 billions, 499 millions, 580 thousand cube feet of water, which in 24 hours evaporate from the whole surface of the Mediterranean sea; and multiplying again that number by that of 365 days, there will be 95 trillions, 812 billions, 346 millions, 700000 cube feet of water, which evaporate from the same surface, in the space of one year. Afterwards if we reduce all the rivers that fall into the Mediterranean to a canal six Italian miles broad, and 15 feet deep (which is a very low supposition) such a canal will carry into that sea, *a hundred thirty two trillions, five hundred thirty seven billions, three hundred eighty four millions of cube feet of water*,—a quantity very much exceeding that which evaporates from that sea in one year. That Dr. *Valisnieri* may have no ground to complain, the Author is willing to grant him, against the testimony of all observations, that *thirty inches* of water fall in *Italy* every year. But he tells him at the same time, that all this water is not employed in keeping up the course of fountains and rivers. One must deduct out of it, 1. All the quantity necessary to moisten the ground to the depth of some fathoms, without which an excessive drought would reduce it to dust; and this quantity must needs be very considerable. 2. One must deduct that quantity which serves for the nourishment and growth of trees, and all the other plants of *Italy*, during the whole year; and in order to conceive how far this can go, it is sufficient to consider, that according to the experiments of Mr. *de la Hire*, one single fig-tree, furnished with an hundred and thirty leaves, absorbs *two pounds and a half* of water, in the space of *five hours*, and consequently *three thousand one hundred and ninety four pounds* in one year. 3. One must deduct out of rain-water that which *continually evaporates*, the

‘ quantity whereof has been determined above. Now,  
 ‘ how likely is it that 30 inches of water yearly may be  
 ‘ sufficient for all those uses; and that there should  
 ‘ remain enough still to keep up the course of fountains  
 ‘ and rivers. Again; Dr. *Gualtieri* makes another im-  
 ‘ possible supposition in favour of his adversary, viz.  
 ‘ that out of those 30 inches of water, 15 only are em-  
 ‘ ployed for the *continual evaporation*, and to *supply the*  
 ‘ *wants of the ground and plants*; and that the other 15  
 ‘ inches serve for the course of fountains and rivers.  
 ‘ But notwithstanding all the endeavours of Dr. *Guàl-*  
 ‘ *tieri* in favour of his antagonist, what shift can the  
 ‘ latter make with 15 inches of water, whilst the 18  
 ‘ inches found by the Academy, are, as has been  
 ‘ shewn above, *much beneath* the quantity requisite to  
 ‘ keep up that *perpetual commerce* between fresh and  
 ‘ sea-water.’

· II. SECONDLY, as the quantity of water that is poured into the Ocean from the *mouths* of all the rivers upon the earth proves the *certainty of an Abyss* beneath the Ocean and the Land, so the quantity that is thrown out at the *heads* or sources of all the rivers equally proves *the same*, and especially that this Abyss lyeth *beneath the Earth* as well as the sea. In the above description of several of the larger rivers, I have mentioned the *length of their courses* as well as *breadth of their mouths*, in order that the reader may judge from thence what an immense quantity of water is requisite for preserving their channels full, and keeping their currents strong; and also that he may observe that their Sources, or the Springs that supply them with water, lye high up in the inland countries, so that several of them are some *hundred*, nay *thousands of miles* distant from the Sea they at last fall into; and some of their Springs rise in the very middle or centre of the largest Continents. So that since they are situated

at such a vast distance from any sea, and take their rise generally in the highest mountains, the *reservoir* that supplies them with water must certainly be *beneath those mountains*. And since, besides these larger rivers there are a multitude of other rivers, rivulets, and springs, that indiscriminately arise in, and pass thro' the different parts of any one of the larger Continents into which the world is usually divided, so that if a person would but take a view of the map of either of the Continents, and observe the heads of the several rivers that spring up in it, that Continent, and so the whole Earth, would appear as if it were bored thro' in innumerable places, thro' which a continual efflux of water proceeded; and from hence he will readily conclude, that *the Earth is, as the Psalmist says, stretched out or expanded upon water, or established upon the Abyss that lieth beneath*; see p. 25, &c.

To say, that the *Origin* of these springs and rivers is owing to *rain and vapours condensed* against the sides of mountains, is, as we have already seen, false in fact as well as anti-scriptural. But as it is the present prevailing opinion, it may be expected that I should examine the chief of the arguments usually brought in favour of it; which I shall do, and endeavour to confute them; and then introduce an experiment or two, which ought for ever to silence this opinion, and which indeed might make those ashamed of it that have embraced it. The first and chief argument,—that the quantity of water which falls in rain and vapours throughout the year is sufficient for the supply of all the rivers upon the earth,—has been already shewn to be an egregious mistake; there being no reason to think it sufficient for the supply of *one* of the *larger rivers*, much less for *all*, during that space of time. *2dly*. It has been said, That since rivers increase and overflow their banks after any great rains, especially

such as are periodical, and after the flowing or melting of the snow upon the mountains, it certainly follows, that their supplies are owing to rain, vapours or snow.—But this is so far from proving that the *constant* and *regular flux* of rivers (which is the point in question) is derived from hence, that it rather proves the contrary; and only shews that the *sudden increase* or *accidental inundations* of rivers may be owing to these causes; but does not at all account for the water that continually issues forth from the springs or heads of rivers, and which affords them a *constant* and *equable supply*, when no such rains fall, and no snow is melted.

Again; it has been said, That the rain that falls, and the snow that is melted, upon the mountains, sink thro' the earth, and is reserved there in large cavities or basons, from whence 'tis gradually dispensed for the supply of springs and rivers.—But the above argument destroys this, for we find that rivers swell and increase *immediately after* and *in proportion* to the rain that falls or the snow that is melted; and therefore, the water that proceeds from either is not detained within the mountains. And it is evident to sense, that, after any sudden shower or even a rain of long continuance, or the gradual melting of snow, the water which proceeds from either flows down from the mountains along upon the surface, almost as soon as it falls, and does not enter into the bowels of the earth [unless where there happen to be natural hollows or pits dug for mining, &c. which *lie open to the surface*; and then *some part* of the rain that falls will of course pass thro' these; but as this tinges the water of the spring with the colour of the soil it has passed thro', so its continuance is easily distinguishable, and it seldom lasts above a few hours after the rain] but in general, I say, it is evident to sense, that the water which falls in rain or from snow flows down from the

sides of the mountain in streams or torrents towards the lower grounds, and either unites with rivers and with them falls into the sea, or else settles at the *bottom* of hills (but not upon the *tops* or *sides*, from whence springs generally rise, and so can afford no supply for them); and even from thence is in a few days conveyed away, part of it being evaporated by the heat of the sun, part carried off by the winds, part spent in the nourishment of vegetables, and part imbibed by the earth.

But it has been farther asserted, That, since in the hotter seasons of the year and in great droughts, when no rain has fallen for some time, the springs and rivers sensibly fail or are diminished; therefore, as their deficiencies are owing to want of rain, their supplies must be owing to rain.—But this by no means follows, for the part that rain bears in the supply of rivers is only (as we have seen already) an accidental increase or swelling of their waters, but has no share in affording a regular and sufficient quantity of water for their, otherwise, *equable* and *constant* courses. And the reason why springs and rivers fail or are lessened in great droughts and the hotter seasons of the year is evident, for during such times the heat of the weather and the action of the Sun-beams upon the water at the Spring-head (where the quantity is generally small) and in the channels of rivers will cause the water to be exhaled and evaporated in proportion to such heats and droughts, and therefore springs and rivers will proportionably fail. Besides; in such hot and dry weather, the usual moisture of the ground is exhaled, and the surface of the earth parched and cracked into chasms and openings, so that the moist vapours that arise from beneath or from within the earth, (of which more particularly hereafter) and which in a great measure afford supplies for *springs* and even for *rain*,

are, when they come to the surface of the earth, attenuated, divided, and dispersed here and there (as our breath or the fume emitted from our lungs, is in the summer-time) by the action of the sun-beams or heat in the air, instead of being collected and condensed at and under the surface of the earth-(as is the case during the colder, and more moderate months) and so saturating the vegetable mould, and replenishing springs, &c. And hence it comes to pass (quite contrary to the hypothesis of springs being derived from rain, &c.) that tho' there falls in *England* and the adjacent countries a *much greater quantity* of rain in *June* and *July* than in *December* and *January*,<sup>5</sup> yet the springs and rivers are *much lower* and the earth *more dry* in the two former months than in the two latter; and this certainly happens on account of the greater heat of the sun, and more copious exhalations from the earth and water; whereas in the two other months, the sun's power is less, and the surface of the earth closed and frozen; so that the *inward* or *subterranean vapours* are confined, condensed, and increased beneath the earth's surface; and hence *springs* and *wells* receive a *surplusage* of water, and the *inward parts* of the earth are quite *sated* or *glutted* with *moisture*, which collecting into drops falls more plentifully from the tops of caves, grottos, &c. during these colder months: and yet this is a time when *Rain* is not only less in quantity, but less able to send supplies to springs, on account of the close union or compaction of the upper parts of the earth; so that their sources must lie beneath the earth, and their *supplies* be *inward*, not *outward*.

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<sup>5</sup> WOODWARD'S *Nat. Hist.* p. 213. MARTYN'S *Abridgment of the Memoirs of the Academy of Sciences*, &c. Vol. II. p. 44.

BUT I shall now produce an experiment or two of Mr. *de la Hire*, sufficient to overthrow this whole theory of the origin of springs being owing to rain and vapours. This gentleman was resolved to bring this hypothesis to the test of experiments, and to examine it in its *most essential article*, viz. by endeavouring to find to *what depth* rain or snow-water did really descend into the earth. In order to know this,<sup>a</sup> ‘ He dug a hole in the *lower terrafs* of the Observatory at *Paris*, and placed therein, *eight feet* under ground, a large leaden bafon, a *little inclined* towards one of its angles, to which was foldered a leaden pipe 12 feet long, which, after a *considerable descent*, reached into a cellar adjoining. And after having covered the head of the pipe in the bafon with several flints of different fizes, to prevent the orifice from being stopped, he threw in a quantity of earth of a middle nature, between fand and loam, (and fo easily permeable by water) to the depth of *eight feet*; and then judged, that if the rain and snow-water penetrated the earth to the depth that some springs are found at (which in digging wells and mines are discovered to be at all depths, from 8 to 800 feet) or ’till they meet with the first clayey or compact stratum to stop them, that then the bottom of the bafon would serve to stop and collect the water: and by this means there would soon be a spring bursting forth thro’ the leaden pipe into the cellar. But on the contrary, after having kept the bafon in this situation for no less than *15 years*, and the ground all the while exposed open to whatever rain, snow, or vapours that fell, he could not observe that a *single drop of water* had ever

<sup>a</sup> See *Memoirs de la Academ.* or MARTYN’s *Abridgment*, Vol. II. p. 52. &c.

‘ passed thro’ the leaden pipe into the cellar.—At the  
 ‘ same time that he begun the above experiment, he  
 ‘ placed another bafon about 8 *inches* under ground,  
 ‘ and chofe a place where the rain and vapours might  
 ‘ fall, and yet the ground be screened from the heat of  
 ‘ the fun and the action of the wind, and took care to  
 ‘ pull up all the grafs and herbs which grew over the  
 ‘ bafon, that all the water, which fhould fall on the  
 ‘ ground, might pafs uninterrupted to the bottom of  
 ‘ the bafon, wherein was a little hole, with a tube to  
 ‘ convey the water into another veffel. The effect was,  
 ‘ that in all the fpace of time from the 12th of *June*  
 ‘ to the 19th of *February* following (more than *eight*  
 ‘ *months*) no water came by the tube from the bafon ;  
 ‘ and tho’ it *began to run* on the 19th of *February*, this  
 ‘ was entirely owing to the great quantity of fnow  
 ‘ which had fallen, and was *then melting*. From that  
 ‘ time the earth in the bafon was always very moift,  
 ‘ though the water would only run a few hours after  
 ‘ raining, and it ceafed running, when the quantity  
 ‘ fallen was drained off.—A year after, he repeated  
 ‘ the fame experiment, but buried the bafon 16 *inches*  
 ‘ under ground. He took care alfo that there was no  
 ‘ grafs on the ground, and that it might be screened  
 ‘ from the fun and wind, which would dry it too faft.  
 ‘ The effect was much the fame as in the former, ex-  
 ‘ cepting that when a confiderable time paffed without  
 ‘ raining, the earth would grow a little dry ; fo that  
 ‘ a moderate rain coming on, it would not moiften  
 ‘ it fufficiently to make it run.—Lastly, he  
 ‘ planted *herbs* on the ground over the bafon, but  
 ‘ found, that when thefe were grown up a little, the  
 ‘ ground was fo far from fending any water after rain,  
 ‘ that *all that fell was not fufficient to fustain them*,  
 ‘ but they would droop and wither, unlefs re-fprinkled  
 ‘ from time to time with water.’ This, I think,



abundantly proves, not only that the rain-water does not penetrate the earth, so as to form the smallest collection of water, above 16 or 18 inches, but that the quantity that falls, is *not sufficient* to furnish the *quota* requisite for the *growth of vegetables*; so that we must call in, as the above-mentioned author remarks, ‘*some foreign assistance* to support them;’ which also he found to be true from ‘*several experiments* that he made upon the *quantity of water evaporated thro’ the leaves of plants.*’ And what he says concerning the rain-water not sinking above 16 or 18 inches in a soil of a middle nature, between sand and loam, I have observed to be nearly true even in the most lax and gravelly soil, such as that in the low-lands about *Oxford*, which consists of small round pebbles and sand. I have examined it frequently after the hardest rains, and those of long continuance, (but could never perceive that the rain had descended, (tho’ the ground was upon a level, in a valley, and of a wide extent) above 20 inches or two feet at most; and at about this depth I observed in several places where the earth was opened, that the gravel was uncommonly hard and compact, the parts of it so intimately united, that it formed a kind of stratum, which in tenacity equalled some kinds of strata of stone: and upon examining the reason of it, I found it to proceed from hence, that the rain water had drained down as low as this, and here lodged; and as it descended, it had carried with it the smaller granules of sand and other finer matter, which being repositied among and between the other pebbles, cemented them close together and consolidated the whole; and that this was the cause of their union was manifest from the finer matter being affixed to the sides and under-parts of most of the pebbles, just in the manner as the draining or last sediment of water would naturally leave it. But.

I say, after repeated observations, I could never perceive that the rain-water had *penetrated thro'* this compact stratum of gravel; and unless the rain had been of long continuance, and the weather very moist and wet before, I could not find that it had penetrated even thus far; but saw plainly that all the rain that fell was not sufficient for the support and nourishment of the herbage and vegetables; which, unless they had been assisted by the *foreign supply* of the *vapours* that *ascend from the inside* of the earth or which proceed *from beneath* upwards (not those that fall *from the clouds*, or *from above*, downwards) would soon have drooped and withered, as those planted by the above-mentioned gentleman did.

It appearing then thus evident that the origin of Springs and Rivers is not owing to *rain* or *any vapours that may fall from above*, we must seek for an *internal supply*, for a magazine of water underneath the earth; and how immensely great this must be, I have given the reader reason to judge from what has been said at the beginning of this argument, p. 105. But it may be proper (in order to obviate all objections and entirely to clear the subject I am upon) to explain how and by what means the water of this subterranean Abyss is conveyed to the tops of the highest mountains, and there breaks out in Springs, &c. Now any one that has but just looked into the inside of the earth, and observed the structure of it, cannot but know that the strata or beds of stone, &c. of which it consists, have innumerable *cracks* or *fissures* in them, some perpendicular, others oblique, and others horizontal, or rather such as intersect and divide the strata at all angles, and in all directions whatever; and also that these fissures are of various sizes and capacities, from some that are several feet in breadth to a multitude of others that are not more than a line in

width, or even invisible ('till some force be applied to the stone, &c. and then the stone will break into small shatters or fragments, and discover where these cracks were, as every one knows); and it is also certain, that several of these fissures or rather these divisions or partings of the regular strata are filled with a rubbley-kind of matter, consisting of a mixture of small loose stones, clay, sludge and sand; and that others of them are quite open.<sup>i</sup>

It is also well known to those that are at all conversant in the subterranean world, that there is a *moist vapour* or a kind of steam continually passing, from beneath upwards, thro' the shell or crust of the earth; and that this vapour pervades, not only the smaller and lessèr fissures, but even the interstices and pores of most sorts of stone, &c; and that the deeper you descend, the more sensibly and forcibly this vapour acts or ascends.<sup>k</sup> Now upon the certainty of these two facts (the reality of which any person may be convinced of, by giving himself the trouble of looking into the inside of the earth) we shall be under no great difficulty in accounting for the ascent of the subterranean water to the tops and sides of mountains for the origin of springs, rivers, &c. For, first, since the Earth is thus cracked and divided, from the bottom of its shell to the top, into an innumerable number of fissures of various shapes and various sizes, it cannot but be that the water of the Abyss pervades these cracks and enters up into them to a level with the water of the Sea: for however irregular and winding these fissures may be, yet it is evident, from the common experiment of immersing several tubes that are of the most different shapes and sizes into a vessel of water, that the water will rise to an equal height

<sup>i</sup> See the *Explanation* of the *Plate* under the Letter F.

<sup>k</sup> See Note <sup>k</sup> p. 41. and the references.

in each, and be level with the surface of the water in the vessel; and so must the water of the Abyfs stand with respect to the surface of the Ocean. So that if we were to suppose the Earth, or rather the mountainous Part of it, to be cut off to a level, or concentrically, with the surface of the Sea, it is certain that the fissures and chasms, which communicated with the Abyfs beneath, would be full of water to their very tops, notwithstanding the Pressure of the outward Air upon them; for, neither this nor the irregularity of the subterranean canals would prevent the water from rising in every one of these fissures to a level with the surface of the Ocean, as is evident from the above-mentioned well-known experiment. Nay, it will rise much higher, for (as Dr. *Gualtieri* justly observes) ‘ Two Liquids of an unequal weight, put in an equal quantity into two equal tubes raised perpendicularly upon the same plain, have a different height relatively to their weight. This being laid down, ’tis certain by many experiments, that Sea-water is heavier than fresh water, and that the gravity of the first is to that of the second, as 103 to 100. And therefore if we suppose the Sea to be an 100 feet deep, and that the sea-water being deprived of its salt by filtration, fills up the subterraneous passages thro’ which it circulates, it may rise to the height of 3 Feet above the level of the sea. Now, if we suppose the sea to have the depth of an *Italian* mile, which makes 5000 feet (measure of *Bologna*), fresh water may rise to the height of 150 feet above the same level. That height of 150 feet is already something considerable for a mountain. But because some are much higher, at the tops of which there are Springs of fresh water; we may observe, that in many places, Pilots have not been able to measure the depth of the sea, because they could not

' find the bottom of it ; but tho' they should find it  
 ' in such places, one may very well suppose that there  
 ' are in them abysses, caverns, &c. which the plum-  
 ' met does not reach, and which penetrating into  
 ' the most internal parts of the earth, from a perpen-  
 ' dicular column of salt-water of an immense height.'

Now if, under these circumstances, we suppose the mountainous part of the earth or that portion of its sphere which is higher than the surface of the Sea (and which we before supposed to have been taken off) to be re-placed in its first and original position, so that the fissures in the mountainous Part shall be directly over the fissures that are full of water to their tops (as is the real situation of them in the present structure of the earth) how soon, in this case, and to what a height would the water of the Abyss be pressed up thro' the fissures into the mountains? For now the perpendicular pressure of the outward Air upon the surface of the water in the fissures being taken off or eluded by the covering of the mountains or their superincumbent strata, the subterranean water, by the force and action of the outward Air upon the Seas and the weight of the salt water in the Seas (which communicate, or are one, with the Abyss), would be forced up through the fissures in the mountains vastly above the level of the Sea; in the same manner (to compare great things with small) as water is pressed up thro' the pores in a heap of sand, or thro' the cracks in a block of stone, whose bottom or under-part lies immersed in a pond of water, but whose upper part is much above it; for by this situation of the Sand or Stone, that part of either which is prominent or above the water receives the perpendicular pressure of the outward air upon its exterior surface, and so eludes or weakens the action of the Air upon the water that is under or in the pores of the stone; and

also, comparatively speaking, increases the pressure and strength of the external Air upon the surface of the water in the pond, which therefore will force the water that is least pressed (viz. That which is under and in the pores of the stone) to that place where it can find easiest admittance, which will be up into the pores and cracks in the stone, as there is the thinnest medium and freest passage. Now if we carry this analogy farther, and consider that the whole surface of the earth is compressed by the strength of the Expanse, or the Fluid of the Heavens surrounding and binding it on all sides; and that this Pressure or Tension is so very great and so closely applied to every part, as to preserve the earth in its present solid state and circular form (tho' it be revolved so immensely swift upon its axis).\* And when we farther consider, that, while the external Air or grosser part of the Heavens (the *Spirit*) presses chiefly upon the surface, the finer, purer, or the ethereal Part (the *Light*) pervades and reaches the inmost recesses of the earth (for, we find, that no terrestrial body can deny it entrance) and penetrates even to the center. And as there is a *new* and *successive* stream of Light, almost instantaneously, moving or impelled from the Fire at the Sun, and continually pressing against, and making its way into the orb of the earth (chiefly at or under the torrid Zone), and having passed thro' the shell or the waters of the Ocean, enters into the Abyss and there *agitates* and *expands the water*: And as in order to gain itself admittance and occupy a space in the Abyss equivalent to its own bulk or quantity, a proportionable quantity of other matter must recede, give way, or pass out of the Earth;<sup>1</sup> so this receding matter, as

\* See also what is said of the *Pressure* of the air, in the note, p. 37.

<sup>1</sup> To explain this somewhat farther. It is now, I think, universally allowed that Light is a *body* or a *material substance*. And when we consider that its particles reflected from a concave speculum,

it is impelled upwards from the center to the surface, would take the easiest and readiest passages it could find, and therefore would endeavour to pass thro' the cracks and fissures of the earth; but as all the fissures that communicated with the Abyfs beneath, were before full of water, even to a level with, or rather *much higher* than the surface of the Sea, so this receding matter in its ascent would certainly contribute towards forcing the water in the fissures *still higher up*

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act with such force as to divide and instantly to split asunder the parts of a diámond or the closest body we know, it must be allowed to be a substance inconceivably *hard* and *subtle*; and its *motion immensely swift and strong*: which last article is further evident from the almost infinite number of reverberations it will endure from specula to specula, and yet its angle of reflection be equal to its angle of incidence. Such being the Solidity, Subtily, Activity, and Velocity of Light, no terrestrial body surely can prevent its passing thro' their pores; and when we consider that the Earth has been exposed to the action of this subtle penetrating Agent for *several thousand years*, there certainly can be no space in it, that can receive an atom of Light, but what has one; and therefore the Earth from center to circumference is a *Plenum*, or there is no one atom in it, but what is in contact with another atom, of some kind or other, but chiefly with the particles of Light; as is evident not only from the tenuity of this body which will premeate the pores of any other, but since the far greater part of the terraqueous globe is in a state of *fluidity* or consists of *water*; and we know that the action or comparative non-action of Light, Heat or Fire (for each are the same in substance, and differ only in degree or manner of motion) causes the *Fluidity* or *Solidity of water* (its fluid or frozen state); and as the earth is warmer, the deeper we descend; and there is an immensely large sphere of water in a state of fluidity and motion or perpetual circulation underneath the earth (as will more evidently be shewn hereafter); so there must be a free admission and full penetration of the particles of Light thro' that mass of *water* in order to preserve it *such* or keep it in a state susceptible of easy motion and brisk circulation. Such being the condition of the earth; and since it is impossible that any two bodies can subsist together in one and the same place, it must follow, that wherever, in such a *plenum* as the above-mentioned, there is an intrusion of any other body or matter, there must be a protrusion of some other matter, quantity for quantity.

or nearer to the tops of the mountains: And this its Effect must be judged of from the nature and force of this receding matter. We must therefore next determine what *this matter* is. Now this can be, no other than the above-mentioned *subterranean moist vapour*; it being certain, that this is incessantly passing thro' (and we know of no other matter that is so) the shell of the earth from beneath upwards or from the center to the circumference; and it answers in its nature and form what we might justly expect such receding matter to be. For it cannot but be allowed, that, as the Light penetrated into the Abyss, and protruded or pushed out other matter to gain itself admision, the matter thus driven out would be the finest and purest that was in the Abyss, which could be no other than the Light and fine Air that were there before (for it is certain that there is some, tho' very pure air, as well as Light, in the Abyss, else fishes could not live and breathe at the bottom of the Ocean; nor the water of the springs that are discovered at the lowest depth in the earth be so replete with air). Now as this Light and fine Air were pushed outward, they must of course pass thro' the water of the Abyss. And as this water had been before rarified and expanded by the colluctation of the atoms of Light between themselves (and it is not improbable, since the earth is of a spherical form, that the rays of light which pass thro' the Ocean and the Abyss, on each side of the equator, are refracted or converge towards one another till they meet in a focus near the center of the earth; and then the heat and agitation would be much greater) and also by their struggle to dispossess and drive out the subterranean light and air, so this light and air thus driven out would arise from the Abyss in form of *steam* or *vapour*; which we find actually to be the case. Now this vapour, in its passage



from the Abyſs thro' the cracks and pores in the ſtrata of the earth, would not only be a means of elevating the water in thoſe cracks, but would itſelf be turned or *condenſed into water* (as the ſteams that riſe in an alembick are) as it ſtruck againſt the tops, ſides, and irregular hollows in the fiſſures; and by this repeated action be continually forming into drops, and trickling down the ſides of the fiſſures; and thus, not only increaſe the water that was before paſſing thro' the fiſſures, but in ſome places, where there were natural baſons or cavities in the rock, be amaſſed in conſiderable quantities. And if ſuch baſons or fiſſures happen to be higher than the ordinary ſurface of the earth, or than the lower grounds (as is the ſituation of them all in mountains) the water thus collected, or rather inceſſantly collecting would break out, wherever it could find vent, on the outside of the mountain, and there form *ſprings, rivulets, &c.* But if the baſons or fiſſures in the inſide of the mountain be not higher than the mean ſurface of the earth, or there happen to be any depreſſed or hollow place on the outside of the mountain, the water that ouzed out of the inſide would then fall into them, and there ſettle; and become either ſmall *pools* or large *lakes*, according to its extent or quantity. And thus, by this inward ſupply, by the aſcent of the *ſubterranean water and vapour*, there will be a conſtant Fund and ſufficient Source of water for the production of Springs, Rivers, Lakes, &c. throughout the whole earth.

But there is a difficulty attending this account of the origin of Springs which may be thought too material to be paſſed by without a ſolution: and that is, — That if Springs derive their water from the Sea or from the Abyſs which communicates with the ſea, how comes it to paſs, that Spring-water is not ſalt and briny, like the ſource from whence it proceeds;

but on the contrary is generally fresh and sweet, or insipid. Now supposing the Abyss beneath the earth to be salt like the Sea (which yet we can have no absolute proof of; and I could give several reasons to shew, that it may not be so, at least, not equally salt with the Sea) yet we may solve the difficulty upon the following facts and observations. First, let it be remarked, that Sea-water may be divested of its saline particles, and is frequently rendered fresh in a *natural* way;—the vapours that are exhaled from the sea, and which fall again in fresh showers of rain, is one proof of this;—and the flesh of fish, which are caught, and which before lived and fed, in the Sea, being sweet, is another proof of it;—and from an experiment which Mr. Lister<sup>m</sup> made, it is certain, that the water which is sucked up (as we commonly say) or rather impelled and strained through the tubes and vessels of the *Alga marina* or common *Sea-weed* is fresh, sweet and potable; tho' the distillation be made from a basin full of salt-water. Or, what is more applicable to the present case, Mons. Marfilli having filtrated a certain quantity of the saltest and heaviest Sea-water he could procure thro' several vessels filled with sand, all which together made up a cylinder of sand of 75 inches in depth, found, that the water had lost near one half of its degree of saltness; and concluded that had it been strained again thro' twice the same quantity of sand, it would have been entirely deprived of its saline particles;<sup>n</sup> or we may safely say, that had it passed thro' a cylinder of sand, consisting of as many feet, as the above did of inches, it would have been as pure and fresh as the water of the wells of St. Mary's on the shore of *Languedoc* in *France*, which *Marfilli*

<sup>m</sup> *Phil. Transf.* N<sup>o</sup>. 156. or *Lewthorpe's Abriäg.* Vol. II. p. 297.

<sup>n</sup> *De la Mer.* p. 33.

says are not more than 60 feet distant from the nearest place where the Sea-water reaches.\* Here then are several strainers, or means by which Sea-water may be percolated and rendered fresh, in an easy, natural, and expeditious way. Now tho' the pores of the earth are larger or more open than the strainers here mentioned, yet when we consider the bulk of the earth or the thickness of its shell, the great variety of strata of which it consists, the many turnings and windings of the fissures (by means of which the subterranean water may pass thro' this variety of strata), the thick gross vapour that is continually passing thro' the whole body of the earth, and the great quantity of Sea-weed and other marine productions that are at the bottom of the Ocean, especially in such calm and quiet places as the cavities at the mouths of the fissures; I say, taking all these into consideration, which may be esteemed as so many percolators, and tho' more open and porous than the above-mentioned, yet by the *length* of their *courses* and the *variety* of their *substances*, they will certainly answer the end of the afore-mentioned. And this appears to be fact from hence, That in such places where the Sea-water has admission into the earth, the Springs and Wells are more or less brackish, as they are nearer to, or farther from the Sea. Thus Mr. *Norwood*, speaking of the *Bermuda* islands, says,<sup>p</sup> ' We dig *Wells* of *fresh water* ' sometimes within 20 yards of the sea, or less; which ' rise and fall upon the Flood and Ebb, as the sea ' doth; as do most of the wells in the country, tho' ' further up (as I am informed). Wheresoever they ' dig wells here, they dig 'till they come almost to a

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\* *De la Mer*, *ibid*;

<sup>p</sup> *Lowthorp's Abridg.* Vol. II. p. 298.

' level with the superficies of the sea, and then they  
 ' find either *fresh water* or *salt*. If it be *fresh*, yet if  
 ' they dig two or three feet deeper, or often less, they  
 ' come to *salt water*. If it be a *sandy ground*, or a  
 ' *sandy crumbling stone*, that the water *soaks gently thro'*,  
 ' they find usually *fresh water*; but if there be hard  
 ' lime-stone rocks, which the water cannot soak thro',  
 ' but passeth in chinks or clefts between them, the  
 ' water is *salt* or *brackish*.' *Varenius* relates the same  
 of several places, and observes ' that Springs near the  
 ' Ocean are salt or brackish, and the nearer they are  
 ' the sea, the more they are sated with salt; as on the  
 ' shore of *Africa*, and in *India*, chiefly on the shore of  
 ' *Coromandel*, where no vines grow, and all their wells  
 ' taste salt. Near the town of *Suez*, at the end of the  
 ' *Red Sea*, their springs are all salt and bitter; and  
 ' even the water which is fetched two *German* miles  
 ' from the shore, tastes a *little brackish*. Also in se-  
 ' veral small islands there are no fresh springs but  
 ' all salt (tho' something *less sated* than the Ocean)  
 ' as in the island of *St. Vincent*, and others. In the  
 ' low countries of *Peru* that border upon the Ocean,  
 ' their Lakes are *saltish*, because of the vicinity of  
 ' the Sea.<sup>9</sup> But farther up in the inland countries, it  
 is well known, that the Springs and Lakes are fresh  
 and sweet. Hence then we may fairly conclude,  
 that the water of the Ocean and the Abyss is, by a  
 gradual filtration thro' the strata of the earth, so  
 strained and purified as to leave behind all its saline  
 or briny particles, and when it arrives at a due dis-  
 tance (either greater, or less, according to the poro-  
 sity or tenacity of the strata it passes through) from its  
 original reservoir, there to become sweet and fresh, or  
 at least divested of its primitive qualities. A fur-

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<sup>9</sup> *VARENIOUS'S Geography, Part I. Ch. xvi. Proposition 5.*

ther proof, that the water of the Aabyſ, in its paſſage thro' the ſtrata of the earth, deposits its ſaline particles, may be drawn from the peculiar qualities of *mineral Springs*; of which there are almoſt an infinite number, differing from each other in the moſt diſtinguiſhable properties, according to the particular ſpecies of the mineral or metallic effluvia they are impregnated with; and tho' ſeveral of theſe have a ſaltiſh taſte, yet it is well known, that even That proceeds from other ſalts than thoſe which the Sea-water is replete with. Whence it muſt follow, that all mineral waters, before they arrive at their outlets, have not only deposited their ſaline particles, but even aſſumed others, very different and diſtinct therefrom. And ſince this is the caſe, we may fairly ſuppoſe, that where the ſubterranean water paſſes through ſtrata that have no proper, or no great quantity of proper, matter for the production of mineral waters, that there it will break out in ſprings of pure and freſh water.

It may not be amiſs to obſerve in this place, that, upon the ſuppoſition of Springs, being owing to rain or vapours that fall upon, and make their way through the outſides of the mountains, to the places from whence they riſe, it is altogether abſurd and impoſſible to conceive, that the *ſmall portion of the earth* which lies above ſeveral mineral ſprings, eſpecially ſuch as break out near the tops of the hiſheſt mountains, can be ſufficient for affording a *constant and equable ſupply of mineral matter* for the *impregnation* of them. Beſides; it is well known, that in ſuch places where mineral Springs are, and there happen to be any cavities open at the ſurface of the earth, or any chinks or crevices in the rock, through which the rain-water may deſcend and gleet down to the fiſſure through which the mineral water flows, that in ſuch caſes the rain-water is ſo far from increaſing the vir-

tues of the Spring, that it either destroys or lessens them for a time, and renders such as are hot and warm cold or cool, such as are acrid and bitter somewhat sweet or less acrid, and so of the rest; which plainly shews, as I observed before, that when rain-water permeates the earth, and reaches the water of Springs, it only makes an *accidental* or *temporary* increase, but does not afford the constant and regular flux; and is so far from being the Source of *mineral water*, or bringing down any matter proper for the production or continuance of such Springs, that were it reaches them, it in part destroys their qualities; which, I may observe, the Springs *recover again* when the rain is over: so that their supplies cannot be owing to rain: and we must seek deeper for their sources than that small portion of the earth which rain-water penetrates; and therefore must have recourse to a *subterranean reservoir*. And upon the supposition of an Abyfs of water beneath the earth, as the grand fund or promptuary of all Springs, there is the whole thickness of the shell of the earth, consisting of a variety of different strata, filled with a variety of soluble mineral and metallic particles, and the fissures full of a gross watery vapour, that has passed through the neighbouring strata, at every crack and cranny, replete with the mineral or metallic effluvia that it has brought out of these strata,—There is all this, I say, for the waters of the Abyfs to make their way through; before they break out in springs on the surface of the earth. So that there is reason to believe, that some mineral waters may have lost their original properties, gained others, lost them, and have regained their original or others of the same kind, before they appear as *Springs*; and certain it is, that several of them come up endued or impregnated with a variety of mineral qualities, and thereby shew the large space they have ranged through

for the acquisition of them. And though the *mouths* or *first passages* of the fissures that reach from the Abyss to the surface of the earth, are probably large and so open as to admit freely to some distance the subterranean water, endued with its peculiar properties, whether saline, or whatever they are; yet as these fissures gradually lessen as they tend towards the surface of the earth, and frequently break off or run into other fissures that are of an horizontal or oblique situation, which again divert and branch off into others still less, and some so small as to be invisible; since many of these fissures, are filled with a rubbley kind of matter, as sand, clay, sludge, small stones, &c. and so fit for straining and refining the water; since the subterranean Vapour, by being condensed against the tops, and trickling down the sides of the fissures is continually adding fresh supplies of water that has been purified or deprived of its original properties by evaporation and distillation; and since there is a perpetual ouzing of water into the larger fissures through the cracks and crannies in their sides; to which ‘ continual distilling alone, gleeing, or straining of the watery particles through the terrestrial strata’ *Varenius* attributes the deprivation of the saline particles in the sea-water; and justly remarks, ‘ that we observe this very thing in mines digged to a vast depth (and the deeper we descend, the more discernible it is), how that water on every side is continually dropping, and collecting itself into small guts, which are called veins of water; and if several such guts or runnels as these, concur in one receptacle, they form a fountain, as they who make drains, to bring water into wells, very well know:’——Now all these circumstances being added together, we cer-

tainly have a solution to the above-mentioned difficulty, and have reason enough to conclude, that the water of the Abyfs, in its passage through the strata of the earth, is deprived several times of the different qualities it gains, and therefore, soon after its permeation, is entirely divested of its saline or original properties, whatever they be.

THUS, I hope, I have now cleared my way, and sufficiently answered every material objection, and plainly shewed, That the origin of Springs is owing to an internal supply; the water of which,—by the general action of the Air upon the Seas and (by their communication) upon the Abyfs, and by the recess of the finer Air and Light from the centre of the earth to the circumference,—is impelled or pressed up through the cracks and fissures in the terrestrial strata to the tops of the highest mountains. And as there are *Springs* breaking out all over the surface of the earth, as well in the most inland as the maritime parts; and these Springs are the *Heads* or *Sources*, from whence that profusion of water proceeds which affords the constant, uninterrupted, and regular streams or courses of all the numerous rivers upon the earth, it must follow that there is an *internal magazine* or an *Abyfs of water beneath the earth*; and that this *Abyfs* is also *equal in extent* to the lower part of the shell of the earth.

So that as I before argued, that, from the quantity of water poured into the Ocean from the *mouhths* or at the *ends* of all the rivers upon the earth, there must be an immensely large Receptacle *beneath the Ocean* for containing it, so from the quantity that is thrown out at the *Heads* or *Sources* of all the rivers, there must be a Reservoir *beneath the earth* for supplying this; and if these two Conservatories were not full and in union with each other, there must soon appear a great superfluity in one, or a great deficiency in the



other, but as neither of these is observed, they must be in conjunction, and a mutual interchange and perpetual circulation be maintained between them. And hence is evident that two-fold scriptural argument *Eccles. i. 7*; the first part of which I have already quoted, proved, and shewed the reason of from Nature; and by now adding (since I have proved) the second, they will, when united, corroborate each other;—*All the rivers run into the Sea, yet the Sea [the general collection of waters, including the Sea and the Abyfs; see page 25, and p. 36.] is not full;—*—*unto the place from whence the rivers come, thither they return again.* And, I hope, it now at last appears, from all that has been said, to be no more wonderful that there should be a circulation of waters throughout the earth, and that Springs should break out on the tops of the highest mountains, than that there should be a circulation of blood in the human body, and that a man should bleed, when pricked, in the veins or arteries of his forehead, as freely as in those of his feet. For, the same Cause produces both these effects. The Blood,—by the pressure of the outward Air or Atmosphere upon, and by the penetration of the finer Air and Light into, the human body,—is impelled or ejected from the Heart (the Centre) into the arteries to the extremities of the body, and from the arteries is forced into the veins, and by the veins is refunded back into the heart: So the Subterranean or Central Water, by the same Agents and after the same manner, is pressed up through the veins or fissures in the earth to its extreme or highest parts, and from thence is conveyed down, through the channels of rivers, into the Sea, and from the Sea is returned into the Abyfs, from whence it first came. And the *ascent* of these two Fluids (the Blood and the Water) is as natural as the *descent*; for

neither of them having any *innate Gravity* or *Levity*, but, like all other matter, being indifferent, and therefore subject, to motion any way, they are moved either up or down, this way or that, just as they are impelled by the Universal Agents *Light* and *Air*.

III. *Thirdly*. ANOTHER Proof of a *Subterranean Abyss of water* may be drawn from *Whirlpools*, *Under-currents* and *Gulphs* in the Ocean.

OF the first of these is that remarkable *Whirlpool* upon the coast of *Norway*, which is thus briefly described by *Gordon* in his *Geographical Grammar*, p. 76. ' Upon the coast of *Norway*, near the isle of *Hitteren* in the latitude of 68, is that remarkable and dangerous whirlpool, commonly called *Maelstrom*, and by navigators *the Navel of the Sea*. Which whirlpool is, in all probability, occasioned by some *mighty subterranean Hiatus*, and proves fatal to ships that approach too nigh, provided it be in the time of flood: for then the sea, upwards of two leagues round, makes such a terrible *Vortex*, that the force and in-draught of the water, together with the noise and tumbling of the waves upon one another, is rather to be admired, than expressed. But, as in the time of flood, the water is drawn in with a mighty force, so during the tide of ebb does it throw out the sea with such a violence, that the heaviest bodies then cast into it, cannot sink, but are tossed back again by the impetuous stream which rusheth out with incredible force. And during that time is abundance of fishes caught by fishermen who watch the opportunity; for being forced up to the surface of the water, they cannot well dive again, so violent is the rising current.' Some have imagined from the circumstance of the bodies that are thrown into this *Vortex* being returned again, that therefore there

is only a great Cavity with a confined bottom, but no Hollow or Passage through the shell of the earth. But were there not a free passage for the waters thro' the whole shell of the earth, I cannot see how they could return with such impetuosity as here described, and the reason why the bodies thrown in do not totally disappear but are cast back again, is, in all probability owing to the *irregularity* of the aperture or channel of this Vortex, being in some places narrower, in others broader, as is the form of the natural cavities in the earth, and even of those in the Sea, where we can visit them, as witness those remarkable ones in the bottom of *Zirchnitzer Sea* in *Carniola*, described in the *Phil. Transf.* No. 54, 109, 191.

AGAIN; 'The *Caspian Sea* (says *Stackhouse* in his *History of the Bible*, Vol. I. p. 122, citing for proof *Moll's Geography*, p. 67. *Stillingfleet's Orig. Sacr.* l. 3. c. 4. and *Bedford's Scripture Chronology*, c. 12.) 'is reckoned in length to be above an 120 German leagues, and in breadth from east to west about 90 of the same leagues. There is no visible way for the water to run out, and yet it receives in its bosom near an hundred large rivers, and particularly the river *Volga*, which of itself is like a Sea for largeness, and is supposed to empty so much water into it in a year's time, as might suffice to *cover the whole earth* [see p. 105.]; and yet it is never increased nor diminished, nor is observed to ebb or flow, which makes it evident, that it must necessarily have a *subterraneous communication* with other parts of the world. And accordingly, Father *Avril*, a modern traveller, tells us, that near the coast of *Xylan* there is in *this Sea* a mighty *Whirlpool*, which sucks in every thing that comes near it, and consequently has a Cavity in the earth, into which it descends.'

OF a similar nature and of the same name with the above Sea is another in *Hispaniola* in the *West-Indies*, which (as *Peter Martyr* in his *History of the West-Indies*, p. 135, informs us) consists of salt, sour, and bitter water, as we read of the Sea called *Caspium*, (lying in the firm land between *Sarmatia* and *Hircania*); we have therefore named it *Caspium*. It hath many *swallowing Gulphs*, by which both the water of the great Sea springeth into it, and also such as fall into it from the mountains are swallowed up. The rivers which fall into this Lake or Sea, are these; from the North, *Guanicabon*; from the South, *Xaccosi*; from the East, *Guannabo*; and from the West, *Occoa*; they say, that these rivers are great and continual, and that besides these there are twenty other small rivers which fall into this *Caspium*. This Lake is tossed with storms and tempests, and often drowneth small ships or fisher's boats, and swalloweth them up with the mariners, infomuch that it hath not been heard of, that any man drowned by shipwreck was ever cast on the shore, as commonly chanceth of the dead bodies of such as are drowned in the Sea.

OF *Under-Currents*, Dr. *Smith* in the *Phil. Trans.* No. 158. writes thus, 'In the *Offing* between the *North-foreland* and *South-foreland*, it runs tide and half tide, that is, it is either ebbing water or flood upon the shore, in that part of the *Downs*, three hours, (which is, grossly speaking, the time of half a tide) before it is so off at sea. And it is a most certain observation, that where it flows tide and half tide, though the tide of flood runs aloft, yet the tide of ebb runs under foot, that is, close by the ground; and so at the tide of ebb, it will flow under foot. There is a vast draught of water poured continually out of the *Atlantic* into the *Mediterranean*, the mouth or entrance of which between *Cape Spartel* or *Sprat*,

' as the seamen call it, and *Cape Trafalgar*, may be  
 ' near seven leagues wide, the current setting strong  
 ' into it, and not losing its force 'till it runs as far as  
 ' *Malaga*, which is about twenty leagues within the  
 ' *Streights*. By the benefit of this current, though  
 ' the wind be contrary, if it does not overblow, ships  
 ' easily turn into the *Gutt*, as they term the narrow  
 ' passage, which is about twenty miles in length. At  
 ' the end of which are two towns, *Gibraltar* on  
 ' the coast of *Spain*, which gives denomination to the  
 ' streights, and *Ceuta* on the *Barbary* coast: at which  
 ' *Hercules* is supposed to have set up his pillars. What  
 ' becomes of this great quantity of water poured in  
 ' this way, and of that, which runs from the *Euxine*  
 ' into the *Bosphorus* and *Propontis*, and is carried at  
 ' last through the *Hellespont* in the *Ægean* or *Archipe-*  
 ' *lago*, is a curious speculation, and has exercised the  
 ' wit and understanding of philosophers and naviga-  
 ' tors. For there is no sensible rising of the water  
 ' all along the *Barbary* coast even down to *Alexandria*;  
 ' the land beyond *Tripoli*, and that of *Egypt* lying very  
 ' low, and easily overflowable. They observe indeed  
 ' that the water rises three feet, or three feet and a half,  
 ' in the Gulf of *Venice*, and as much, or very near as  
 ' much, all along the *Riviera* of *Genova*, as far as the  
 ' river *Arno*: But this rather adds to the wonder.  
 ' My conjecture is, that there is an *Under-current*,  
 ' whereby as great a quantity of water is carried out,  
 ' as comes flowing in. To confirm which, besides  
 ' what I have said above, about the difference of tides  
 ' in the *Offing*, and at the shore in the *Downs*, which  
 ' necessarily supposes an *Under-current*, I shall present  
 ' you with an instance of the like nature in the *Baltick*  
 ' *Sound*, as I received it from an able seaman, who  
 ' was at the making of the trial. He told me, that

‘ being there in one of the king’s frigates, they went  
 ‘ in their pinnace into the middle stream, and were  
 ‘ carried violently by the current: That soon after  
 ‘ they sunk a bucket with a very large cannon-bullet  
 ‘ to a certain depth of water, which gave a check to  
 ‘ the boat’s motion; and sinking it still lower and  
 ‘ lower, the boat was driven a-head to the windward  
 ‘ against the upper-current; the current aloft, as he  
 ‘ added, not being above four or five fathom deep,  
 ‘ and that the lower the bucket was let fall, they found  
 ‘ the under-current the stronger.’

So also *Marfilli* (as quoted by Mr. *Ray* in his *three Physico-Theological Discourses*, p. 81.) affirms, ‘ That  
 ‘ the lower water in the channel of the *Thracian Bosphorus*, is driven *Northward* into the *Euxine Sea*,  
 ‘ whilst the upper flows constantly from the *Euxine*  
 ‘ *Southward*. And that that which flows from the  
 ‘ South is falter and heavier; which he found by let-  
 ‘ ting down a vessel close shut up, fitted with a  
 ‘ valve to open at pleasure, and let in the lower water,  
 ‘ which being brought up and weighed, was observed  
 ‘ to be ten grains heavier than the upper. That the  
 ‘ upper and lower flow contrary ways, he found by the  
 ‘ fishermen’s nets, which being let down deep from  
 ‘ vessels that were fixed, were always by the observa-  
 ‘ tion of the fishermen, by the force of the current  
 ‘ driven towards the *Black Sea*: and by the letting  
 ‘ down of a plummet; for if it were stopped and de-  
 ‘ tained at about five or six feet depth, it did always  
 ‘ decline towards the *Marmora* or *Propontis*, but if it  
 ‘ descended lower, it was driven to the contrary part,  
 ‘ that is, the *Euxine*.’ And though Mr. *Ray* speaks  
 of this (and also of the Under-current at the *Streight’s*  
*Mouth*) as being ‘ the concurrent and unanimous vote  
 ‘ and suffrage of mariners, voyagers, and philosophers,’  
 yet he seems to make a doubt of it, because, says he,

‘ I do not understand how waters can run backward  
 ‘ and forward in the same channel at the same time ;  
 ‘ for there being but one declivity, this is as much as  
 ‘ to affirm, that a heavy body should ascend.’  
 But surely Mr. Ray may easily conceive, how water  
 may be made to run into a vessel or pond at one part,  
 and be made to run out in a contrary direction at the  
 bottom by means of a cavity beneath, and so two dif-  
 ferent Currents be formed ; which certainly is the  
 case in the above-mentioned seas ; there being a great  
 cavity or aperture at the mouths of each leading into  
 the Abyss beneath, which causes a current different  
 from, and in a contrary direction to, That which ap-  
 pears upon the surface of the waters.

VARENIUS (in his *System of Geography*, Chap. iv.  
 Sect. iv.) gives an account of the several principal  
 Currents in the Ocean ; some of which are certainly  
 owing to *subterranean gulphs* or passages that lead un-  
 der the earth, particularly the two that follow, (as  
 he himself imagines) since they set in towards the Shore ;  
 1. ‘ The most extraordinary Current of the sea is that  
 ‘ by which part of the *Atlantic* or *African* Ocean  
 ‘ moves about *Guinea* from *Cape Verd* towards the cur-  
 ‘ vature or bay of *Africa*, which they call *Fernando Poo*,  
 ‘ viz. from West to East, which is contrary to the ge-  
 ‘ neral motion. And such is the force of this current,  
 ‘ that when ships approach too near the shore it carries  
 ‘ them violently towards that bay, and deceives the  
 ‘ Mariners in their reckoning.—This current effects not  
 ‘ the whole *Ethiopic* Ocean, only that part which is ad-  
 ‘ jacent to the shore of *Guinea*, to the end of the bay,  
 ‘ and to about one degree of south latitude. It is ob-  
 ‘ served not to exceed the distance of fourteen miles  
 ‘ from the shore ; therefore ships are very careful lest  
 ‘ they should approach so near, when they sail along

‘ these coasts; which would hinder their intended  
 ‘ course and drive them to a place they would not  
 ‘ care to visit.’ 2. The second perpetual current is  
 ‘ where the Ocean moves swiftly from about *Sumatra*  
 ‘ into the bay of *Bengal*, from south to north [that is  
 ‘ from the sea towards the shore]; so that it is proba-  
 ‘ ble this bay was made by the rapidity of the current.  
 ‘ I do not know whether the cause may be owing to the  
 ‘ many islands, and to cape *Mabo*, upon the south con-  
 ‘ tinent, whereby the ocean in it’s passage westward may  
 ‘ be diverted northwards, or there may be a subterra-  
 ‘ neous Receptacle in the bay itself.’

THE reader may see descriptions of several o-  
 ther lesser Gulphs, Whirlpools, and Under-Currents  
 in the Sea in *Kircher’s Mundus Subter Lib. ii. & iii;*  
 and from viewing and considering the number and  
 situation of them, we may reasonably conclude that  
 there are few or no Seas without one or more of such  
 Gulphs, and consequently that there is an immense  
 quantity of water daily poured into the inside of the  
 earth through the mouths of them all.

AND here, by the way, I may just animadvert up-  
 on the inaccuracy of those writers who have endea-  
 voured to prove, by exact mathematical calculation  
 (which proves just nothing at all when founded on  
 false facts), that the quantity of water which is raised  
 from the Ocean in vapour is equal to that which is  
 poured into it by all the rivers upon the earth, with-  
 out having taken notice of, or made any allowance  
 for, these *Under-currents* and *In-draughts*, which must  
 necessarily carry off a great quantity of the water. I  
 have already had occasion to examine this opinion at  
 large (page 108, &c.) and have shewed the falsity of  
 it from facts and experiments; and this article may  
 be brought as another argument against it.



IV. A *fourth* Proof of a *subterranean Reservoir of water* may be deduced from *Lakes*.

OF these there are several sorts, each tending to prove the point in question, as, *first*, Those which receive a great quantity of water, either from rivers or other means, but externally emit none; *secondly*, Those that send forth a great quantity of water, but outwardly receive none; *thirdly*, Those that neither increase nor decrease, notwithstanding the difference of seasons, or the quantity of water carried off by evaporation. In each of these cases there must be a *subterraneous exit*, or else an *internal supply*; and when it has been proved, that there are some of these Lakes in almost every part of the world, it must be allowed that the reservoir which supplies them must be equally extensive with themselves, or that there is a collection of water which extends under the whole surface of the earth.

OF the *first* sort of Lakes are the following, reckoned up by *Varenius*, (*System of Geog.* p. 280.) ‘In the foregoing proposition we observed that the Lake *Titicaca* discharges a river into a smaller called *Paria*, which therefore may be referred to this class, viz. to such as receive rivers but emit none. The lake *Asphaltites*, which is also called the *Dead Sea*, receives the river *Jordan*, but emits none: Its length, from north to south, is seventy *German* miles, and its breadth five, as some make it. There is one in the lesser *Asia*. There is a small one in *Macedonia*, called *Jana*, which receives two little rivers: One in *Persia* near *Calgistan*. The lake *Soran*, in *Muscovy*, receives two small rivers. The river *Gbir*, in *Africa*, is reported, by *Leo Africanus*, to lose itself in a lake, and some maps so represent it, but others join it to *Nubia*.’ *Peter Martyr* in his *History of the West-Indies*, p. 135, speaking of *Hispa-*

*niola*, says, ‘ That about threescore miles distant from  
 ‘ the chief city of *St. Dominick*, there are certain high  
 ‘ mountains, upon the tops whereof is a Lake or  
 ‘ standing Pool of fresh water three miles in compass,  
 ‘ and well replenished with divers kinds of fishes.  
 ‘ Many small rivers and brooks fall into it. It hath  
 ‘ no passage out, but is on every side inclosed with  
 ‘ the tops of mountains.’ Under this head we may  
 reckon a Lake mentioned by *Du Halde*, in his *Description of the Empire of China*, Vol. I. p. 20. ‘ This vast  
 ‘ Lake [named *Tong-ting-Hu*, in the province of *Hu-*  
 ‘ *quang*] is remarkable for the greatness of its circum-  
 ‘ ference, which is above 80 french leagues, and the  
 ‘ abundance of its waters, especially in certain seasons,  
 ‘ when two of the largest rivers in the province,  
 ‘ swelled with the rains, discharge themselves into it,  
 ‘ and when it disembogues them, one can scarce per-  
 ‘ ceive it to be diminished.’ To this article also  
 may be referred what has been already said concern-  
 ing the two lesser seas or lakes, called the *Caspian*,  
 one in *Asia*, the other in *America*, p. 137, 8.

Of the *second* sort of Lakes, or, those which send  
 forth a great quantity of water but outwardly receive  
 none; take the following account from *Varenius* (*Sys-*  
*tem of Geog.* p. 278) ‘ There is an infinite number  
 ‘ of these Lakes and most large rivers flow from such,  
 ‘ as out of cisterns;—of the smaller sort are the follow-  
 ‘ ing; the Lake *Wolga*, at the head of the river *Wolga*;  
 ‘ the *Odoium* at the head of the *Tanais*; the *Adac*, from  
 ‘ whence one of the branches of the river *Tigris* flows;  
 ‘ the *Ozero* [or *White Lake*] in *Muscovy*, that gives  
 ‘ source to the river *Shackfna*, which is poured into  
 ‘ the *Wolga*, and many more little ones; we shall  
 ‘ here only reckon some of the larger sort that are  
 ‘ more remarkable. The great lake *Chaamay* in the  
 ‘ latitude of twenty six degrees north, not far from

' *India* to the eastward of the river *Ganges*; out of this  
 ' lake flow four very large rivers, which water and fer-  
 ' tilize the countries of *Siam*, *Pegu*, &c. viz. the  
 ' *Menaw*, the *Asa*, the *Caipoumo*, and the *Laquia*.  
 ' Some maps exhibit a small river that runs into this  
 ' lake. The lake *Singbay*, upon the east border of  
 ' *China*, sends out a great river southward, which  
 ' being joined to another, enters *China*. The lake *Ti-*  
 ' *ticaca*, in [*Los Cbarcas*] a province in south *America*,  
 ' is eighty leagues in circuit, and emits a large river,  
 ' which is terminated in another small lake, and is no  
 ' more seen. There are several towns and villages  
 ' discovered about this lake. The lake *Nicaragua*, in  
 ' a province of the same name, in *America*, is only  
 ' fourteen *German* miles from the *Pacific*, or south sea,  
 ' and above one hundred from the *Atlantic*, into which  
 ' it is discharged at broad flood-gates. The lake *Fron-*  
 ' *tena*, in *Canada*, out of which issues the river of *St.*  
 ' *Lawrence*. The lake *Annibi*, in *Asia*, in the latitude  
 ' of sixty-one degrees.' And after p. 282, where the  
 Author gives an account of *Lakes* that *both receive and*  
*emit rivers*, it is evident that the quantity of water  
 emitted by some is far superior to what is received;  
 and in others the quantity received superior to what is  
 emitted; so that there must be subterraneous supplies  
 and exits.

THE next quotation I shall cite may serve both for  
 this second article and also for the last, viz. for those  
*Lakes that neither increase nor decrease, notwithstanding*  
*the difference of seasons and the quantity of water carried*  
*off by evaporation*: It is from *Acosta's History of the In-*  
*dies*, Book iii. chap. 16, 'It is a question often asked,  
 ' Why there are so many *Lakes* in the tops of these  
 ' mountains, into which no river enters, but contrary-  
 ' wise many great streams issue forth, and yet do we

' scarce see these lakes to diminish any thing, at any  
 ' season of the Year. To imagine these lakes grow  
 ' by the snow that melts, or rain from heaven, That  
 ' doth not wholly satisfy me; for there are many that  
 ' have not this abundance of snow, nor rain, and yet  
 ' we see no decrease in them: which makes me to be-  
 ' lieve they are springs which rise there naturally;  
 ' although it be not against reason, to think that the  
 ' snow, and rain help somewhat in some seasons.  
 ' These Lakes are *so common* in the *highest tops* of the  
 ' *mountains*, that you shall hardly find any famous ri-  
 ' ver that takes not its beginning from one of them.  
 ' Their water is clear and breeds little store of fish,  
 ' and that little is very small, by reason of the cold  
 ' which is there continually. Notwithstanding some  
 ' of these lakes be very hot, which is another wonder.  
 ' At the end of the valley of *Tarapaya* near to *Potozi*,  
 ' there is a lake in form round, which seems to have  
 ' been made by a compass, whose water is extremely  
 ' hot, and yet the land is very cold: they are ac-  
 ' customed to bathe themselves near the bank, for else  
 ' they cannot endure the heat being farther in. In the  
 ' midst of this lake there is a boiling of above twenty  
 ' feet square, which is the very spring, and yet (not-  
 ' withstanding the greatness of this spring) it is never  
 ' seen to increase in any sort: it seems that it exhales  
 ' of itself, or that it hath some hidden or unknown  
 ' issue: neither do they see it decrease, which is an-  
 ' other wonder, although they have drawn from it a  
 ' great stream, to make certain Engines for metal,  
 ' considering the great quantity of water that issueth  
 ' forth, by reason whereof it should decrease.' But  
 the greatest Lake of this kind in *America*, and indeed  
 in the whole world, is the Lake *Parime*, lying directly  
 under the Equator. ' It is (as *Varenius* says in his  
 ' *Syst. Geog.* p. 278) in length from east to west, about

' 105 German miles, and in the broadest place 100  
 ' miles over or thereabouts; so that it may be com-  
 ' pared with, if it do not exceed, any lake in the  
 ' world for magnitude; yet it neither receives nor  
 ' emits any rivers.' *Gordon* in his *Geographical Gram-*  
*mar* speaking of *Scotland*, writeth thus, page 204;  
 ' Towards the north-west part of *Murray* is the fa-  
 ' mous *Lough-Nefs*, which never freezeth; but retain-  
 ' eth its natural heat, even in the extreamest cold of  
 ' winter; and in many places this lake hath been  
 ' founded with a line of 500 fathoms but no bottom  
 ' found. Nigh to *Lock-Nefs* is a large round Moun-  
 ' tain [called *Meal-fuor-vouny*] about two miles of per-  
 ' pendicular height from the surface of the *Nefs*; upon  
 ' the very top of which mountain is a lake of cold fresh  
 ' water often founded with lines of many fathoms, but  
 ' never could they reach the bottom. This lake,  
 ' having no visible current running either to it or from  
 ' it, is equally full all seasons of the year; and it never  
 ' freezeth.' *Sir Robert Sibbald* in his *Scotia illustrata*,  
 p. 22, says ' That there are various Lakes in *Scotland*,  
 ' especially in the highest places, which neither emit  
 ' nor receive rivers, and yet are full of water;' and  
 concludes ' that such must be supplied by sources  
 ' from beneath, at least with a quantity of water equi-  
 ' valent to what is carried off by the heat of the Sun.'

IN *Kircher's Mundus Subterraneus*, Lib. v. Ch. 4.  
 there is an account of several other Lakes of each of  
 the above-mentioned kinds, and full proof that they  
 derive their origin from, and are continued by, *sub-*  
*terrene sources*. And though probably some of these  
 Lakes are maintained by rivers that run under-ground  
 or by springs that issue out at their bottoms, yet, as we  
 have already shewed (p. 120, &c.) that the *Springs and*  
*Rivers which appear above ground* owe their supplies to

an *internal Reservoir*, it must much more strongly follow that these covert Springs and Rivers are owing to the same, and therefore that the Lakes, which are supported by them, plainly shew that there must be a *subterranean Reservoir of water*.

V. A *fifth* Argument in proof of an *Abyss of water beneath the earth* may be drawn from the consideration of some *phenomena* attending *Earthquakes*.

AN account of which I shall transcribe from Dr. *Woodward's Nat. History of the Earth*; the truth of which every person that is at all conversant in the history of Earthquakes cannot but know; and indeed the effects of the late dreadful shock of the earth at *Lisbon*, which extended themselves (through means of the agitation of the waters of the Sea and the Abyss) to the *four quarters of the world*,\* being at present fresh in the memory of almost all now living, will bear ample testimony to the truth of what the Doctor asserts, *Nat. Hist.* p. 133, 'That this *subterranean Heat* or Fire, which thus elevates the water out of the *Abyss*, being in any part of the earth *stopped*, and so diverted from its ordinary course, by some accidental glut or obstruction in the pores or passages through which it used to ascend to the surface: and being by that means preternaturally assembled, in greater quantity than usual, into one place, it causeth a great rarefaction and intumescence of the water of the abyss, putting it into very great commotions and disorders: and at the same time making the like effort upon the *Earth*, which is expanded upon the face of the abyss, it occasions that agitation and concussion of it, which we call an *Earthquake*. That

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\* See an Account of these effects, and how extensive they were, in *Phil. Trans.* for the year 1756, Vol. XLIX. Part 1. §. ii.

‘ this *effort* is in some earthquakes so *vehement* that it  
 ‘ splits and tears the *Earth*, making cracks or *chasms*  
 ‘ in it some miles in length, which open at the in-  
 ‘ stants of the shocks, and close again in the intervals  
 ‘ betwixt them : nay, it 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 failing, *the whole Tract*, as soon  
 ‘ as ever the shock is over, sinks down to rights into  
 ‘ the *Abyfs* underneath, and is swallowed up by it,  
 ‘ the water thereof immediately rising up, and form-  
 ‘ ing a lake in the place where the said tract before  
 ‘ was. That several considerable tracts of land, and  
 ‘ some with cities and towns standing upon them ; as  
 ‘ also whole mountains, many of them very large, and  
 ‘ of a great height, have been thus totally *swallowed up*.  
 ‘ That this effort being made in *all directions* indiffer-  
 ‘ ly ; upwards, downwards, and on every side ; the fire  
 ‘ dilating and expanding on all hands, and endea-  
 ‘ vouring, proportionably to the quantity and strength  
 ‘ of it, to get room, and make its way through all  
 ‘ obstacles, falls as foul upon the *water of the Abyfs*  
 ‘ beneath, as upon the earth above, *forcing it forth*  
 ‘ which way soever it can find vent or passage ; as  
 ‘ well through its ordinary exits, wells, springs, and  
 ‘ the outlets of rivers ; as through the chasms then  
 ‘ newly opened ; through the *Camini* or spiracles of  
 ‘ *Ætna*, or other near *Vulcanoes* ; and those *Hiatus’s*  
 ‘ at the bottom of the sea, whereby the *Abyfs* below  
 ‘ opens into it and communicates with it. That as  
 ‘ the water resident in the *Abyfs* is, in *all parts* of it,  
 ‘ stored with a considerable quantity of heat, and more  
 ‘ especially in *those* where these extraordinary aggre-  
 ‘ gations of this fire happen, so likewise is the water  
 ‘ which is thus forced out of it ; insomuch, that when

' thrown forth, and mixed with the waters of wells,  
 ' of springs, of rivers, and the sea, it renders them  
 ' very sensibly hot. That it is usually expelled forth  
 ' in *vast quantities* and with *great impetuosity*; infomuch  
 ' that it hath been seen to spout up out of the deep  
 ' wells, and fly forth, at the tops of them, upon the  
 ' face of the ground. With like rapidity comes it  
 ' out of the sources of rivers, filling them so of a  
 ' sudden as to make them run over their banks, and  
 ' overflow the neighbouring territories, without so  
 ' much as one drop of rain falling into them, or any  
 ' other concurrent water to rise and augment them.  
 ' That it spues out of the chasms opened by the Earth-  
 ' quake, in great abundance: mounting up, in  
 ' *mighty streams* to an incredible *height* in the air, and  
 ' this often-times at many miles distance from any  
 ' sea. That it likewise flows forth of the *Volcanoes* in  
 ' *vast floods*, and with wonderful *violence*. That it is  
 ' forced through the *Hiatus's* at the bottom of the *sea*  
 ' with such vehemence, that it puts the sea immedi-  
 ' ately into the most horrible disorder and pertur-  
 ' bation imaginable, even when there is not the least  
 ' breath of wind stirring, but all, 'till then, calm and  
 ' still; making it rage and roar with a most hideous  
 ' and amazing noise; raising its surface into prodig-  
 ' ious waves, and tossing and rolling them about in  
 ' a very strange and furious manner; oversetting ships  
 ' in the harbours, and sinking them to the bottom;  
 ' with many other like outrages. That it is refunded  
 ' out of these *Hiatus's* in such *quantity* also, that it  
 ' makes a vast addition to the water of the sea; raising  
 ' it many fathoms higher than ever it flows in the  
 ' highest tides, so as to pour it forth far beyond its  
 ' usual bounds, and make it overwhelm the adjacent  
 ' country; by this means ruining and destroying towns  
 ' and cities; drowning both men and cattle; breaking



‘ the cables of ships, driving them from their anchors,  
 ‘ bearing them along with the inundation several miles  
 ‘ up into the country, and there running them a-  
 ‘ ground; stranding whales likewise, and other great  
 ‘ fishes, and leaving them, at its return, upon dry-land.’  
 And again, *Nat. Hist. of the Earth illus.* p. 104.  
 ‘ 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 in-  
 ‘ stances 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 ac-  
 ‘ counts from writers of the most unquestioned fide-  
 ‘ lity; and even from eye-witnesses, that there have  
 ‘ been earthquakes, in our own times, 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 phenomenon 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 terrestrial part

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See RAY'S *Physico-theological Discourses*, p. 13.

‘ 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.’

VI. THAT there is an *Abyss of waters beneath the earth*, may be still further shewed from the quantity of water that has been discovered in the inside of the earth, in opening the strata either for Stone, Coal, &c. in digging for wells, &c. in searching after minerals, ores, &c. from sudden and accidental eruptions of water out of the bowels of the earth; or from discoveries of subterranean waters that have been made by any other means, either accidental or designed, that do not properly come under the heads I have already discussed.

Mr. HUTCHINSON in his *Observations* on the earth (see Vol. XII. of his works, p. 331.) says, ‘ It is hardly credible how great a quantity of water will be sometimes flung upon miners, when they come to break up strata of stone, that have in them many of these cracks, that are so small that they are hardly discernible. These are indeed the natural conveyances of water: and, when once they are opened, it runs incessantly. I have observed such an irruption of water in vast quantity out of Stone, that, emptying those cracks, is much too dense and close to let any, the least, humidity pass.’ The vast profusion of water that sometimes ensues the breaking up of the strata in *Coal-pits* is well known to all that are in the least conversant in that affair; and what amazing quantities are drawn off from deep *mines*, either by drains or levels, or raised by engines, is also well known: Nay, in digging common wells and ponds, in places where there are no Springs above

ground, it frequently happens, that such a glut of water issues forth as to endanger the lives of the workmen. Of this Dr. *Shaw* gives us a remarkable instance in his *Travels*, p. 135, ‘The Villages of *Wadreagg* [in the eastern province of *Barbary*] are built in a plain, without any river running by them, and are supplied in a particular manner with water. They have, properly speaking, neither fountains nor rivulets; but by digging wells to the depth of an hundred and sometimes two hundred fathom, the inhabitants never fail of obtaining a plentiful stream. And to this purpose, they dig thro’ different layers of sand and gravel, ’till they come to a fleaky kind of stone, like unto Slate, which is known to lie immediately above *The [Babar tâbt el Erd] Sea below ground*, as they seem to call the *Abyss*. This is easily broken through; and the flux of water which followeth the stroke, riseth generally so suddenly and in such abundance, that the person let down to perform the operation, hath sometimes been overtaken and suffocated by it, tho’ raised up with the greatest dexterity.’

Of sudden Eruptions of water from out of the bowels of the earth there are several accounts recorded in history, some that have overflowed whole countries, others large towns and cities, others villages: of these the reader may see several accounts in *Kircher’s mundus subterraneus*; *Ebrartus de Belemnitis Suevicis, Præfamen*; *Phil. Transf. &c.* I shall cite one account from the last mentioned Treatise in order to give the reader an idea of such Eruptions, No. I. p. 9. ‘In the beginning of July 1678, after some gentle rainy days, which had not swelled the waters of the *Garonne* more than usual, one night this river swelled all at once so mightily, that all the bridges and mills above *Tolouse* were carried away by it. In the plains which were below this town, the inhabi-

'tants, who had built in places which by long ex-  
 'perience they had found safe enough, from any for-  
 'mer inundations, were by this surprized; some were  
 'drowned together with their cattle; others had not  
 'saved themselves but by climbing of trees, and get-  
 'ing to the tops of houses; and some others who  
 'were looking after their cattle in the field, warned  
 'by the noise which this horrible and furious torrent  
 'of water (rolling towards them with a swiftness  
 'like that of the sea) [in *Britaigne* he means] made  
 'at a distance; could not escape without being over-  
 'taken, though they fled with much precipitation:  
 'This nevertheless did not last many hours with this  
 'violence. At the same time exactly, the two  
 'rivers only of *Adour* and *Gaue*, which fall from the  
 '*Pyrænean* hills, as well as the *Garonne*, and some  
 'other little rivers of *Gascoyne*, which have their  
 'source in the plain, as the *Gimone*, the *Saue*, and  
 'the *Rat*, overflowed after the same manner, and  
 'caused the same devastations. But this accident  
 'happened not at all to the *Aude*, the *Ariege*, or the  
 '*Arise*, which come from the mountains of *Foix*, only  
 'that they had more of the same than those of the  
 '*Conserunt*, the *Comminge*, and the *Bigorre*. *M. Mar-*  
 '*tell* (by the order of *M. Foucault*) hath searched after  
 'the cause of this deluge, being assured that it must  
 'have had one very extraordinary: for all who had  
 'seen the circumstances agreed, that it had *rained* in-  
 'deed, but that the rain was neither *so great*, nor  
 'lasted *so long*, as to swell the rivers to that *excess*, or  
 'to melt the snows of the mountains. But the nature  
 'of these waters, and the manner of their flowing  
 'from the mountains, confirmed him perfectly in his  
 'sentiments. For, 1. the inhabitants of the lower  
 '*Pyræneans* observed, that the water flowed with vio-  
 'lence from the *entrails* of the mountains, about which

' there were opened several channels, which forming  
 ' so many furious torrents tore up the trees, the earth,  
 ' and great rocks, in such narrow places where they  
 ' found not a passage large enough. The water also  
 ' which *spouted* from all the sides of the mountain in  
 ' *innumerable Jets*, which lasted all the time of the  
 ' greatest overflowing, had the *taste* of *Minerals*.  
 ' 2. In some of the passages, the waters were *stinking*  
 ' (as when one stirs the mud at the bottom of the mi-  
 ' neral water) in such sort that the cattle refused to  
 ' drink of it, which was more particularly taken no-  
 ' tice of at *Lomber*, in the overflowing of the *Saue*  
 ' (which is one of the rivers) where the horses were  
 ' eight hours thirsty before they would endure to drink  
 ' it. 3. The Bishop of *Lombex* having a desire to  
 ' cleanse his gardens, which the *Saue* passing thorough  
 ' by many channels by this overflowing, had filled  
 ' with sand and mud; those which entered them  
 ' felt an *Itching*, like to that which one feels when  
 ' one bathes in *Salt-water*, or washes oneself with  
 ' some strong *Lixivial*. This *Itching* could not  
 ' be produced by either rain or snow water, but by  
 ' *some mineral Juice*, either *Vitriolick* or *Aluminous*,  
 ' which the waters had dissolved in *the bowels of the*  
 ' *mountains*, and had carried along with it in passing  
 ' out through those numerous crannies. For these  
 ' reasons *M. Martell* believes the true cause of this  
 ' Overflowing to be nothing else but *subterraneous*  
 ' *Waters*.' I might here add an account of the  
*Rivers* that are known to run wholly under-ground,  
 and even of the *Cataracts* that have been discovered  
 there (of which *Herbinus* in his *Dissertationes de admi-*  
*randis mundi Cataractis, supra & subterraneis, &c.* gives  
 a description) but to avoid prolixity shall conclude  
 with observing, that *the deeper we penetrate into the*  
*earth, the greater quantity of water is met with, and*

that generally this water breaks forth in such a manner as manifestly to shew that it is raised by a power from underneath, thereby plainly indicating its subterranean origin.

THUS I have produced several arguments to prove that there is an *Abyss of water beneath the earth*; and several others might be brought; but these may more naturally be introduced under some of the subsequent heads. For, I would observe here, once for all, that there is such a close connection between the several parts of the subject I am treating of, or the Heads I have been obliged to divide it into, that very often one and the same argument (or at least with the help of a few additional sentences) will prove two or three of these Heads, but yet is more immediately applicable to one, I shall therefore dispose of it under its proper Head, and as far as it affords proof for other particulars, deduce them by way of *corollaries* or *conclusions*.

BUT before I quite finish the Article I am now upon, it may not be amiss to endeavour to shew what the *Form* and what the *Size* of this Abyss may be.

FROM what has been already said (p. 134) it appears that the Abyss and the Ocean are in conjunction with each other, and therefore that the Abyss is not divided into separate parts or distinguished into large detached caverns (as some have imagined) but is *one continued and united body of water*, and equal in extent to the circumference of the lower part of the shell of the earth, and lying immediately under it; as is also evident from what is said page 151. And therefore as the Shell of the earth is of a round form, we may justly esteem the Abyss to be so likewise, as it is represented in the *Plate* by G. H. And, that the Abyss is really of this form we have better proof than any that can be deduced from natural evidence, for He who made it and the whole earth hath assured us

that it is so, as I have shewed page 26; and in order to strengthen the comments there made upon Scripture, and to add authority to the justness of them, I shall cite the opinion of the celebrated *Stackhouse* in his *History of the Bible*, p. 125.. I select this writer (out of several that might be brought) not only because he has determined the *Form* of the *Abyss*, but has spoken of the *Size* of it, and given a calculation by which the reader may judge of the quantity of water contained therein. 'Tis certainly (says he) more than probable (because a matter of divine Revelation) that there is an immense body of water enclosed in the center of the earth, to which the *Psalmist* plainly alludes when he tells us, that (*Psal. xxiv. 2.*) *God founded the earth upon the seas, and established it on the floods; that (Psal. cxxxvi. 6.) he stretched out the earth above the waters; that (Psal. xxxiii. 7.) he gathered up the waters as in a Bag (so the best translations have it) and laid up the Deep as in a Storehouse.* Nay, there is a passage or two in the proverbs of *Solomon* (where *Wisdom* declares her Antiquity, and pre-existence to all the works of the earth) which sets before our eyes, as it were, the *very Form* and *Figure* of this *Abyss*; (*Proverbs viii. 27, 28.*) *When he prepared the heavens, I was there, when he set a Compass upon the face of the Deep, and strengthened the Fountains of the Abyss.* Here is mention made of the *Abyss* and of the *Fountains of the Abyss*; nor is there any question to be made, but that the *Fountains of the Abyss* here are the same with those, which *Moses* mentions, and which, as he tells us, *were broken up at the Deluge.* And what is more observable in this Text, the word, which we render *Compass*, properly signifies a *Circle* or *Circumference*, or an *Orb*, or *Sphere*: so that according to the testimony of *Wisdom*, who was then present, there was

‘ in the beginning a *Sphere, Orb, or Arch*, set round  
 ‘ the *Abyfs*, by the means of which, the *fountains*  
 ‘ thereof were *strengthened*; for we cannot conceive,  
 ‘ how they could have been *strengthened* any other way,  
 ‘ than by having a *strong Cover or Arch made over*  
 ‘ *them*. If, such then be the form of this *Abyfs*,  
 ‘ that it seems to be a vast mass, or body of water,  
 ‘ lying together in the womb of the earth, it will be  
 ‘ no hard matter to compute what a plentiful supply  
 ‘ might have been expected from thence, in order to  
 ‘ effect an universal Deluge. For, if the Circumfer-  
 ‘ ence of the earth (according to the lowest com-  
 ‘ putation) be 21000 miles, the diameter of it (accord-  
 ‘ ing to that circumference) 7000 miles, and conse-  
 ‘ quently from the superficies to the center, 3500  
 ‘ miles; and if (according to the best account) the  
 ‘ highest mountain in the world (taking its altitude  
 ‘ from the plain it stands upon) does not exceed *four*  
 ‘ *perpendicular miles* in height; then we cannot but  
 ‘ conclude, that, in this *Abyfs*, there would be infi-  
 ‘ nitely more water than enough, when drawn out  
 ‘ upon the surface of the earth, to drown the earth,  
 ‘ to a far greater height than *Moses* relates.’





## S E C O N D L Y,

I AM now to prove that the whole Earth was covered to an immense height by this Subterranean Water, or that the Deluge, in the time of *Noah*, was universal; the Fountains of the Great Abyfs having been broken up, and the water thereof elevated above all the high Hills under the whole heaven.

AND, *first*, to begin with proofs deducible from the circumstances of things on or near the Surface of the Earth.

I. THE Division of the surface of the earth into Mountains, Hills, Combs, Dales, Vallies, &c. is so obvious and striking, that few or none but must have observed it; though probably but few have seen how far this regularly irregular Division (as I may justly call it) was owing to, and is a proof of, an universal Flood, or that the surface of the earth has been covered to a great height by an inundation of water. I shall therefore enlarge on this article, and point out the evidence deducible therefrom.

*Mountains* and *Hills* have generally on all sides a regular descent or inclination from their tops, greater or less, longer or shorter. And when separately considered, and without attending to every little inequality, may be said to be of a conical or pyramidal shape; and when many lie close together, or are continued in a direct chain through whole countries, they may be said to be of a prismatical form. The point therefore to be decided is, *Whether this be their original shape*, That which was necessarily produced by, and in which they have always remained since, the first situation of their materials in the places they now stand?—Or, *Did they obtain their present form afterwards*, i. e. were their original materials modelled, framed, or brought into this shape by the action of some outward Cause?—And *what was that Cause?*

THAT Mountains were not originally of this shape seems evident from the manner in which their materials or constituent parts subsided and at present lie, they being disposed in strata, beds, or layers (whether of stone, clay, chalk, &c.) of equal thickness throughout, and regularly lying upon each other in a flat, level, or horizontal position; which situation of all others seems the least proper for disposing such materials into a conical or prismatical figure. Did their strata or layers stand one against another in a sloping posture like the ridge of a house, or even perpendicularly upright, it might more probably have indicated their present shape to have been the original; but since they are posited in a flat, level situation, (which is the most different from any of the *upright* forms) it seems plainly to shew that their present shapes were not the original, but are owing to some external force.

Which is further evident from hence, That in mountainous countries, which consist of the same kind of strata, the strata in each mountain shall exactly answer or correspond together in every respect,—in species, in colour, in depth, in thickness, in situation and in their contents. So that suppose, the 1st [under the vegetable mould] or uppermost stratum to be of a whitish coloured Sandstone, one yard thick; the 2d a red Marl, two yards; the 3d a blue Lime-stone, containing shells, teeth, bones, &c. of particular kinds, one yard thick; the 4th a blue Clay, containing native fossils, such as *fenitæ*, *pyritæ*, &c. three yards thick; the 5th a grey Flag-stone, eight yards thick; the 6th a stratum of Coal, [with its usual attendant, a black clayey slate, replete with plants of all sorts] two yards thick; the 7th a Rag-stone, ten yards thick; the 8th a Freestone, containing a great variety of shells, twelve yards thick; the 9th a red Sand-stone, sixteen yards thick;

the 10th a stratum of grey Lime-stone, containing a great variety of corals, shells, &c. reaching to the bottom of the mountain." Now in the same order and in the same horizontal position you shall find similar strata in each mountain throughout such a country. The question therefore is, whether they were not *all* once *united*, or the strata continued throughout in one entire body, without any of those *Eminences* we call Mountains, or those *Hollows* called Vallies? And if so, then the *present mountainous form* was not the *original*, or these mountains were not coeval with, or any ways owing to, the disposition of their materials of the settlement of their strata. Now in order to shew that the strata in these mountains were once *wholly continued*, let a person first examine a single *chain* or

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<sup>u</sup> If any person should be desirous of examining the strata of the earth in a mountainous country, and should not find any great variety of strata, or even but one single stratum, yet upon strict inspection or rather at first sight he will perceive that this single stratum is divided into a great number of lesser strata or small layers, which will be easily distinguishable from each other, either by their colour, depth, thickness, or more remarkably by their Contents or the fossil bodies they contain, one layer abounding with one species of shells, another with a different; another layer containing bones and teeth of fishes; another corals of various kinds, &c. &c. &c. so as to afford him evident marks by which he may distinguish one layer from another almost as readily as if there had been strata of different substances.

In the description of the above supposed Mountain the Strata are not represented as lying according to their specifick Gravities, for however commonly received the opinion is that they do so lie, yet I never could find them in this situation in any place that I have seen. And the several experiments and observations that have been made upon the strata of the earth, when opened to the *greatest depths*, shew that they do not lie according to their specifick gravities; see in particular *Philosop. Transac.* No. 336. *Art.* xi. No. 250, *Art.* ii. No. 360, *Art.* iv. No. 391, *Art.* i. VARENIUS's *Geography*. Lib. I. Cap. vii. *Propos.* 7. HAUSKBEER's *Experiments*, p. 317, *Experim.* xx. LUIDII *Lithophil.* p. 110.

*ridge* of them, runing for ten, twenty, or thirty miles only, [and they sometimes continue for several hundred] in which chain particular mountains are distinguishable from each other only by the separation or vacant spaces between their tops, reaching to different depths and at various distances; and suppose, upon examination, he should find that the strata in each of the tops were of the same kind, colour, thickness, &c. (as above described) and lying in the same position, and only parted from each other by the vacant spaces between their summits, and that the *strata underneath*, in the body of the mountain, were *quite whole and entire*, lying in the same direction or parallel with those in the tops, Would he not conclude that the uppermost strata were likewise once whole and united [which are now only discontinued by the comparatively small vacant spaces between the summits of the mountains] as well as those that are underneath? Especially, if he was to remark, that, where the separation between the tops of some of the mountains was not so great or deep as in others, the strata that did not appear in the rest, would appear in these; or suppose the depth of the space between some of the mountains to be no more than thirty yards or to reach down to the stratum of Free-stone (in the above description) but that in other of the vacant spaces between the mountains even this stratum of Free-stone should not be found, or, as is frequently the case, only a part or half of it be wanting, Would he not conclude, that the other part was formerly subsisting in its due place and order? And if he would judge thus of this stratum, doubtless he would determine the same of the rest, and that the vacant spaces between the tops of the mountains throughout this chain were formerly filled up with their respective strata. Judging then thus of this single Ridge of mountains, let him now

extend his view on every side, and behold how exactly parallel the same kind of strata in the adjacent mountains lie with their similar ones in this chain, and he will as readily conclude that they were all once in conjunction and the vallies between them filled up with corresponding strata, as those vacant spaces were between the tops of the first chain of mountains he examined. In short, if a person was to see the broken walls of a palace or castle that had been in part demolished, he would certainly conclude that the breaches or vacant spaces in those walls were once filled up with similar substances, and in conjunction with the rest of the walls, and could easily with his eye see the lines in which the walls were carried, and in thought fill up the breaches and re-unite the whole : And in the same manner if a person was to view the naked ends or broken edges of the strata in a mountain on one side of a valley and compare them with their correspondent ends in the mountain on the other side of the valley, he would manifestly perceive that the space between each was once filled up, and the strata continued from mountain to mountain. So that the present conical shape of mountains was not coeval with their substances or with their inward and original form ; they being primarily of *no outward* form, if I may so say, or rather there were once none of those Eminences upon the earth which we now call Mountains ; for when the strata of the earth were whole and entire, and in conjunction with one another, and the vacancies that now occasion vallies, dales, &c. filled up with their respective strata, the earth must have been of *one spherical form* without mountains, hills, dales, vales, &c. and all the strata must have lain originally horizontally upon one another, or rather, to speak philosophically, concentrically with each other. — And what further shews, That mountains

are only *Eminences* of the earth, caused by the excavation or scooping out of the substances or strata that formerly occupied those *Hollows*, which we now call Vallies, Dales, Combs, &c. is this, that it may be demonstrated, That the origin of mountains cannot be owing to any *Elevation* or *Depression* of their strata; though most writers have attributed it to this cause, and supposed them to have been produced by Disruptions from within the earth, occasioned by the breaking out of subterranean fires, earthquakes, &c. whereby the strata became elevated in some places, and depressed in others: but this could not have been the case. For, the strata of Mountains in the inland countries (and such *mediterranean Eminences* are properly to be termed *Mountains*; Hills being less, and situated at a distance from mountains, and nearer the sea) are generally, and if the highest or most inland in the Continents or Islands on which they stand, are, I may venture to say, always posited in an horizontal direction, or but very little inclining therefrom, and even this inclination accountable from other causes than Disruptions, as will be seen in the process of this treatise.\* Now the strata of Mountains being thus horizontally placed, which also appearing to have been their original position, (as will more clearly be shewn

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\* Thus much I can say for certain, that the *Strata* in some of the highest ridges of Mountains in *England* and *Wales* are *horizontally posited*; which is a plain proof that Mountains in general might have been, and that these in particular really were, formed without any elevation or depression of the strata: and hence also it appears that the *horizontal position* is the *original and natural situation* of the strata. And in such mountainous places where I have observed the strata to be *somewhat inclined*, it has generally been where there are large and deep vallies, steep precipices, naked rocks for a great extent of ground, and many other such like proofs that the Agent (the *water*, as will be seen hereafter) that tore out the hollows of the dales and vallies, passed off with great rapidity and acted with great force upon

hereafter) is an undeniable proof, that they have *not* been *displaced*, and therefore that these eminent parts of the earth were not owing to any *Elevations* or *Depressions* of their strata; for had they been produced by either of these means the strata must have been inclined in various angles, and placed in the most different directions from the horizontal. Besides, had Mountains been owing to the Elevation or Depression of their strata, the outsides and forms of Mountains would have been shaped or in a great measure have answered the inward position of the strata; whereas this is seldom the case; and in Mountains where the strata are horizontal, never can be, provided those Eminences are of the common pyramidal or conical shape; but where such have large extensive plains or much level ground upon their tops, the outward shapes of these indeed usually answer or correspond with the inward level site of the strata; but such *flat* eminences as these are not what we generally understand by the term *Mountains*, and ought rather to be called, as they commonly are, high *Plains* or *Downs*. And in such mountains or rather *Hills* where the strata are inclined, I have seen the outward form very

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the subjacent strata; in doing which it would naturally (in such places where there was a variety of strata) wash and carry away the more soft and brittle strata, and by this means undermine, and so incline, the superior beds of stone; &c. and in many places I have remarked, particularly upon the sides of steep mountains, that this inclination of the strata is but for the depth of some feet, or what I may call, *superficial*; and that the beds of stone upon the top of the mountain are but little, or not at all, inclined; and in the body of the mountain are *horizontally posited*: which plainly shews, that the *upper strata only* have been moved, and moved too by some *outward* cause, and not the *whole body of the mountain*, either by elevation or depression of the strata.

different from what one might expect from the inward inclination of the strata, nay, sometimes *directly contrary* to it. It being then thus certain, that the present outward form of Mountains was not owing to, either, the inward disposition, or present situation, of the strata, and that the vacant Spaces between the tops and sides of mountains were once filled up, it must follow, That these high and eminent parts of the earth were caused by some external Agent or Means that acted upon the *outward surface* of the earth, and which, by *tearing off and carrying away* the matter or *strata* that formerly occupied those places we now call *vallies*, left those *Eminences* standing, which we now call *Mountains*.

AND that this was really the case will yet more manifestly appear, in tracing out what that *Agent* was that effected this, which is the next thing to be considered.

THAT the outward form of Mountains was owing to the action of some *Fluid*, which by softening and mollifying the parts gradually wore and tore away the circumjacent strata, is evident from the conical shape, regular slope or gradual descent of Mountains from their tops quite down their sides; and when we consider the bulk of a mountain, and the prodigious number of them upon the earth, there is no Fluid of a nature proper, and in quantity sufficient, for effecting this but *Water*. And that Water was the Agent is further evident, from the general tendency or inclination of the sides of mountains down towards the Sea; especially in islands and peninsulas, chiefly and more remarkably in such as are longer than they are broad; and in necks or promontories of land that jut out into the sea, and have water on both sides of them. So in the islands of *Cuba*, *Hispaniola*, *California*, *Madagascar*, *Sumatra*, *Suconia*, *St. Christopher*, and many



others, there is a ridge or Chain of mountains running directly through the middle, in a line with the length of those islands and peninsulas, gradually lessening and lessening with gentle declivities on each side, tending outward or falling away down towards the two seas [not inward towards the land], just in such a manner as Water descending from the tops of these ridges would naturally have torn and carried away the ground, and so have formed regular descents on both sides; which descents generally continue for several miles underneath the sea; for it is a common observation with mariners that where the shore lies nearly level or upon a gentle descent, that there the sea gradually increases deeper and deeper the farther you proceed from land;\* so as plainly to shew that the ground underneath or the bottom of the ocean was formed after the same manner, and is only a continuation of that at Land: since then these Descents or Declivities are at present in part covered with *water*, there can be no reason to doubt that this was the Agent that formerly covered and formed the whole. So in Promontories or parts of land that project into the Sea, where such are long and narrow, there is commonly a ridge or several ridges of mountains passing through the middle with gentle declivities on each side. Thus in *Italy* the *Apennine* mountains are continued lengthways through the middle of that country, and divide it in two parts, just in the manner (as it has been represented) as the back-bone of an animal does his body; similar is the situation of the mountains in *Norway*, *Malacca*, *Corea*, *Cambodia*, *India* within the *Ganges*, the South part of *Africa* for several hundred

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\* KIRCHER's *Mundus Subterraneus*, p. 97. MARSILLI *de la Mer*, p. 11. RAY's *Three physico-theological Discourses*, p. 27.

miles, and for as many in the south part of *America*, &c. And what is further remarkable in Promontories and such procurrent parts of land, they generally, and especially where there is an open and free Sea, gradually lessen and terminate in a point like a Wedge; which is exactly the form that water, retreating from the upper lands, and falling on each side, would naturally shape and reduce it into.

Whereas, the effects of the water descending from the surface of such extensive parts of the earth, as large Continents are, would exhibit a different appearance of things from what they do upon islands and promontories; for in this case the water would take many and various courses, according to the greater number, distance, and irregular situation of the Passages or Inlets it had into the Abyfs (which inlets we may suppose to be in such places where Seas and large Lakes are at present); and also according to the greater variety of the Strata it had to act upon (many of which strata would resist, and as many yield to, the force of the water; and some more, some less) so that under such manifold and different circumstances we might expect to find the *Chains* or *Ridges* of *Mountains* upon large Continents lying in *many* and *various directions*; and accordingly we do find them.

But yet, in some degree, the outward form or surface of Continents and Islands would resemble each other; for upon both, and even where there were no remarkably great mountains, we might reasonably imagine, that the inland parts would be the highest, or more eminent than the maritime; for the water would act more strongly and tear off a greater quantity of the earth near the sea-coasts than higher up within the land; and this, for two reasons;—because the Passages into the Abyfs lay nearer the sea-coasts, and thither the whole force of the water was directed;—and because all the water that covered the inland

parts of the earth would flow over and act upon the maritime, and would bring along with it large fragments of rocks and a great quantity of rubbish, which by being driven upon, would wear and tear away, the land near the sea-coasts to a great degree; and therefore the mediterranean parts of Islands and Continents would be less, or but little, torn; and on this account, after the retreat of the water, be left standing highest. And this also we find to be fact: as is evident from the courses or falls of rivers; they generally, or indeed almost universally, taking their rise in or near the *Middle* of Continents and Islands, and flowing down towards, at last empty themselves into the Sea; and as it is certain that the fall of water is always from the higher to the lower grounds, so it is as certain that the inland parts of the earth are higher than the maritime.

Besides, it is a common observation that Mountains or inland Eminences are higher, and their descents or sides longer than those of Hills; which are generally shorter, but their sides or falls more sudden and precipitous: and that the strata in Mountains are horizontal, but in Hills (or lesser Eminences nearer the sea) are generally oblique or inclined. All which is exactly consonant to what a Flood of water, retreating from the surface of the earth, would naturally produce; as is evident from what has been said in the above paragraph: and the truth of the fact may be exemplified from the manner in which water moves when permitted to run out at an orifice at the bottom of a large and deep vessel; the chief action or motion of the water is at and near the orifice; while the surface is almost calm; and if the bottom of the vessel be made of any matter that will yield to the force of water, it will be most torn at and near the orifice, since the current will be there strongest: And so, as the wa-

ter, that covered the earth, retreated from the surface towards the apertures in its shell, the chief motion and violence would be at the mouths of the orifices that led into the abyſs, whither the whole body of the water tended, and its whole force was exerted; and near theſe apertures the currents of water would be very ſtrong and rapid, and which, by waſhing away the more ſoft and brittle ſtrata, would undermine whole ridges of mountains and lay their ſtrata in a ſloping poſture, and by its continual action in paſſing over theſe ridges, would reduce and wear them leſs and leſs until they came to be of their preſent ſize or Hills. But higher up or at a greater diſtance from the ſea, the force would be proportionably diminiſhed, as the quantity of water would be leſs and the current weaker; ſo that the ſtrata in mountains are but little or not at all diſturbed from their original horizontal poſition; and as a leſs degree of force was exerted in forming them than in Hills, ſo their deſcents would of courſe be longer and more gradually declining than thoſe of Hills.

And from what has been juſt ſaid, we may ſee the propriety of Monſ. *Buache's* plan of the diſpoſition of Mountains, as laid down and delineated in *Histoire de L' Acad. des Scien. An. 1752, Nov. 15.* according to which, the greater or moſt remarkable Ridges of Mountains upon the ſeveral Continents of the earth take their riſe in or near the middle of large Tracts of land; and are ſtretched out, as radii, from ſome *high* and *extenſive Plains*; one of which plains riſes in *Africa*, another in *Asia*, two ſmall ones in *Europe*, one in *North* and another in *South America*; and from each of theſe, reſpectively, iſſue out, like horizontal ſhoots from a ſtock, ſeveral long Ridges or Chains of Mountains.—In order to ſee the reaſon of this from Experiments, and how far it would favour our preſent hypotheſis, I provided a

large vessel of Glass, had several holes of different sizes bored in the sides about six inches from the bottom, and stopped each with cork: I then filled the vessel with water; and having pulverized before-hand certain portions of the various strata of which the earth consist, as Stone, Coal, Clay, Chalk, &c. I permitted these substances to subside one after another through the water, till the terrestrial mass reached about two inches above the level of the holes: and the whole settled in regular layers one upon another, just according to the disposition of things in the earth. I then (with the assistance of another) pulled the corks out of each hole as nearly at the same time as possible. The water immediately began to drive the earthy parts through the holes, and scooped or tore the surface of the earthy mass in such a manner as that the deepest Hollows were near the Apertures, *i. e.* where the force was greatest, and the several furrows gradually less and less, towards the middle part; as the force of the water was proportionably diminished to its distance from the place where its most violent action was: So that at the greatest distance from the apertures, *i. e.* in the middle of the heap of the terrestrial mass there were no furrows at all, and that part remained the highest of all the rest, and answered to one of the above-mentioned high plains upon the surface of the earth: and from this middle-part there tended several ridges, between the furrows leading down towards the holes in the vessel, just in such form as the chains of mountains, which take their rise in or near the middle of some Continent upon the earth, and tend, like radii, from some high inland plain towards their respective apertures in the Seas next adjoining. Besides; the strata in the middle-part of the terrestrial mass remained immoveable, and without the least alteration, but those near the apertures in the vessel, were bent and

inclined, and in some parts confusedly mixt together, agreeably to the disposition of things in the earth, with respect to inland and maritime Eminences, as I have observed already.

Thus do the phænomena on the surface of the earth, with regard to Mountains and Hills, higher and lower lands, both upon islands, peninsulas, promontories, and continents, exactly answer to, and manifestly shew forth, the effects of a Flood of Water which once covered the whole, and gradually retreated therefrom.

AND this will be still more evident if we descend to a particular examination of the form, situation, and cause of *Combs, Dales, Vallies, &c.* It was necessary to speak somewhat of these before, but they deserve a separate and closer consideration than could hitherto have been conveniently bestowed upon them.

A *Comb*, a *Glin*, a *Dingle*, or a *Gill*, &c. (for it passes under different names in different parts of *England*) is a gradually increasing or gently declining Hollow upon the surface of the earth; the sides regularly sloping down towards the middle part. They are of various sizes; some being not more (or even less) than 3 or 400 yards in length, 50 in breadth, and 20 in depth at their largest end; others there are that are three or four miles in length, a mile in breadth, and 4 or 500 yards deep; and others of all intermediate sizes. They generally begin at a ridge of mountains or hills, and tend down their sides towards the lower lands; their beginnings or upper parts are very small, in some places scarcely perceptible; and they gradually open or increase to some of the above-mentioned lengths, breadths, and depths. The strata in most of them are bare and visible, if not throughout the whole Comb, yet in some part or other, or rather in several parts; and the broken ends or edges of the rocks that project from each

side generally answer each other to a surprizing exactness; and near the beginning or in the upper parts of the Comb they almost touch and meet each other, and at the very beginning are united; and so leave no doubt to conclude but that the strata were once in contact or continued in parallel lines from side to side throughout the whole Comb.<sup>y</sup> And this mutual agreement between the strata on each side of Combs evidently shews, that these and such like Cavities were caused by some outward Agent that acted upon the surface of the earth, and which by tearing off and carrying away the interjacent strata, left these Hollows, and were not owing to any inward disruption, or a force from beneath: for, had this latter been the case, it could not be but that the strata on one side or other of Combs would always appear elevated or depressed, or some way or other altered. And it is further demonstrable that Combs and Gills were not owing to any inward disruptions, since it is common to observe in such of them as have rapid rivers or strong currents of water runing through them,

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<sup>y</sup> Sometimes indeed the strata on one side of a Comb are different both in kind and situation from those on the other; but then the reason is evident upon the spot; as, first, either the Comb was formed in a place where the ends of different strata met, or in a deep fissure, or two or three Combs happened to be formed near together, and by the side of each other, and then the Agent that tore the largest has shelved off or inclined the strata of the larger towards the lesser, there being no strata on the back-part (on account of the cavity of the lesser Comb) to support it; or some such accident or other has made a difference, which will be at once manifest to a judicious spectator. And these accidents generally happen in hilly countries or such as are near the sea, where the water of the deluge, in its retreat from the surface of the earth, descended with violence and acted with great force; whereas higher up in the inland countries or near the mountains the Combs and Gills are generally very regular and exact, and the broken edges of the strata on each side tally and correspond to the utmost nicety.

that the strata at their bottoms are whole and entire, and lie parallel with those above; nay, when miners have occasion, in tracing or pursuing a vein of ore, to dig under Combs they find the strata beneath, as regularly placed and in the same direction as those above, and where they are horizontal above they are horizontal below; which affords an undeniable argument that Combs were not formed by any Force from beneath, but by the operation of some outward Cause. And when we consider the general regularity, smoothness, gently sloping sides, and the gradually increasing length, breadth and depth of Combs or Gills, we can attribute the Cause of their formation to no other Agent than Water, that formerly covered the tops and ridges of the Mountains and Hills where these sloping Hollows are now found, and which by descending from thence, gradually tore and furrowed the earth into so many *alvei* or channels, just in the same manner as water, falling in a sudden and great thunder-shower, and retreating from the hills above towards the sea or any great river, tears and wears channels in the ouze or mud upon the shore. Another mark,—that Gills and Combs were formed by currents of water—is the serpentine shape or winding course of such as are long and large, and the apparent causes of such deflexions or curvatures. For water descending from the mountain-tops would of course be diverted from a rectilinear motion (especially if it ran for any considerable length) by reason of the different strata, or different constitution of the same strata, it acted upon; some parts being hard, others soft some having but few, others many and large crack &c. and according to the different circumstances these accidents the course of the water would be varied and the stream occasionally diverted from the path that resisted most towards those that resisted less:



on the same account, there would be many and various streams rushing down the sides of the same mountain, and as these would be irregular and winding, two or more would frequently unite, particularly the lesser fall in with and join the larger; and of this there are manifest marks and the effects now remaining; for it is common to observe at such places where a long and large Comb begins to turn off, that there is a furrow or channel now visible upon the surface of the earth, and the Comb is deflected from its former course according to the angle in which this furrow meets it (allowing for the size of the furrow) and also is proportionably broader and deeper according to the size of this concurring channel; manifestly shewing, that where the stream that formed this lesser furrow met the larger, that there the deflexion would naturally begin, the Comb be turned off, and enlarged, in proportion to the additional force of the Current that formed this lesser channel. Many such observations as these might be made, if we were to consider particularly and minutely the form and situation of the mountain or hill in which the Comb lies, the constitution and position of the strata within, the course of the fissures, the shape of the valley beneath, the distance of the sea, or any great lake, &c. from each and all of which many and different proofs might be drawn, plainly indicating, that Combs were formed by currents of water; but these are easier to be seen and discovered by a spectator than to be described to a reader; and they will be very evident to any one that has had but the hint given him that Combs and Gills were channels tore in the earth by the descent of water from the upper lands. And what has been said above in relation to Gills may in a great measure be applied to *Dales*; which begin at the end of two or more Gills, and gradually increase in length, breadth, and depth, in proportion to the number and size of

the Gills that lead into them; just in the same manner, and as evidently by the same means, as the larger Combs were increased and opened by the streams of water that tore the lesser channels that enter into them.

As the Dales fall off from the mountains, and meet or unite at a greater or less distance, a still larger Hollow presents itself; which gradually opens and dilates as the former; and constitutes what we call a *Valley*; of greater or less extent and dimension according to the number and size of the Gills and Dales that descend into it.

At last, at a great distance from the mountains, two or more vallies unite, and open into a wide extensive *low-land Plain*, or rather, a *gently declining country*; which adjoins to the *Sea-shore*; the bottom of which (especially if it is of a soft yielding nature, not rocky and stoney) is of a similar form, continues the same declivity, or gradually grows deeper and deeper 'till it ends in an unfathomable Abyss.

And thus does the Whole clearly point out the effects of a Flood of water that formerly covered the mountain-tops, and retreated therefrom down to, and even beyond, the very depth of the Ocean; forming (in its passage from the surface of the earth to the center) high up, where its force was weakest, the lesser channels or *Gills* and *Combs*; and where several streams united, the *Dales*; and where the currents, that made the dales, met and joined their forces, hollowing out the *Vallies*; and were the torrents that scooped out vallies opened and expanded themselves, there forming the *wide low-land Plains*, *gradually declining Sea-shore*, and the *sloping bosom of the Ocean*.

HAVING thus, safely and truly, I hope, conveyed the reader from the tops of the highest Mountains down to the bottom of the deepest Seas, we will now take a review of the paths we have trod, and draw some suitable conclusions from the whole. And

1. FROM what has been said, we may see the error of his Lordship's opinion concerning the origin of mountains, p. 88, viz. ' That when the Fountains of the great Abyfs were broken up, and an immense Hollow was excavated out of the earth from pole to pole, as a bed for the sea to lie in; when the rocks, and the sands, and the shells, and the earth, that were taken thereout, were thrown upon the land, and raised in Mountain upon Mountain, so as to assail the skies and invade the region of the clouds; when Promontories, and Capes, and Head-lands started up in an irregular order, &c; or as it is elsewhere described p. 118. ' At the time of the breaking up the fountains of the Abyfs, a great part of the materials, which were scooped out of the earth, as well as those which then lay on the surface of the sand and of the shore, would be loose, separate and divided, and would float irregularly in that confusion of Elements, which such a wonderful operation must have occasioned, not only when showered down in cataracts from on high, but also, when conveyed by the force of the waters of the Sea, which gushed forth, as out of a womb to the place destined for their abode; where this heterogeneous mass would subside, and form itself into such Hills and Mountains, of such a mixed kind of materials, as we now find them to be, according to the wise designation of the great Author of Nature.' Such was the Manner, such the Means, according to his Lp. by which Mountains and Hills were produced. From whence it should follow, that Mountains and Hills are no more than huge heaps of *Rubbish*, thrown out of the Sea, or the place where the sea now is, by the omnipotent Hand of God;—as his Lp. more clearly asserts, p. 108, and 115: But this referring to the first Cause, when the operation

was manifestly performed by second Causes, is boldly cutting the Gordian knot, which we cannot fairly untie, and shews neither the Philosopher nor the Divine in this case; for both the Word of God, and the whole face of the earth, declare the contrary, as I have already shewed at large, and shall conclude this section with the Testimony of another Author, against this opinion, ‘ We are to consider that a great many Mountains of the Earth are far distant from any seas, as the great in-land Mountains of *Asia* and of *Africk*, and the *Sarmatick* Mountains and others in *Europe*; how were these great bodies slung thorough the air from their respective seas, whence they are taken, to those places were they stand? what appearance is there in common reason or credibility, that these huge masses of earth and stone that stand in the middle of continents, were dug out of any seas? we think it strange, and very deservedly, that a little chapel should be transported from *Palestine* to *Italy* over land and sea, much more the transportation of Mount *Atlas* or *Taurus* thorough the air, or of a range of mountains two or three thousand miles long; would surely upon all accounts appear incongruous and incredible: besides, neither the hollow form of mountains, nor the stony matter whereof they commonly consist, agrees with that supposition, that they were press’d or taken out of the channel of the sea. — Then too, we are to consider, that the mountains are not barely laid upon the earth, as a tombstone upon a grave, nor stand as statues do upon a pedestal, as this opinion seems to suppose; but they are one continued substance with the body of the earth, and their roots reach into the abyss; as the rocks by the sea-side go as deep as the bottom of the sea in one continued mass: and ’tis a ridiculous

‘ thing to imagine the earth first a plain surface, then  
 ‘ all the mountains set upon it, as hay-cocks in a  
 ‘ Field, standing upon their flat bottoms. There is  
 ‘ no such common surface, in nature, nor consequently  
 ‘ any such super-additions: ’tis all one frame or mass,  
 ‘ only broken and disjointed in the parts of it.

2. FROM the above description of things appears also the absurdity of the opinion, that is at present so much in vogue in *France*, concerning the origin of Mountains,<sup>z</sup> viz.—That Mountains are only Heaps of Sand and Mud, formed by the agitation of the waters of the sea, which were chiefly put into motion by the flux and reflux of its waves in tides, or some strong currents that met and opposed each other, during the time when the whole surface of the earth was covered with water (for the maintainers of this system allow that it has been thus covered). The Sand and Mud having been thus collected and heaped up together, and the water subsiding and sinking to occupy the cavities at the bottom of the sea from whence the sand and mud were excavated, the dry-land by this means and mountains were raised upon the whole surface of the earth.——But surely the Authors of this hypothesis could never have observed the effects of the Agent, which they suppose to have been the Former of mountains, during any violent agitation of the sea, nor have observed the inward Constitution, or outward Form of Mountains. For with regard to the first of these articles, as his Lp. justly remarks (in his Answer to this System of the origin of Mountains, p. 11.) ‘ The Sea, in its greatest  
 ‘ agitations, always levels every thing in its power;  
 ‘ instead of raising it into Hills and Vallies. And if

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<sup>z</sup> See Messrs. *Le Cat's*, *Buffon's*, *De Maillet's*, &c. writings.

‘ these Authors will but make the experiment, of  
 ‘ raising a Mound within the reach of the Tides, and  
 ‘ let but a single Spring-tide get above their works, I  
 ‘ believe, instead of finding their Mound increased into  
 ‘ a Mountain, they will find their Mountain reduced  
 ‘ into a Mole-hill, if not entirely carried off and  
 ‘ levelled with the bottom of the Sea.’ And, in

opposition both to his Lp’s. System and that of these Authors, it must be remarked, that the *inward structure* of Mountains undeniably disproves each of their opinions. For, mountains consist of regular strata or beds, (whether of stone, coal, clay, &c.) orderly posited upon each other, and in an horizontal direction; and besides, each respective stratum is of equal thickness throughout, though they continue for several miles in extent;—all which clearly demonstrates that the whole settled in a regular and successive order, during a quiet and calm sea, or without the least perturbation of the water it subsided in.

And since those parts, that now remain and are visible, of the Mass that thus settled, viz. the Mountains and their tops, still retain their first and horizontal direction, it is evident that they have not been displaced or their position altered; and also that they have not received any new or fresh Matter to cover them (except the vegetable mould and a few feet of loose stones and sludge; of which hereafter); neither were they formed by occasional or successive additions of Sand and Mud or heaps of Rubbish, for had this been the case, there would have been no regular strata or layers of stone, coal, clay, &c. or if there had been such, they would have been inclined on all sides or shaped according to the *outward form* of the mountain, and have covered these conical or prismatical Eminences like so many caps or arches laid one upon another; neither could

the layers have been of the same thickness throughout even in a single Mountain (much less in hundreds or thousands) but would have been much thicker at bottom than at top; at least those layers that settled last must have been formed thus; for when the Mountain had attained to any considerable size, and a new layer or sediment of loose matter subsided on it, the far greater quantity would fall down on each side, and settle most at and round the bottom, with thin edges towards or near the top; which is a form that, I believe, no mountain upon earth has. But what further shews, that Mountains are not Heaps of Rubbish thrown out of the sea, or quantities of Sand and Mud confusedly coacervated, is, the general uniformity of their shapes, their regularly sloping sides, the manner in which Chains or Ridges of Mountains are continued, being extended length ways upon such islands and peninsulas as are longer than they are broad; and shooting out, like branches from a stock, from high extensive Plains upon the larger Continents of the earth: and then the Hills gradually falling off from the mountain-tops, and meeting the Dales down their sides, the Dales uniting with the Vallies, and the Vallies opening into extensive declining Countries, and these adjoining to the shelving Bed of the Ocean,—all manifestly shew, that the Agent that formed mountains did not act from the Sea upward, or towards the inland countries, and amassed together large heaps of sand and earth, but descended from the mountain-tops, or the most inland parts of the earth, and furrowed or made its way down towards the very bottom of the Ocean, carrying before it almost every thing that was moveable or opposed its passage.

3. FROM the above-mentioned uniformity in the shape and course of Mountains, and the apparent

cause thereof; and from the regular manner in which Gills, Dales, and Vallies descend from the mountains and run into each other, gradually declining towards the Sea, it is also evident that Mountains were not owing either to any irregular Elevation or Depression of the strata of the earth: for had either of these been the Cause, this regularity could never have been preserved and been visible over the whole face of the earth. So that neither Dr. *Burnet's*, nor Dr. *Woodward's* and Mr. *Whiston's* System of the origin of Mountains is true or consistent with the face of Nature; the first of whom supposes them owing to a sudden depression or sinking in of the strata of the earth, and the other two, to as sudden and violent a Depression of some of the strata and Elevation of others; for, upon either of these schemes, the Earth must have exhibited the most ghastly appearances of Rocks and Precipices, and the whole form of it would have resembled the ruins of a desolated edifice, that had been thrown down by a Tempest, or blown up by a subterranean explosion: so that there would have been no traces of the operation of a Fluid Agent that descended from the mountain-tops and gradually tore its way quite down to the Sea, and so formed the regularly-sloping sides of Mountains, the easy and natural Cadence and Connexion of Gills with Dales, Dales with Vallies, &c. And

4. THIS same regularity and uniformity in the risings and fallings of the higher and lower lands, and their mutual dependences on and inclinations with each other, remaining the *same at this day* in all countries, manifestly shews, that there have been no Mountains or Hills, Dales or Vallies made since the Deluge or the Inundation that caused the present; and therefore that Mountains are not *continually a-forming*, as some of the modern French philosophers assert; neither were they



*occasionally* thrown up by earthquakes or subterranean eruptions as some of the old philosophers imagined: indeed earthquakes and such like explosions, instead of raising new mountains, rather tend to throw down the old, by shaking and dislocating the land, where the violence of the concussion prevails, and sinking it beneath the Ocean or into the Abyss; and besides earthquakes generally happen near the sea, and affect not inland eminences or Mountains.

5. NEITHER could the channels of Gills, Dales, and Vallies have proceeded from Contractions or lateral shrinking of the strata of the earth (and so the parts of the earth above, or on each side of these cracks, be left eminent or in the form of mountains) in the same manner and by the same means as Chaps or Cracks are made in the mud and ouze upon the sea-shore by the heat of the sun-beams and action of the wind, according to the opinion of some of the Ancients. But had this been the case, as the tops of the mountains were dry soonest and most exposed to the influence of these two agents, the Combs and Dales would have been deepest near the summits of hills and mountains, and gradually have lessened or been shallower and shallower as they proceeded down the sides, and terminated in a point at the bottom of mountains; but the direct contrary to this is their form; therefore This could not have been the Cause. Besides; such Contractions as these could never have made *Eminences*, nor would there have been any difference between Mountains and Hills, neither would the inland parts of Continents and large islands have been the highest, as I have plainly shewed they are; for when the mud upon the sea-shore or when the ground in large flat and low marshes is dried and cracked in the summer-time, the parts or pieces of land between

the cracks are equally high, and the whole surface level. Though indeed thus much may be said for this opinion, that the Cracks and Fissures that were made in the shell of the earth (after it had settled, saturated with water, and the Expanse from above and from below had compressed and hardened, and so contracted the strata in some places, and thereby left *gaps* and *fissures* in others<sup>a</sup>) gave room for the water that covered the earth during the deluge to descend through into the Abyss; and such as served for this purpose directed, in some measure, or were the cause of the direction of, the courses of the Vallies, Dales and Combs; but they neither did, nor could have formed them for the reasons above given: besides, these Cracks are seldom above eight or ten feet broad (and generally much less) and several vallies are as many miles in breadth, and exceed them as much in length as they do in breadth; and what is more re-

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<sup>a</sup> Or, to give an account of this Effect in the words of a modern writer, 'First then these Fissures are no more, as they seem to me, than the necessary consequences of the first settlement of matter, when it was divided into wet and dry, solid and fluid. That we may the more clearly apprehend this, let us recollect what happens to small masses of matter, cloven by like fissures, whence we may infer what is probably the cause of those greater chifts which we are now in search of. We all know that slime, diluted clay, and pulverized or dissolved stone, shall occupy more space in that state of moisture than when the same clay, slime, or stone, becomes dry and hard; and, from a parity of reason we may argue, that when solids and fluids formed, and from a state of chaos became divided into distinct bodies, the parts of the former, being deserted by the latter, must needs grow closer together, and consequently leave chasms and crevices betwixt them. But the masses of earth, stone, and clay, were not at this time meerly passive; they formed larger and more compact bodies every where, in proportion to the quantity and mutual attraction of their similar parts, within proper distance. Hence arose firmer combinations, and consequently greater open-

markable, the Cracks and Veins of ore in many places run directly across the vallies, and yet the vallies continue on in their usual courses; which plainly shews that they were neither formed, nor even altered, by these cracks. But, in short, the sea-shore itself (from whence the above hypothesis is brought) affords a manifest difference between the Cracks made by shrinking and the regularly-increasing Channels of Combs, Dales, and Vallies; for upon the sea-shore or the banks of a large river, especially where there is any quantity or depth of mud and ouze, the chinks caused by the action of the Sun-beams and Wind are nearly throughout of the same size, meet and intersect each other at almost all angles, chiefly at right, and so divide the parcels of ground or mud between into squares, pentagons, or some such figure, but never, or scarcely ever, into long ridges like the chains of mountains. And what is further observable in the same place, the Channels or Gulleys tore in the

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ings between such masses. Farther, it must be observed, that as all similar particles struggled to come into contact with each other, so, at the same time, they deserted, and repelled, and expressed all dissimilar and contending particles; consequently masses of differently natured particles seceded and fled from each other, every party (if I may use the expression) tending to form and stick close to its like: betwixt such different substances therefore, attracted here, and there repelled, some chink or interval must needs happen. These causes then, viz: the desertion of moisture, the union of similar and the mutual repulse of dissimilar particles, must all have contributed to form the masses of our terraqueous globe into such separate portions as we now find them in; for that indeed it was not possible for bodies to grow hard and dry, unite and contract, without leaving some chafms and fissures between them. What ensued upon the hardening of particular and smaller masses, ensued also in the larger portions of the whole earth, in proportion to the quantity of solids united at any one effort, whether a *grain*, a *stratum*, a *county*, or a *region*."

mud by the retreat of the sea-water in ebbing, or by the descent of land-floods, do really leave the interjacent land in prominent ridges just like Those of Mountains; and those gulleys or little furrows gradually increase in length, breadth, and depth, as they unite and fall in with each other, just in the same manner as Gills, Dales and Vallies do; which manifestly shews, that both kinds were formed by currents of descending water.

6. SINCE there are Mountains and Hills, Combs, Dales, and Vallies upon the *whole surface* of the earth, and these were caused by the retreat of Water from the surface, it is certain, that the Deluge that formed them was *universal*: And I have already proved that there never was but one universal Flood, which was That recorded by *Moses*.

7. SINCE Gills, Dales and Vallies, fall away from the Mountain-tops, and tend in their courses down towards the neighbouring seas, and are united to the shelving Bed of the Ocean, nay, since some of the chains of Mountains are continued under the sea and appear again on the opposite land, or, what is more, since there are Mountains and Hills, Dales and Vallies, even entirely under the sea,<sup>b</sup> it is evident, that the water that formed them, descended not only down *towards* the sea, but even *beyond* it, into some great Cavity in the inside of the earth; for had it reached no farther than the present surface, or even any considerable way into the bed, of the Ocean, its waves must have been reverberated or returned upon themselves, and so would soon have lost all their force: but since this force continued and cut and tore the

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<sup>b</sup> KIRCHER'S *Mundus Subterraneus* p. 69, 96, &c. MARSILLI *de la Mer*. p. 3—12.

earth under the sea to unfathomable depths, we may justly suppose that the water descended far beyond, entered into, and filled up, a large Concavity within the earth, and so constituted what *Moses* calls the *ABYSS*.

8. SINCE the Water that scooped out the hollows of Combs, Dales, and Vallies descended into the Abyss, it must of course have carried with it all that quantity of the earth which it tore away for making these hollows; and as it descended from every part of the earth's surface down towards the centre, it would at last reposit and settle the whole there, in form of a *central* or *inner globe* or *nucleus* of terrestrial matter, surrounded on all sides by the water of the Abyss. To which, or to a similar kind of nucleus, moveable in a fluid medium, Dr. *Halley* ascribes the *Cause* of the *variation of the magnetic needle*,<sup>c</sup> and to which not only This, but many other and far greater effects, both in and on the earth, are to be attributed. And

9. WHEN we consider the great length, breadth and depth of the larger Vallies upon the earth, the multitude of the lesser, together with the numerous Combs and Dales that lead into them,—the Height of the Mountains and inland Eminences above the lowland, their distance from the Sea, or rather, from the corresponding Chain of Mountains on the opposite Continent,—the vast Bed of the Ocean, the cavities of all the Lakes, Rivers, &c. I say, when we consider all this, and reflect, that all these Hollows were once filled up, with the solid strata or substance of the earth, from the top of one ridge of Mountains to the opposite, and from that to the next beyond, and so on quite round the globe, (which therefore was once en-

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<sup>c</sup> *Philos. Transf.* N<sup>o</sup>. 148, 195.

tirely spherical, and without any inequalities, or the least rising and falling, of hill or dale); and that all this substance was scooped or hollowed out and carried down into the Abyfs, we may suppose the *central nucleus* to be of some *considerable bulk* or size. But the Agent that did all this, the Water that thus tore and swept away the solid rocks, and left such deep and wide marks of its power, must be *great in quantity* beyond conception, far exceeding what might be sufficient barely to fill all these Hollows, for it must have passed over and through the solid rocks, where these Hollows are, many times before it could have made such gradually worn channels and have opened such extensive breaches; and therefore be far superior in quantity to the bulk of the whole Ocean itself and all the water that fills every other Cavity upon the earth; for all these Cavities were made by the *repeated actions* of this descending Flood. And since the Tendency of these Hollows and Channels plainly shews, that the Water that tore them descended down towards the Ocean or the several Seas upon the earth, and since the water in them is not sufficient in quantity to have effected all this, there must be (from a consideration alone of the quantity of Water necessary to cause these effects) a large Reservoir or an Abyfs of Water beneath the earth; which, during these Transactions, must have been elevated far above all the highest Mountains or Eminences upon the whole surface of the earth; and therefore the Deluge at that time universal, and caused not barely by an effusion of the waters of the Ocean, but principally by those of the *Abyfs*, according to the description given by *Moses*.

II. ANOTHER *general* argument (including, like the former, several particular ones, and deduced also from the circumstances of things upon the surface of the earth) in proof of an *Universal Flood* may be drawn from the consideration of the nature, form, and situation of several bodies or substances that at present lie loose upon the surface of the earth. For,

I. IT is common to observe upon the sides, and even the summits, of the highest Hills, Mountains, and inland Eminences (especially such as consist of solid strata or hard rock within, and have long flats or any level ground at their tops) a prodigious number of *Stones*, of various sorts and sizes, but generally of one or nearly the same form; being either perfectly spherical or oval, or some way or other tending to a round figure; their surfaces or outsides being quite smooth, without any projections or angles. I have observed multitudes of such stones, of all sizes,—from some that were eight or ten feet in circumference to others that were but two or three inches in circuit,—lying upon the tops and sides of some of the highest hills and eminences in *England* and *Wales*; particularly upon the long chain of Mountains that run through the middle of *South Wales*, and upon the high lands in the northern parts of *Worcestershire*, *Warwickshire*, *Shropshire*, and *Staffordshire*. And those large stones that lie upon the *western* side of *Shotover* hill, near *Oxford*, and which on account of their Roundness, are called, by Dr. Plot, *Lapides testiculares*,<sup>d</sup> are of this sort. So also upon *Marlborough Downs*, in *Wiltshire*, are an inconceivable number of large stones, which, from their shape and situation, are called the *grey Weathers*, as resembling a flock of sheep lying down; and

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<sup>d</sup> Nat. Hist. of Oxfordshire, p. 129.

many of these, especially such as lie at a distance from the center or middle of these stones, are quite round and smooth, though vastly large. Mr. *Hutchinson* says, that he observed ‘ many such round smooth stones, of various sizes, from the bigness of a melon to an hundred weight, lying, not only upon the sides, but upon the tops and ridges of the high hills in the North of England, particularly in *Arkendale*, and in many other places; and also in *Cornwall*, and in *Devonshire*, upon *Dartmoor*.’ Dr. *Lister*, in *Phil. Trans.* N<sup>o</sup>. 164, remarks, ‘ that all the high mountains and Woods in the North of England are covered, more or less, with a quantity of Sand, mixt with white pebbles of a greater size.’ *Langius* in his Preface to his *Historia Lapidum figuratorum Helvetiæ, &c.* or, *History of the figured Stones in Switzerland*, starts the following question (but leaves it undecided) ‘ Also it has often been inquired, Whether the smooth round stones and flints that are now found upon the tops of the highest mountains, even of the Alps, where no river can possibly pass, were thus smooth and round by nature, or whether they were at first and originally rough and unequal, and then afterwards smoothed and rounded by currents of water, during the Deluge, and carried to the highest mountains?’<sup>2</sup>

<sup>2</sup> Vol. XII. of his Works, p. 294.

<sup>3</sup> *Cæterum de Silicibus subrotundis & lævibus, &c.* It may be proper to remark here, with Dr. *Woodward*, (see his *Cat. of English Fossils*, p. 83.) ‘ That the Danish, German, and other writers of Fossils do not restrain the name *Silix*, to what we in England call Flint, but apply that name to very various bodies;’ and also that the Romans (as the Doctor proves at large, p. 22.) did the same; understanding by it any very hard Stone that would strike fire, as indeed most hard Stones will. I mention this, because the bodies which we in England call *Flints*, are sometimes found, and were so formed, naturally of a round shape; and it might be objected to the



Dr. *Balthasar Ebrhart* in the account he gives of his Journey from *Memingen* over the *Tyrolensian Alps* (see *Phil. Transf. N<sup>o</sup>. 458*, for 1740) makes the following observations ‘ The mountains of *Memingen*, which are ‘ higher than the middle of the highest mountains in ‘ these parts, have upon their very summits vast quantities of Stones about three or four inches in circumference, that have been plainly *worn round*, and just ‘ after the same manner as those that are thus formed ‘ by the stream and attrition of rivers. But it is manifestly evident that this immensely large heap of ‘ Stones, which lie, as it were, in a separate and detached manner upon these mountains, where *no river flows*, could never have been formed by currents of ‘ this kind. Another remarkable circumstance is, ‘ that these Stones are found to increase in bulk or diameter from *Memingen* towards the *Alps*, so as at last ‘ to equal masses or trunks three or four feet thick, ‘ but from *Memingen* towards the opposite country and ‘ more remote from the *Alps* they proportionably decrease less and less, so as at last to be reduced to a ‘ species of gross sand. This remarkable phenomenon, which may serve to explain the theory of the ‘ earth, may be accounted for from the following

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above quotation that the Flints therein spoken of might have been naturally of a round form, and so not have been worn by any agitation in water. But, first, I would observe that round flints are *very few* in comparison of the number of others that are found in all kinds of shapes; and *Langius* himself, in the description he afterwards gives of a *Flint* or rather of the body he applies the word *Silix* to (p. 13.) does not mention it as being *naturally*, or even *accidentally*, of a *round form*; and whatever he understands by the word *Silix*, it is certain that the bodies he speaks of in the above quotation carried in themselves evident marks of *having been worn, ground down, and even rounded, by water*; otherwise he would never have thought of putting the above question.

observations and reflections. I have observed among  
 the *Tyrolensian Alps* whole and entire summits of  
 Mountains, that have in *one continued rock* the very  
 same kind of Stone with that which is now found  
 in *separate and worn parts*, and placed at a distance  
 in the country between the *Alps* and the *Danube*.  
 There are also just as great a variety of these worn  
 stones, as there are of Rocks in the *Alps*: The  
 Cause which broke the *Alpine* rocks and covered all  
 this part of *Germany* with fragments torn from thence  
 (and which were afterwards rounded by the mutual  
 attrition, between themselves and the waves) could  
 be no other than the great deluge.—The fragments  
 of stone which were torn from the shattered *Alps*  
 (which were as high again as they are at present be-  
 fore the deluge) the farther they were carried and  
 the more they were rolled, the more were they worn  
 and lessened. Hence the places the nearest the *Alps*  
 were covered with the largest fragments, those that  
 were more remote, with the smallest. The exact  
 agreement between the most broken pieces of these  
 stones, and the larger and entire rocks in the *Alps*  
 demonstrate to the eye the place from whence they  
 came, and that the former are no other than the  
 dispersed ruins of the latter.’ *Swedenborg* in his  
*Miscellanea observata*, &c. p. 11, speaks of Mountains  
 in *Sweden*, ‘*qui lapides habent admodum tritos, & quasi*  
*politos, & mixtos cum arenis,*’ i. e. which have stones  
 upon them that are much worn, and as it were polished,  
 mixed with Sand.’ *Bishop Pontoppidan* in his *History*  
*of Norway*, p. 56, speaking of the Effects or Conse-  
 quences of the Deluge, writes thus, ‘This [*i. e.* the  
 Deluge] is likewise the origin of most of those *Peb-*  
*bles*, which are found scattered in all parts of the  
 globe.’ And indeed, I think, we may fairly conclude

from the instances I have brought, that, if all parts of the globe were examined by proper and judicious persons, some such round or smooth Stones as the above-mentioned, lying at greater or less distances, in greater or smaller numbers, would be found upon them.

THE Point therefore to be decided is, How came these Stones to be of this round shape?—Were they originally thus?—Or, formed so afterwards?—And by what means?

THAT these stones were not originally and at first of their present figure is evident from many particulars, as, 1<sup>st</sup>, From some of them having on their outsides the bases of hexagonal shoots of spar and chrystal, which are now of a round or circular form at their tops, whereas it is well known that these naturally terminate or end in sharp pointed angles, wherever there is room or space for them to shoot, and such there must have been here, if these stones had always been of the same shape and size: so that as these shoots of spar were once longer, and also pointed at top, and being now round or hemispherical, it is manifest, that they have been worn and ground down to this form by some regular attrition.——2<sup>dly</sup>,—From several of these Stones having now, lying immersed in them, and united with their substance, the shells, teeth, and bones of various animals, pieces of wood, coral, &c. all of which bodies are naturally of some determinate figure, and greatly differing from each other, and yet such parts of these shells, bones, corals, &c. as appear on the outsides of these Stones shall be round or circular or answerable to the outward shape of the stone; and yet the parts which lie immersed within the stone shall be of the true, usual, and natural form of these bodies; nay, when the stone is broken, there shall frequently

be found in the inside the same species of shells, corals, &c. quite whole and entire, as those on the outside, which are now shaped to the figure of the stone; and therefore these on the outside were formerly of the same shape as those in the inside; and of course both Shells, Corals and Stone must have been rounded or brought to this unnatural, spherical, figure by some external force or agency.—3<sup>dly</sup>.—The same is manifest from the Contrast between the manner in which the *constituent parts* of these Stones *originally settled*, and their *present outward form*; it being evident to sight, particularly in the larger ones, and especially in such, as are of a fissile nature, that they settled in a flat regular manner, or in lines, layer upon layer, each of equal length, breadth, and thickness in all its parts; which could not possibly form a body of a spherical shape; but as these are now of an orbicular form, they must have been reduced and rounded by some outward force.—But, 4<sup>thly</sup>.—Where these Stones occur, the far greater number of them are generally of the same kind, contain the same species of shells, corals, &c. and apparently settled in strata of the same size and order, as the Stone or Rocks in the adjacent Mountains; and so afford an undeniable proof that they are only *fragments* or pieces torn off from the adjoining mountains; and therefore were not originally of the same size and form as they are now; but have been, since their separation, much lessened and worn into a round figure. And their shape and smoothness manifestly shew, that they obtained their form in, and by the motion of, a wet Fluid, such as Water; for had they been subjected to the action of a dry Fluid, such as the Air, in a violent wind or tempest, &c. it could not be but that they would have been of the most irregular forms, and their outsides jagged and pointed with angles or em-

bossed with protuberances in every direction; but since they are so regularly rounded and their surfaces so extremely smooth they must have procured their shapes from being agitated in and by a moist Fluid, such as could penetrate and mollify their outward parts, and so permit them to be worn away, granule after granule, or by a gradual attrition. And when we consider the great size and weight of some of these Stones, their immense number, and the vast extent of ground that in some places they are spread over nay that there is reason to suppose, that they are in some measure scattered over the whole face of the earth) it may fairly be concluded, that there is no *moist Fluid*, in or upon the earth, in a quantity sufficient for effecting this but *Water*; which therefore must have been the Medium in which, and the Agent by which, this wonderful phœnomenon was transacted. —

As is moreover evident from the *manner* in which these Stones lie. Those that are upon the long tops and flats of Mountains or upon high level ground are situated for the most part at a little distance from each other or lie in a separate detached form [not heaped together or in trains]; for as upon such even land, there could be no inclination in the ground to determine them to one place more than another, and as the currents of water, that formed the Combs that descend on all sides of such high land, set different ways, so these Stones, that were shuffled and rolled about upon the top, would be left in the most irregular, loose, detached or stragling manner possible; and accordingly we so find them. But those that are upon the sides of Hills, especially such are somewhat steep, and particularly at some considerable distance from the top, lie thick and close, and heaped upon one another: those that are in the Combs, Dales, and Vallies (that fall off from the Mountains) lie still thicker and closer;

and chiefly in the bottoms of such Cavities, there being few or none upon their steep sides; and also tend in a train from the tops of these Cavities, and gradually increase in number and quantity, as the gills, dales and vallies open and enlarge by receiving other gills, dales and vallies into them; in which lateral gills and dales are also a few, the greater part having been carried down into the large vallies, where they lie in inconceivable numbers; and particularly in the curving parts of the vallies, just before their turnings; or where any rock, that withstood the force of the Flood, or large fragment of a rock, that the waters could carry no further, stands in the middle or any part of a valley, there these round Stones are found in still greater plenty for the depth of many feet under the ground. And what is remarkable, and yet a general rule in this case, is, that such Stones of the above kind as lie near the beginnings of the Combs are least worn, those that lie farther down in the dales more worn, those that lie in the vallies and in the low flat countries most of all worn and perfectly rounded, as having been carried furthest, and agitated most. So that all of them manifestly bear the appearance of having been, not only formed or rounded by water, but also of having been placed just in such manner, as water alone, retreating from the mountain-tops down through the vallies, would naturally dispose them.\* Many other

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\* It is not uncommon to find among the Stones, that were thus apparently worn round by accident, some, that were always, or naturall, of a round shape; and it may be proper to inform the reader how to distinguish between the one and the other; and also to shew how far even these last are serviceable in proving the point in debate. The Stones that are naturally of a round shape, and which are commonly called *Nodules*, have generally an outward coat or crust, differing from the internal part of the body either in substance, colour, or hardness; or else consist of several coats; and are usually very hard: those that are of the same substance throughout (as flinty, alabaster

circumstances there are (which will readily be perceived by an observer, though they are not so easily to be described to a reader) depending either upon the nature of these Stones, the Constitution of the strata in the adjoining land, or the situation of the ground, &c. that afford ocular demonstrations, that these *round Stones* are only *Fragments*, which were beaten off from the neighbouring rocks, and worn into their present figures, by the agitation of *Water*;—which fluid must therefore once have filled all the deep Vallies, and have covered all the high Hills and Mountains, where these Stones are now found.

nodules, &c commonly are) when broken, split or fall apart in all kinds of directions: those that consist of several coats of different matter, open or separate in pieces. that are convex on the outside and concave in the inside according to the several coats. On the contrary, Stones that are worn to a roundness, which was not natural to them, such as *Pebbles* found upon the sea shore, and those that are now found upon the highest mountains, have never any coat or investient crust, break regularly, or according to the grain of the stone, and frequently into a number of thin flat plates like the stone that lies in strata in the adjoining hills. and are generally, either soft or hard, according to such stone: and carry in themselves evident marks of which I have already recited at large the particulars) that they are pieces or *fragments* of the adjacent rocks, *worn round* by being rubbed against one another in such a fluid as *Water*. And even the *Nodules* themselves, that are sometimes found among the *Pebbles*, exhibit manifest proofs of having been broken out of regular strata, carried from their natural and original place, and of having endured the outward force or action of *Water*. For, first, in such places where we find *Nodules* of flint, crystal, alabaster, &c. lying loose upon the surface of the earth, it is common to find the very same kind of *Nodules*, immersed in their natural beds in the strata of the rocks adjoining, and very distinct and easily separable from the substance of the rock (which is another mark by which *Nodules* may be known from rounded pieces of the rock): it is therefore reasonable, to believe that the *Nodules*, that are now loose, and detached upon the surface of the earth, formerly lay in, and were beaten out of, the adjacent rocks, by the same means or by the same flood of water, that parts of the rocks themselves were broken off and worn round; among which

BUT besides this larger sort of *round* or *Bowler Stones*, (as they are called in some parts of *England*; their very form indicating to the most superficial observer that they have been rolled or bowled about) there is another kind of a less size, from some that are two or three inches in circuit to others that are as small as pease, commonly known under the name of *Gravel*. This consists of a variety of substances, not only of hard, round or smoothed Stones of different kinds, but of parts of Bones, pieces of Shells, Coral, &c. that have been also rounded or worn,<sup>b</sup> so as evidently to demonstrate, that the whole has been in agitation, and that such a

these Nodules now lie. This also is evident from a circumstance attending many of them, viz. that their outward coats have apparently been much rubbed and worn, especially in the more prominent parts, and in some of them quite worn off. I have observed too that several of them have had parts or pieces of the rock, from whence they were originally torn, affixed to their outsides, which though at first certainly of no determinate shape, have been, since their separation, regularly rounded to the shape of the Nodules: nay, I have observed large Masses of the rock, containing several Nodules in them, thus worn and rounded; which manifestly shews, that even these Nodules are Fragments, or at least were beaten out, of the rock. Then, lastly, Nodules, being found lying together with and exactly in the same manner as, the mountain-pebbles and other worn fragments of stone, undeniably proves, that they were posited upon the places, and in the manner, they are now found by the same means, that the inland-pebbles were, and though they do not shew such strong and clear signs of having endured the force or action of water as the pebbles (chiefly on account of their superior hardness and original roundness); yet they exhibit sufficient marks, as I have described above, of having been subject to its force.

<sup>b</sup> It may not be amiss to observe here, that in some parts of *England* the inhabitants very improperly call any small, loose, rubble stones, though they are flat, pointed with angles, or of all shapes, provided they lie near the surface of the earth, by the name of *Gravel*: but unless they are answerable to the above description, and apparently worn, or a great part of them worn and rounded, they ought not properly to be, neither indeed are they generally and commonly, so called.



fluid as *Water* was the Agent. Which is further apparent from the *manner* in which, and the *places* on which, *Gravel* lies. It being always posited in a loose, irregular form, not in a close compact state, or in uniform strata of equal thickness in all parts, as the regular beds of Stone, &c. are; no, this is thrown or pitched, as it were, in streaks or unequal seams, and in all directions, generally in an oblique; sometimes in a wave-like form, just in such manner as the undulating motion of departing Water would naturally cast it. Besides, it is usually found free and void of all lighter, earthy, ochreous, clayey or such like matter, which, being soluble in water, would, when once assumed up therein, be contained longer, and carried farther than (and so seldom subside together with) the heavier and harder parts of *Gravel*; which therefore would be left clear and divested of all such lighter matter, and indeed at present it appears to the eye to have been washed and cleansed by Water. Then too *Gravel* is commonly found over unmoved and horizontal beds of Stone, Chalk, &c. and being of a nature different from these, and lying in a manner different from that in which the strata of the earth originally settled, it is manifest that This has been moved, agitated, and brought from other places. And since great part of this mixt substance, *Gravel*, is of the same nature with, and consists of the same kind of shells, corals, &c. as those which are found in the higher lands or in the grounds above, it is an evident proof that it was brought from these lands. And when we consider the *places* where *Gravel* is commonly found, viz. either upon extensive flats just under Mountains or higher ground or in the bottoms of large vallies, or else spread over low-land gently-declining countries, but seldom or never (or but in very small quantity) upon the tops or even sides of sharp-

pointed and steep mountains, it affords an additional and undeniable evidence, that it was brought from the upper lands; and being disposed or posited just in such manner and just upon those places, where water, retreating from the higher grounds, would naturally throw or leave it, it evidently shews, that Water was not only the Cause of the *form* or *roundness* of the various *parts* of Gravel, but of the *Disposition* or *Settlement* of the *whole*. Such is the form and situation of *Gravel* in *England*; and no doubt is to be made but that it is the same or similar in every part of the earth where it is found; and since there is scarce a country over the whole globe but what has it, more or less, so it is certain that all these countries or the whole face of the earth have been overspread by *Water*.

UNDER this article may also be reckoned a still lesser species of round stones than any of the above-mentioned, viz. those which constitute what we commonly call *Sand*; this substance 'being really no other' (as Dr. *Woodward* justly observes, *Nat. Hist.* p. 188) 'than very small *pebbles*; as may appear to any one who shall carefully examine it, especially with a good microscope.' And when thus viewed and magnified; the various bodies of which it consists as manifestly exhibit marks of having been worn or ground down to their present size and form by the agitation of water, as the parts of *Gravel* do. *Sand* too lying in a similar irregular manner, and being posited upon such places, as *Gravel*, equally points out the action of water, retreating from the higher grounds, to have been the Cause of its situation and position.<sup>1</sup>

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<sup>1</sup> In some places indeed what is properly, and ought so to be called, *Sandstone*, lies in such a loose lax manner, even upon the tops of the highest mountains, (where their upper parts happen to consist of *Sandstone*) and in some places *Sand* itself lies thus, as at first sight greatly to resemble the *Sand* found in the vallies and in the low cam-

What adds confirmation to this is, that where the upper lands consist of a lax friable stone, there the Sand lies in the valleys beneath in a greater plenty than usual, or where the country is an extensive low-land plain, and the mountains at a great distance, there also is generally a vast quantity of Sand; as is the case with those immensely large sandy Desarts in the lower or remote parts of *Africa*, bordering upon the *Mediterranean* sea; for the water, that formed the Mountains in the in-land or higher part of that great Continent, must have passed over such spacious tracts of land in its retreat towards the sea, that in all probability it would meet, in many places, with strata of a loose friable kind of stone, which it would soon separate, tear asunder, shatter to pieces, and at last grind down to Sand, and when thus reduced, this matter would be easily carried and hurried away by the torrents of descending waters to a great distance from the mountains, and at last be naturally left expanded over the low flat countries; or posited in the bottoms of large and deep vallies; and such from the maps appears to be the situation of most of the sandy Desarts upon the earth. And I cannot but think that the far greater quantity of, what is called, *Sea-sand*, was not formed upon the shores, where it is now found, but was originally *Land-sand*, and brought down even

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paign countries: but there is always a manifest difference between them; for the Sand or Sandstone of Mountains is more coarse than the other, and generally adheres in lumps, and is found in vast large strata or beds of equal thickness in every part, and regularly divided by horizontal and perpendicular fissures, as the solid unmoved beds of stone, &c. are; whereas the Sand found in the vallies is small and fine, easily separates when touched, and is always pitched in unequal streaks, that are commonly thicker in one part than another, and gradually terminate in points towards either end, and is posited in all the variety of directions. that water, flowing over uneven ground, could possibly throw it into.

from the in-land countries. Thus much is certain, that the rains that fall upon the higher grounds generally come down replete with Sand, and deposit it in rivers; and rivers, by washing away their banks, still receive more sand; which being carried down by the currents is at last discharged into the Ocean. And it is very remarkable that upon a sandy shore there is generally a great load or bar of Sand at the mouths of the rivers, the very place where the Sand, brought down by the river, would naturally subside, not only on account of the stream being there broadest and less strong, but chiefly by reason of the opposition the river-water would meet with from the waves of the Sea, which would beat back the current of the river, weaken its force, and oblige it to lay down its burthens. So also with regard to those immense *Sand-Banks* that are found upon some shores, even where there are no very large rivers immediately adjoining (though they are generally, where there are such rivers) it is certainly very reasonable to conclude, that they are in a great measure the product of the diluvian waters; and had the Sea, after the deluge, retreated farther within its bed they would have been left upon the low-lands and now found in the form of *sandy Desarts*; for as the waters of the deluge retreated from the higher lands, tore out and carried away such vast quantities of terrestrial matter (as the hollows of the Combs, Dales, and Vallies over the whole surface of the earth abundantly demonstrate) they would naturally deposit a great portion of that mixt substance they were loaded with, especially of the finer and lighter sort, upon those parts or places, where their force first began to abate, or the land was of a proper form for receiving and retaining it, and such certainly are those low flat Shores where the principal Sand-banks are found. Some persons indeed have imagined that there is a dif-

ference between Sea-sand and Land-sand; but the strictest inspection can discover none: And Dr. *Woodward* observes, that ‘ The Sand upon the shores of ‘ *Sheppey* consist of extremely small pebbles of the very ‘ same kind with those commonly found in sand-pits ‘ at land, in various parts of *England*, particularly in ‘ several parts of *Kent*’ (in which County the isle of *Sheppey* lies): Dr. *Lister* too remarks (*Phil. Transf.* N<sup>o</sup>. 164) ‘ That the *in-land Sand-hills* above *Bulloigne* in *Picardy* ‘ in *France* is of the very same kind with that on the ‘ *sea-shore* at *Calais*.’ So that, upon the whole, we may as fairly conclude, that the granules of Sand were caused by a friction of the parts among themselves in agitated water, as that the pebbles of which Gravel consists were; and also that the far greater quantity of the Sand now lying upon the sea-shore was not owing to the agitation of the waters of the Sea, but that the origin of *this* and of *all the Land-sand* is to be attributed to the action of *other waters*: and when we consider the vast extent of the several *Sandy Deserts* upon the earth, and the largeness of many of the *Sand-banks* upon the sea-shore, and the distance of these from one another, and how in a measure they are scattered over the whole face of the earth, we must infer that the Cause was as universal as the Effects, and therefore that a *flood of Waters* has covered the *whole surface of the earth*.

II. BUT besides these Stones that have been thus apparently rounded by water, there are others that have plainly endured the force of this fluid, though not in so great a degree as the above, either on account of their size, hardness, or the short time they were subject to its force, but yet they manifestly exhibit marks of its power; and their size, number, and situation sufficiently demonstrate that the action of the water,

to which they were subject, was universal or extended over the whole surface of the earth. For

THERE is abundant reason for believing, that there are very few hills or mountains, at least such as consist of solid strata or hard rock within, but what have separate masses of stone, some of an immense bulk, together with smaller pieces, lying upon their tops or sides, and also that there are such stones in the valleys beneath; and both the larger and smaller masses, of all kinds of shapes, and lying in all kinds of postures, though generally in such a direction, and so situated, as plainly to indicate that a flood of waters, retreating from the higher grounds, was the cause of their position. What Mr. *Lbwyd* says of *Wales* (*Phil. Trans.* N<sup>o</sup>. 334) I have observed to be true, not only in that Country, but in various parts of *England*: ‘What seemed to me most strange, were vast confused Stones, and, to appearance, *Fragments of rocks*, standing on the surface of the earth, not only in wide plains, but on the summits also of the highest mountains;’ To which he subjoins this remark, ‘There is no Brimstone or Pumice-stones on the tops of our mountains, nor any thing else that I suspect to have been the effects of *Volcanoes*.’ [so these stones not to be attributed to such causes]. Again; Dr. *Stukeley* (after having cited the above quotation from Mr. *Lbwyd* in his *Abury restored*, &c. p. 17) writes thus: ‘So [in the same manner as the above Stones] lie the *Moor-stones* on the wastes and hill tops of *Cornwall*, *Derbyshire*, *Devonshire*, *Yorkshire*, and other places, of a harder nature than these [i. e. the grey weather-stones on the *Marlborough* downs, of which the Dr. is first speaking] and much the same as the Egyptian *Granate*.’ But the grey weather-stones themselves (of which I have spoken in part before p. 189) are probably as remarkable as any, and as they lie in a part of *England*, that

is much frequented on account of the great roads, that are near them, principally one that leads from the second to the first City of the kingdom, and are well known to most travellers in these parts, I shall give a particular account of them, to save the trouble of being circumstantial in other relations. These Stones are of a bastard kind of lightest grey marble: and are of various sizes; some of them of 50, 60, or even 70 ton weight;<sup>k</sup> others so small as to weigh but a few pounds. They are spread over an irregular space of ground for forty miles in circuit, as I have observed myself; and have been informed, that they extend much farther.<sup>l</sup> They begin at, or those that are highest lie upon, the tops of the greatest Eminences on these downs, and tend on each side in incredible Numbers for several miles down towards the two nearly opposite Seas, the *English* Channel and the *Bristol* Channel, and many of them lie in long trains, just in such a manner and direction, as water retreating from

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<sup>k</sup> ' But our grey-weather stone is of so hard a texture, that Mr. *Ayloff* of *Wotton-basset* hewed one of them to make a rape-mill stone, and employed 20 yoke of oxen to carry it off; yet so great was its weight, that it repeatedly broke all his tackle, and he was forced to leave it. *Ld. Pembroke* caused several of these stones to be dug under, and found them loose and detached. My Lord computed the general weight of our stones at above 50 ton, and that it required an 100 yoke of oxen to draw one. *Dr. Stephen Hales* makes the larger kind of them 70 ton.' *Dr. STUKELEY's Stonehenge*, p. 6. Some of the largest of these Stones lie in the bottom of a Comb or Valley called *Grey-weather-bottom*, and are in a great measure covered with coppice wood, which must be removed, and the Stones carefully surveyed on all sides, in order to see their due size.

<sup>l</sup> It is certain that these Stones were formerly far more numerous than they are at present, for many of the Houses and most of the Walls for gardens and enclosures of all the Villages on and near these Downs are built of them; and for several years past full liberty has been given to all, that might want them, to take them away (in order that the ground might be ploughed) and vast numbers have accordingly been taken off. Then too, the huge Stones of which the two Druidical

these ridges would naturally have thrown or placed them, as the courses of the rivers adjoining evidently demonstrate, they tending these two ways; nay, even the rain, that falls perpendicularly upon the earth parts on the tops of several of these hills, and retreats towards the two above-mentioned seas; one portion, falling into a branch of the river *Avon*, descends to *Bristol*; and another, entering into the river *Kennet*, (which at some distance joins with the *Thames*) goes to *London*, and empties itself near the East end of the *English Channel*; but on the South side of these downs, the rain that falls retreats into another river called the *Avon*, and runs directly into the very middle of the *English Channel*: so that these Hills are manifestly the highest land in the South part of *England*, and from them there lies a gentle declination on each side towards the nearest seas: which declination (as I have above shewed) was caused by, or was the natural consequence of, a flood of waters that formerly covered

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Temples of *Abury* and *Stonehenge* (the former situated on, the other at about the distance of 16 miles from, these Downs) consist, were brought from these Hills and once made a part of the Grey-weather, as cannot be doubted. when we consider, That there is no stone of the kind of which these Temples are built, nearer than these Downs; nay, that there is no stone, that I know of, in all *England* of the same kind but those that lie on these downs: which also by being separate and detached from any rock, and lying loose upon the surface of the earth, were most fit for use and ready for carriage: besides; in the Valley where the biggest of these Stones lie are now to be seen several great Holes or Cavities in the ground with slopes on each side, which have been plainly dug, and the chief substance carried away; and in two or three of these Cavities I observed a large *grey-weather-stone* lying, but broken in the middle: and it was very evident, that the earth had been dug away from such Stones, that they might the more easily be carried off; but probably, by some accident (as the machinery not being strong enough), the Stone in raising, fell and split asunder, and then was too small to answer the end designed, and therefore was left, as not being worth the carriage.



these lands, and retreated from the in-land parts down towards the sea-coasts; and as the Stones I am speaking of, tend in a course answerable to the effects of such a flood, we may justly suppose that their present position and situation were owing thereunto. Which will be further apparent from a more particular consideration of them. On the tops, and near the ridges of the Hills, there are few, and those separate from each other; but as the distance increases, they increase in number, lying thicker and closer, and chiefly in the bottoms of the Combs; and besides, shape and wind their course according to the direction of the Combs and Vallies; which clearly shews that the Agent that formed the one (the Combs), placed also the other (the Stones): and when we lose sight of them above ground, they are still to be found underneath, lying among broken flints and gravel, and such as I discovered here were much less than those that lay upon the surface of the earth and higher up in the Vallies, and also much more worn, and many of them fairly rounded: All which evidently denotes, that water descending from the highest eminences on these Downs was the cause of the position, situation, and direction of these Stones. I have observed too such masses of Stone, as the above, lying not only in in-land countries, but also on the *Sea-coasts*, and many of them so large as to constitute *Rocks* and small *Islands*; and that they were really no more than Fragments broken off, and brought down from the mountains or hills above, was sufficiently manifest, not only from the strata in them being in a different position, and of a different kind from the unmoved strata on the sea-coasts, but that the nearest place, where there were any strata of the same kind with the fragments, was in the mountains or hills above; and from them there lay separate masses of the same kind

of stone, some more, some less worn, in the combs, dales, and vallies, quite down to the sea-coasts; where the larger fragments lay, and rested, as it were, upon the lowest ground.

AND what is thus observable in *England* is to be seen also in other parts of the world. Mr. *Innes* in his *Miscellaneous Letters*, &c. (p. 6) speaking of the parish of *Magilligan* in the County of *Londonderry* in *Ireland*, says thus, ‘The Deluge hath left us other marks of its fury, for more than half of our Mountain, is one continued Heap of Stones and Rocks tumbled down, and in particular one Rock left standing upon the side of the precipice: it is about 28 feet in height; about 6 yards about, with natural seams in it; not very well cemented; no art of the *Irish* could place it there.’ So also Mr. *Smith* in his *ancient and present State of the County of Kerry* in that kingdom, p. 82. ‘The most considerable natural curiosities in this [the Southern] part of the Country are *two Rocks*, on either side of the river *Roughy*, [which in this place is about a mile broad] which seem to have exchange’d their situation: one of them the Country-folks name *Clough-Barradh*, *i. e.* the stone slice. This river divides a lime-stone soil, from one of common grit, a thing very frequent in *Ireland*, tho’ but little noticed, because of its being very common. Except the above-mentioned rocks; all the stone on one side of this river, is lime-stone, and that on the other, is a coarse grit, or common mountain-stone: but opposite to each other, on different sides of the river, a large rock, too heavy for human force to remove, of lime-stone, hath seated itself on the grit-stone side of the stream; and a large rock of grit, hath occupied the place from whence the other seemed to be detached, and is seated among the rocks of lime-stone: which is a species of *Lulus Naturæ*, or sport-

ing of nature, not very incurious; and which must have been effected by some prodigious flood, or shock of the earth; but earthquakes have been hitherto, 'till of late, quite unknown to this kingdom.' Bishop *Pontoppidan* in his *History of Norway*, p. 56, writes thus, 'Hence [i. e. from the Deluge, as he rightly concludes] likewise remain on the surface of the earth the many detached blocks and fragments, like lumps of mortar, scattered not only in the valleys and creeks, but also on the tops of the highest mountains; many such being found here of the bulk of a common house, consequently too ponderous to have been raised to such a height by the hands of men; and besides, of no visible use.' Again; p. 177, 'The highest crest of the mountain of *Svuka* in *Oesterdalen*, a province of *Norway*, lies, according to a survey taken by the barometer, above two thousand ells higher than the lake of *Famund*, a water betwixt the mountains. This mount consists of one solid, hard sand-stone; on the top of the mountain stands a solid huge mass of the same stone, which bears on it many marks of a dissolution and disruption, which can be attributed to nothing but water.' *Swedenborg* in *Acta Literaria Sueciæ* (translated in the *Literary Memoirs of Germany*, Vol. I. p. 66) observes thus, 'That the Ocean once stood high above the Earth seems to be more evidently concluded from the face of the Northern parts, than from that of countries more Southerly. Here [in *Sweden*] we find entire tracts filled, as it were paved, with Stones of a huge weight and bulk: and the higher the country lies from the sea, these Stones are larger and more numerous;——as in *Orebo*, which lies high and between two Seas, larger and more numerous Fragments are observed than any where else.' *Lantgius* in his *Preface* to his *Historia Lapidum, &c.* &c.

*History of the figured Stones in Switzerland*, remarks thus, ‘Then concerning *Stones* this truly wonderful occurs, that the tops of rocks and summits of the highest mountains are sometimes divided by joints into separate pieces; and moreover that certain Fragments or large pieces of Stone of some cubits in height and breadth are found lying upon Plains, and even upon Hills which are at a great distance from higher grounds, or separated from them by vallies: now by what means the aforefaid Divisions or Separations were produced in the hardest Rocks, and how the above-mentioned Fragments of rocks were brought down to the places where they are now found deserves, in my opinion, a diligent inquiry: for I can scarcely think that they were naturally generated in these places, since they carry in themselves evident marks of being really the *Fragments of Rocks, cum verissima rupium Fragmenta præ-se-ferant.*’ A person, who attended Sir *Martin Frobisher* in his second voyage to the *Streights* that pass under his name, observed upon the adjoining land, ‘Huge and monstrous mountains, whose great substance were Stones, and these Stones so shaken by some extraordinary means that one is separated from another, and discordant from all other quarries,’ *Hakluyt’s 3d. Vol. of Voyages*, p. 38. Mr. *Ellis* in his *Voyage to Hudson’s-Bay, &c.* p. 147, speaking of an island (called *Marble-island*) near the Coast of *new North-Wales*, says, ‘The tops of the hills are prodigiously rent and shattered, numbers of huge Rocks are confusedly huddled together, as if by an irruption.’ *Ludolphus*, in his *History of Ethiopia*, p. 28; describing the Mountains and Rocks in *Habessinia*, writes thus, – ‘Amongst these Mountains, and frequently in the Plain itself, and in the middle of the fields, rise up *Rocks* every way steep, yet varying their shape; some looking

' afar off like towers, some like pyramids, some like  
 ' four-square towers built by art, and so even on the  
 ' sides, as if the workman's hand had done it : so that  
 ' there is no way to get to the top but by the help of  
 ' ladders and ropes.' Under this head may probably be  
 reckoned those two remarkable Rocks or Stones,  
 which front each other, near *Blankemburg* in *Germany*,  
 and which are called *Monks Craigs*, on account of  
 their resembling at a distance the appearance of two  
 monks in their proper habits, *Atlas Geographus*,  
 p. 544: So also I may here mention that large and  
 curious Mass or Mountain (as it is called) of *Iron-ore*  
 at *Taberg* in *Smalandia*, in *Sweden*, for it can really be  
 no other than an enormous Fragment, torn from the  
 mountains above, as is evident from Dr. *Ascanius's*  
 description of it,<sup>m</sup> which is as follows, ' This Moun-  
 ' tain is situated in a sandy tract of land; of which the  
 ' sand is extremely fine. Opposite to it is a valley,  
 ' through which a small river flows. It's perpendi-  
 ' cular height is above 400 feet; its circumference  
 ' half a Swedish league, or three English miles. The  
 ' whole mountain is one mass of rich iron-ore, and  
 ' even in some parts is mixed with particles of native  
 ' iron.—There are many perpendicular as also horri-  
 ' zontal fissures all over the mountain; which are filled  
 ' with the same sand, reduced to a kind of fine mud-  
 ' like paste; and in no part whatever is it impregnated  
 ' with the least particle of the iron-ore of the mountain;  
 ' but is of the same purity and nature as is found on  
 ' the sea-beaches.—No ore is found beyond the foot  
 ' of the mountain, nor on the neighbouring plain;  
 ' so that it appears as if the mountain had been artifi-  
 ' cially laid on the sand, for it has no roots, or, like  
 ' other mountains, its substance does not penetrate the

<sup>m</sup> See *Philos. Transactions*, Vol. XLIX, p. 30, for the year 1756.

‘ground.—It is situated near 40 Swedish leagues distant from the sea.’ Another Hill or Eminence that may come under the denomination of a Fragment, is that called *the inaccessible* or *Needle-mountain* in *Dauphiny* in *France*, as the form and situation of it plainly denote, ‘The position of this Hill is such, that it appears to have been inverted or turned upside down, for it is no more than a thousand paces in circumference at the bottom, and is two thousand at top; from whence it is called the *inaccessible Mountain*.—At the top upon the plain of this hill there is a narrow and steep Rising or a sharp-pointed Elevation; which gave this hill the name of the *Needle-mountain* (see *Histoire de L’Acad. des Sciences*; for the year 1700, p. 4)’ and which, probably was the cause, why it did not settle upon its larger basis, or the plain at the top. The famous *Rock* in *Horeb*, anciently called *Massab* or *Meribah*, and at present *the Stone of Moses* and *the Stone of the Fountains* (being that which *Moses struck with his rod*, in order to give water to the children of *Israel* in the *Wilderness*, *Exod. xvii*) is preserved to this day without the least injury from time or accidents, and is certainly a *Fragment* from mount *Sinai*, as appears from *Dr. Shaw’s* description of it, ‘It is a Block of *Granate marble*, about six yards square, lying tottering as it were and loose in the middle of the valley [of *Rephidim*], and seems to have formerly belonged to mount *Sinai*, which hangs, in a variety of precipices, all over this plain.’<sup>n</sup>

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<sup>n</sup> *SHAW’S Travels*, p. 352. It may not be unacceptable to the reader, nor altogether foreign to our present purpose, to continue the *Dr’s* description of this *Rock*, which is as follows, ‘The waters which gushed out, and the Stream which flowed withal’ (*Psalms*, *lxxviii*, 20) have hollowed across one corner of this rock a Channel about two inches deep, and twenty wide, appearing to be incrustated all over, like the inside of a tea-

THUS I have given instances of large masses of Stone or Rocks lying loose upon the ground in various parts of the earth, and no doubt is to be made but that similar masses are to be found in every part, where there is any considerable extent of land, though such only are taken notice of by travellers as have something remarkable in their appearance. And that these are really no other than *Fragments* torn off, and carried down, from higher grounds, every circumstance in the above descriptions tends to point out, as the reader will be a sufficient judge for himself from what has been already said on the subject. I shall therefore

‘ kettle, that hath been long in use. Besides several mossy productions, that are still preserved by the dew, we see all over this channel, a great number of Holes, some of them four or five inches deep and one or two in diameter, the lively and demonstrative Tokens of their having been formerly so many Fountains. It likewise may be further observed, that Art or Chance could by no means be concerned in the contrivance; for every circumstance points out to us a Miracle, and, in the same manner with the Rent in the Rock of mount *Calvary* at *Jerusalem*, never fails to produce a religious surprize in all who see it.’ Similar to which is *Dr. Pococke’s* Account of this Rock, and also that of the *Prefetto’s* of *Egypt*; each of which the reader may see inserted in the *Bishop* of *CLOGHER’s* *Translation of a MS. Journal from Grand Cairo to Mount Sinai*, &c. p. 34, 2<sup>d</sup> Edit.

I may here observe too, that in considering this Rock as a *Fragment*, the Miracle of the water’s flowing out of it will appear much greater than if it had been in its natural bed or united to the solid orb of the earth; for it is not uncommon, in breaking up or only boring through the regular strata of the earth, to enter into a natural fissure, which, communicating with the *Abyss*, is always full of water, and when such is broken into, a stream of water will immediately issue out and continue flowing: but as this Rock was separate and detached from the regular and undisturbed strata, and lying loose upon the surface of the earth, it cannot be supposed to have had any communication with the natural fissures, and therefore the water that proceeded from it, must have been owing to a supernatural Cause; which is agreeable to what an ancient Traveller (*M. BAUMGARTEN*, a

in this place only enlarge a little on the aforesaid passage of *Langius*, (p 210) ‘ That the tops of Rocks and ‘ summits of the highest mountains are sometimes ‘ divided by joints into separate pieces;’ for though this may seem a trifling and insignificant observation, yet the opening or widening of these kind of joints was the immediately preceding effect to the tearing off and carrying down of the Fragments, and one was the consequence of the other, as will be evident from the following particulars. ‘ These Joints or Openings between the stones in the upper parts of Rocks ought to be distinguished from the natural fissures in the body of the rock, and are distinguishable there-from

*German Nobleman*, who travelled into *Arabia* in the year 1507; see his Travels in *CHURCHILL’s Collection of Voyages*, &c. Vol. II. p. 337) remarks: ‘ Which Miracle (of the water’s flowing out of ‘ the above-mentioned Rock) was the more wonderful, because ‘ this Stone, though it is separated from the rest of the rock; ‘ and is almost of a square figure, yet is fixed in the ground by ‘ only one pointed corner [see *Dr. SHAW’s Draught* of it, in his ‘ Travels, p. 350] and consequently not in so fit a posture to ‘ extract any moisture from the earth; and therefore its sending ‘ forth such abundance of water must have been the work of an ‘ Almighty Hand.’ I may here add too, that this Stone was so small, exposed in such a manner, and situated in such a tottering condition, that it might easily be viewed on all sides, and even turned upside down, had the people that attended *Moses* suspected any cheat or imposture in this affair; and in order to take off all suspicion of this kind might be one reason why God made choice of such a Stone as this for the operation of this miracle, which was so extraordinary and attended with such indubitable proof, that the persons, who had just before murmured and questioned the divine Mission of *Moses*, now entirely acquiesced in it: and if such persons as *Corah*, *Dathan*, *Abiram*, and *their companies* (who were ready on every occasion to find fault with *Moses* and dispute his Authority) were satisfied, surely our present unbelievers (who lay claim to great modesty and reason) ought to be so, since the Miracle was examined by their own set of people, and they may have ocular demonstration of the truth of it at this day.



by various marks,—being generally far more numerous than the others, commonly filled with sludge or an earth-like matter, but principally are to be known from the others on account of their greater width in proportion to their length, and because their edges or terminations are much worn and rounded, and also the extraneous bodies, such as shells, corals, &c. that project from the edges, much worn and rubbed. All which clearly shew that these edges have been subject to some gradual attrition, and that these joints or openings have been a passage for some such fluid as Water; which also must have passed through them with some force or violence, else these edges (which doubtless at first like the ends or terminations of other cracks in stone, were sharp, jagged, or pointed with acute angles) could not have been worn to such a degree; which last consideration further shews, that this effect is not to be ascribed to the slow and gentle gleanings of rain through the earth; nor even where the rock is naked and exposed to all the violence and beating of the wind and rain are these openings to be attributed to them (though probably they may enlarge them a little), for they are found almost equal in number, and size, and have as manifest marks of the force of running water, where the rocks are covered with mould and rubble for the depth of several feet, as where the rocks are exposed to the weather. And I believe that there are few or no rocks but what have these joints or openings made by the action of water, in a greater or less degree, even under the turf; which is a proof that this effect was produced before the earth was covered with vegetable mould: and since these marks of the force of water are to be seen upon the summits of the highest mountains and rocks throughout the whole world (for we may reasonably suppose that what is common to the rocks and moun-

tains in *England* and *Switzerland*, is common also to all other) we must conclude, that the water that opened or enlarged, and passed through these cracks was equally universal with its effects, or spread over the whole surface of the earth; and therefore the Deluge, in which these accidents happened, universal. And as the Water made its way through these cracks, it would not only wear and widen them, but by continuing and repeating its action would at last separate and disjoin large pieces of the rock, and remove them from their places: and accordingly it is common to see, in a country that is exposed and the rocks laid bare, large masses of Stone, some displaced but two or three inches from their original beds, others two or three feet (and there remaining pendulous at the tops of precipices and brows of hills), others carried down the sides of mountains and hills for several yards; but none of them removed to such a distance, or so much injured in the carriage, but that a judicious person may find the very place they formerly occupied in the natural rock, and have as convincing a proof that they are *disjecta membra* or the dissevered parts of the adjacent rocks, as if he had seen them torn from thence. And if he would judge thus of those that lie upon the tops and sides of mountains, he would certainly determine the same of those that lie farther down in vallies; for the former, are only the beginning; the latter, the end of the same train: and as the former were pushed down or removed out of their places by the force of descending water, so also we must conclude of the latter; and that both are proofs that a flood of waters formerly covered, and retreated from, the surface of the whole earth.

II. But besides these larger Stones, there are others that are less; which also are to be found loose upon

the surface of the earth, or else but a little way beneath it; and are of such a nature themselves, and lie in such a manner, as clearly to point out that they are *Fragments* torn from the strata above, and placed in the form they now lie, by currents of water descending from the higher grounds. Of these lesser fragments there are a great variety, and no country whatever without them. And as it would be endless to speak of every different species, trace out the accidents that have happened to them, and particularize the arguments deducible from each, I shall therefore treat only of one species, which, on account of its usefulness in leading to the discoveries of veins of ore, &c. has been accurately searched into, and carefully examined, by most miners. The species I mean, are those Stones which are commonly called *Sboad-stones*. An account of which I shall take from Mr. *Borlase's Natural History of Cornwall*, p. 149; as that Author has illustrated his meaning by some Copperplate cuts, which the reader, if not conversant in the affair, would do well to consult. But first it will be necessary to explain a few terms. A *Vein of ore*, or a *fissure containing ore*, is called in *Cornwall* a *Lode* or rather *Load*; and I suppose for this reason, because that is the place where the ore *lies*, as if it had been *loaded up* or *laded in*, as goods are in a ship. The *Top-part* of the Vein or that which is nearest to the surface of the earth, and which generally consists of a mixture of ore, loose stones and rubble, is called the *Broil*. When this *Broil*, or rather that which was once the *Broil*, is found dispersed or lying at any distance from the *Load*, these dispersed or separated parts are called *Sbodes* or *Sboad-stones*, because, I suppose, they lie in such a manner as manifestly to shew that they were *shed* abroad or detached from the main Vein or *Load*; and that this detachment or separation was made by

the force of water will appear from the following phenomena, as extracted from the above-mentioned Author.—“ First, the Broil is found in greater quantity in the vallies than on the tops or sides of hills; in the level grounds, it is but just moved from its first station, and spread on each side the vein in an equable manner; but if the lode has any declivity near it, then many of the loose stones of the broil are found strewed down the hill.—2<sup>dly</sup>. The longer the declivity, the farther are these Stones removed; but the shorter and steeper the sides of the hill are, the less distant they are found.—3<sup>dly</sup>. The smaller Stones are carried farthest; on the contrary, the largest stones are nearest to the lode.—4<sup>thly</sup>. The smaller are also nearer to the surface of the ground, but the larger ones, deeper, and still deeper as you approach the lode, ’till the last are found contiguous to the lode itself.—5<sup>thly</sup>. The farther distant these Stones are from the lode, the fewer they are in number; but they multiply as you come nearer, and are always in greatest plenty next the lode.—6<sup>thly</sup>. These Stones are known from all others by their being of a different colour and structure from the shell, rubble, and other common stones of the ground where they lie, but more particularly by their angles being worn off; and the farther distant they are from the lode, the smoother they are; and the nearer, the less are their angles blunted. In *Cornwall* we call these dispersed parts of the broil *Shodes*.——(Now) From daily observing the grounds they search, and the different substances they there meet with, the tanners can readily distinguish between what has been removed, from what has perpetually kept one and the same station; the karn, that is the firm solid rock, seldom affords us any instances of alteration or movement, but every loose unconnected part of the earth has been

moved and shifted; and for as much as the transposed bodies are found to be moved more or less, farther or less distant from their former beds, according to their own specific weight, and the declination of the plane they moved on, it is the general persuasion of every intelligent tinner, that this change of situation can be owing to nothing but *the Force of Water*, and of no other water so likely as that of the *universal deluge*, neither are we to think this less the voice of truth, because it is so common an opinion; for indeed the cause speaks so much for itself, that in order to confirm the justness of this reasoning, there remains nothing more to do, than to point out the correspondence and circumstantial agreement betwixt this assigned cause, and each particular effect and property mentioned before.——*First* then, In low and level grounds the Broil is greater in quantity, and less disturbed, than on the tops or sides of hills, as being but just moved from its first settlement by the vacillating waters of the deluge on a plane surface; whereas on a declivity, and a more exposed situation, the waters had more power to agitate and disperse, and consequently the original covering of the lode is much lessened in quantity.——*2<sup>dly</sup>*. The gravitation of these stones (usually impregnated with metal) will, when moved with water, make them descend a steep hill quicker than down a more easy descent, in the same proportion as bodies moved on inclined planes, their velocity being in proportion to their own weight, the declivity on which they move, and the impediments they meet with there; but the quicker they descend, the sooner they get at rest, and fix by immersing themselves in the stiff clay and rubble and *vice versa*.——*3<sup>dly</sup>*. The smaller Shodes were moved to and fro easily and frequently, and consequently much dispersed; whereas the greater and weightier the shodes were, the more

they resisted the agitation of the waters, and were less removed.——4<sup>thly</sup>. The smaller Shodes are usually found in and near the surface, being washed downwards, till, by the resistance of the ground on which they are spread, they are forced out like the rills of brooks into open day, whilst the larger by their superior weight, rest deeper interred, and nearer the lode.——5<sup>thly</sup>. The more distant Shodes are found from the lode, the more they were dispersed by the water, and consequently became fewer in number in any equal space, like diverging rays; and the nearer to the lode, the thicker and more frequent they remain for the same reason.——6<sup>thly</sup>. That the angles of these stones are blunted, proceeds evidently from the agitation of water, and they are smoothed in proportion to the distance they have been rolled; and had the force continued a sufficient while, these stones would have been as round as the pebbles on the sea-shore; but the farther we find them from the lode, the more trituration they have undergone, and *vice versa*."

III. TOGETHER with the above-mentioned Fragments of Stone, both those of the larger as well as those of the smaller kind, both those that are round as well as those of the most irregular shapes, there are also found a variety of other substances, lying in such a manner, both with respect to themselves, and also with regard to the ground they lie upon, as plainly to shew that their situation and direction were owing to the effects of a Flood of Water that once covered, and retreated from, the surface of the whole earth.

FOR, first, it is common to observe upon the tops of the highest Mountains a small thin covering of a kind of blackish bituminous earth, commonly known in *England* by the name of *Peat-earth* or *Turf*; and this upon examination appears to be no other than a

mass of rotten and perished vegetables.° And where the mountains happen to have any extensive flats or large spacious Cavities, in form of basons, at or between their tops, there is generally a still greater quantity of these substances, lying in a mossy or morassy kind of ground, with a vast number of trees, of all sorts and sizes, buried under them: and many of the trees and vegetables of such species are not now known to be growing near these places, nay, some of them of such kinds as the nature of the climate will not permit to grow there:† consequently, they must have been brought from other, far more distant, regions: and no Agent or Medium can be thought upon so proper for effecting this as *Water*, a Medium upon which these bodies would naturally swim and float, and therefore be easily conveyed from place to place. And the parts they are now found upon plainly shew, that their present situation was owing to a flood of waters that covered the whole surface of the earth; for they are left upon such places where such a flood, in its retreat to the lower land, would most naturally deposit a great portion of its floating wealth, viz. upon the highest and more eminent parts, or those places which it first receded from; in the same manner as the water upon the sea-shore in retiring, after an high tide, throws, and by the unequally reciprocal or gradually decreasing repercussive motion of its waves, leaves, upon the parts it first recedes from, all lighter bodies or the substances that swam upon its surface; and in a similar manner as the same water in retiring from the channels of rivers, bays, &c. leaves upon the banks and shores the finer parts of the mud and slutch that

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° WOODWARD'S *Cat. of Fossils*, Part II. p. 17. MORTON'S *Hist. of Northamptonshire*, p. 83, &c. HALE'S *Husbandry*.

† WOODWARD'S *Nat. Hist. illus.* p. 60.

it was pregnant with, so when the flood that drowned the whole earth retreated to its appointed place, it left the surface in a manner covered with the finest, lightest, and purest of terrestrial matter, *Vegetable Mould*.—  
*Secondly*; Under the vegetable mould there lies a vast variety of Substances, of all sorts, shapes, and sizes, but each and all of them placed in such a direction as manifestly to indicate that their position and situation were the effects of a flood of water retreating from the higher grounds. Thus, for instance; where the higher and more inland countries abound with free-stone, and chalk, interlined with layers of flint; in the lower lands you will find for the depth of several feet the two former substances intimately blended together or washed and worn down to a gritty kind of maum, and the nodules of flint broken into innumerable pieces, and confusedly mixed with the afore-mentioned matter. In such places where the upper strata of Mountains consist of Lime-stone, with interjacent layers of clay, and of iron-stone, replete with yellow and red oker, or ruddle; in the vallies beneath you may discover both large and small, round and irregular, fragments of the iron and lime-stone, with unequal and uneven streaks or seams of Clays of all colours, that the above-mentioned substances could tinge them with. Where the upper strata consist of a loose Sand-stone, and a brittle flakey Slate, with beds of clay intervening; in the lower lands you will find for a considerable depth a gritty marly rubble, filled with immensely small pieces of sharp flakey stone, thrown in a variety of postures. And the same may be observed respectively and proportionably of all kinds of strata, in such places. If we descend from the in-land and mountainous countries to the Hills and the Vallies beneath them, and examine the manner in which things lie under the vegetable Mould,



we shall find them placed much in the same form as those already described, only a greater quantity and a greater variety of them (according to the different species of strata that lay between the Hills and the Mountains) and these also in general much more worn and much smaller, especially those parts that came from the Mountains. If we go farther down, and visit the Low-lands and Marshes near the Sea-shore, a still greater variety and greater quantity of Rubble will present itself to our view; and the fragments of stone much more worn, and in many places, ground down to a fine Sand or Slutch.

Now that this Rubbly-matter was placed in the manner above-described by the action of Water retreating from the highest in-land Eminences down towards the Sea-shore is evident,—from the multitude of Stones that are found in it which have been apparently worn round by agitation of Water;—from the number of fragments of Stone that lie in trains, tending from the higher towards the lower grounds, just in such form and direction as water in its retreat would naturally cast them (as I have already shewed with respect to those Stones and Fragments that lie above ground);—from the irregular and unequal streaks and seams into which it is cast; and what is very remarkable that in such places where there is any eminent projection in the ground or rock underneath, or large fragments of Stone which the waters could carry no farther, there these streaks and seams of different matter are thrown over it in various concentric arches, and the whole terminated in such a form as plainly to indicate that the force of a descending flood placed them thus;—and also from the manner in which this Rubble lies all over the earth; as for instance, upon the highest in-land Eminences, especially such as are sharp-pointed and steep, there is but a

small portion of this rubble, seldom exceeding a few inches in depth; in the bottoms of the combs that descend from these Eminences, you will find the quantity somewhat increased; in the dales, still more; in the vallies, a much larger portion; and in the lowland marshes near the sea-shore a still greater quantity, for 2 or 300 feet in depth, and in many places even unfathomable. All which would be the natural result of a flood of water, that formerly covered, and retreated from, the surface of the whole earth, and descended into the Sea, or rather, the Abyfs beneath the Sea. For, as the in-land parts of the earth were at the greatest distance from those places (the apertures into the Abyfs) where the most violent force and strongest action of the water was, so they would be least torn, and of course least covered with Fragments and Rubbish; and the wear and tear by the water would be in proportion greater and greater, and the load of loose rubble gradually and continually increased, till it approached the Sea-shore; and by the time that the latter-waters arrived thither, the Ocean would be full or nearly so, and therefore these waters would be repelled back again, and the loose clay, mud, slutch, &c. with which they were filled, be caused to settle upon or near the sea-shore, and so constitute, what we call a *Marsh* or *Moor*, being a loose clayey ground, consisting of a variety of terrestrial substances worn extremely small, and placed, in all kinds of direction, as the reciprocal and undulating motion of water would naturally cast them.

THUS I have shewed, from the consideration of that vast variety of bodies or substances that are now found loose upon the surface of the earth (each particular species carrying its particular proof) that this terrestrial globe has been covered by an inundation of water.

I AM now to deduce some Corollaries from what has been advanced.

1. THEN, from the quantity of matter that is now found loose at the bottoms of Combs, Dales, and Vallies, and from this matter being principally of the same kind with the strata in the sides of these Cavities, we may reasonably infer that it once made a part of the strata; and so, that the strata were once continued from side to side, and of course that the Hollows of Combs, Dales, and Vallies, were once filled up with strata similar to those, which now appear in their sides or in the bodies of the mountains or hills, in which these superficial Cavities are: and as Mountains and Hills are no more than *Eminences* caused by the formation of the *Hollows* of Combs, Dales, and Vallies, so it is certain that the earth was once of one uniform spherical surface, and that the present irregular, mountainous form, was not the *original*, but owing to some *after-cause*, as I have already endeavoured to prove, p. 160, &c.

2. FROM that vast quantity of Rubble which in a manner covers the whole surface of the earth, chiefly from that which is posited in Combs, Dales, and Vallies, it is manifest that the Hollows of combs and vallies were not caused by any *Contraction* or *lateral shrinking of the strata* (see p. 183) for had these cavities been owing to such a cause, there would have been but little or no loose matter found in them, for in such a case the parts of the strata (when the whole earth began to be consolidated after its dissolution) by being contracted within themselves, atom to atom, would be so closely united together, that the Cavities caused by these Contractions would contain little or no loose matter in them, as is the case with the *covered Fissures* or those Chasms in the body of the earth, which terminate in themselves and have no Communication with other cracks; in these we never find any such

loose matter or rubble as that which lies in the bottoms of dales and vallies: had therefore one sort of these Cavities, as well as the other, been formed by *Contractions*, there would have been like matter found in each and respectively placed.

3. FROM the *regular* and *gradually increasing proportion* of the rubble that is found in Combs, Dales, and Vallies, it is manifest that these Channels were not caused by any elevation and depression of the strata; for had this been the case, this rubble would have been placed in the most confused and irregular manner possible.

4. FROM this same increase and apparent tendency of this rubble from combs to dales, from dales to vallies, from vallies to the shelving bed of the ocean, we may determine the place, whither the other part of this rubble (*viz.* That which formerly filled up all the Hollows and Channels upon the earth and in the sea) was carried to, namely, *the Center of the Earth*. For had it been carried no farther than the bed of the ocean, and deposited there, it would more than have filled that; because the matter that was tore out for making that Cavity, would equally have filled it when in the form of rubble, as when it remained in whole and unbroken strata: and then there was the additional substance of all that matter, that before filled up the hollows of the Combs, Dales, and Vallies over the whole surface of the earth: and had all this been placed in the bason of the sea, it must more than have filled it. Now since it is certain that all this rubble was carried down into the bed of the Ocean, and as that did not retain it, it must therefore have passed through, and been carried into some place beyond the bottom of the sea, and that could be no other than the center of the earth, the last place it could be driven to; and there it would remain in form of a *nucleus* or *inner-globe*, as described p. 54, 187, and delineated by I in the *Copper-plate*.

5. If this load of rubble and fragments of stone were carried down to the center of the earth, it will certainly follow, that the Agent that did this, that the water (as it is of a more subtle and penetrating nature than this matter) accompanied it in its passage and descended together with it; and as this loose matter occupied the center, the water would naturally settle around it, as denoted by G. H. in the PLATE; and so constitute the *Mosaic Abyss*.

6. As in tracing the fragments of stone that lie in trains from the mountains, it is common to observe where the descents are gradual (where they are irregular and attended with sudden falls and precipices, great irregularity must naturally be expected) that those stones that are largest and least worn lie nearest the tops, and those that are less and most worn at the greatest distance, and also that these Stones are of the same kind with the strata in the mountains above, and not of the kind with the strata in the vallies beneath (unless where they both happen to be of the same species) so it is certain that the currents of water which removed these stones from their original beds, and placed them in the manner we now find them, came from the mountain-tops and drove towards the sea, and therefore that these Stones were not thus placed by partial deluges, owing to high tides or accidental inundations of the sea, as some have imagined; for had either of these latter been the cause, the larger stones would have been left nearest the lower grounds, and the lesser necessarily thrown higher up: and if the water of such a flood, in its return to the sea, had force enough to bring back any of these bodies, it would naturally leave them in the greatest irregularity; the lesser would be brought to the larger, and the stones of the vallies be mixed with those of the mountains; which is not the case: and therefore these Stones were not thus placed by such partial floods.

7. FROM the consideration of some other circumstances attending these fragments of Stone, especially those that have been worn round by water, we may see the falsity of another hypothesis, calculated to solve these phænomena, without reference to the universal Deluge in the time of *Noah*; viz. that these Stones were thus rounded, and the fragments of Rocks torn from their original beds and scattered over the surface of the earth, at the first formation of things, when the earth was totally covered with water, at which time the highest mountains constituted part of the bottom of the sea, therefore it is no wonder, since the retreat of those waters, that we now find pebbles and rocks in the most inland countries. But the grand question to be solved, is, *How came these waters to retire?* in which principal particular the Authors of this hypothesis are not agreed, some imagining that the water was rarified and changed into air; others that the Sea by the violent motion of its flux and reflux, threw up vast quantities of sand and mud, and thereby left the spaces between them as Vallies, which the water occupying, the eminent parts became dry and habitable; with several such groundless and unphilosophical assertions. But it required, and these Authors suppose it did require, a great length of time, even that of ages, before these transactions were completed, and therefore that the parts of the earth, which at present bear marks of the Sea constituted for a long time the bottom of it, and thereby gave room for the waters to separate the rocks from their natural places, and form the fragments of stone into pebbles, and place them in the manner we now find them in the most distant countries from the sea. But then there is a very material difference between the inland pebbles and rocks, and those formed and found at sea. It is common to observe vast numbers of pebbles and stones upon the sea-shore which have several extraneous bodies, such as shells, corals, and corallines, affixed to their outsides,

and many of these so closely adhering that it is almost impossible to disengage one from the other without breaking both; and it is also certain that these grow and are formed at this day, especially in calm and quiet places. But now, after the strictest examination I could make upon immense multitudes of Rocks and rounded stones that I have seen at land, I never could observe any such extraneous bodies adhering to them,<sup>9</sup> nay, not upon such as were but a few miles from the sea, when the pebbles upon the sea-shore abounded with them; which must plainly shew, that the places where these pebbles are now found were never the bottom of the sea, nor the pebbles themselves formed at sea, but that they were made at some particular time, or in some general deluge, the waters of which must have been in such constant agitation and perpetual fluctuation, as not to permit such things to settle and grow; which is agreeable to the *Mosaic* account of the Flood in the time of *Noah*, see p. 51. And what further shews that the places where these Stones are now found were never the bottom of the sea, nor the Stones themselves formed at sea, is, that we never find (what is very common to find at sea, and upon the sea-shore) any *artificial things*, such as regularly shaped pieces of wood, stone-instruments, iron-tools, potsherds, &c.

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<sup>9</sup> I have seen indeed one or two instances of *Nodules*, having a small shell or a plant sticking to their outsides; but then these are a very different species of Stones from *in-land pebbles* (though they resemble them in their outward shape) as I have shewed, p. 196. *Nodules* were formed during the dissolved state of the earth and the great confusion of things at that time, and many of them have apparently passed through several strata that abounded with shells and plants, and at last settled in strata that were replete with these extraneous bodies, so that it is no wonder that we sometimes find one or two of these bodies adhering to their outsides: but *in-land pebbles* were formed at a different time, in a different place, and in a different manner, as may be seen in the above cited page.

naturally lying among them, but only such as were placed there by design or accidentally dropt, as is evident from the prior disturbance of the earth, where such have been taken up at any depth, and their being generally found in such places where Old Cities, Castles, Camps, or Lakes have been. And indeed had these artificial things ever been cœval with these fragments of stones, or subject to the agitation of water as they have been, they would certainly have been worn and rounded in the same manner as they are. Besides, the artificial things that are taken up at sea, have indiscriminately shells and corals, growing on them, as well as the stones and pebbles on the shore,

\* I have read indeed of boats, small barques, anchors of Ships, &c. being found at land in countries far distant from the sea, but then it has generally been in authors of no great credit, and the facts asserted upon no good testimony; but even allowing them to have been true, it is certainly much more reasonable to suppose, that the places where these things were found, were formerly the bottoms of large *Lakes*, which by design or accident had been drained, rather than the *ancient bed* of the Sea; in the same manner as in draining the famous *Lake of Martin-meer* in *Lancashire*, which was eighteen miles in circumference, there were found in the slutch at the bottom no less than eight boats, shaped somewhat like the Canoes made use of in *America*, as *Dr. Leigh* in his history of that County, assures us of his own knowledge, p. 18, and 181. Or else these things might be attributed to violent tempests or accidental overflowings of the Sea; and besides, whatever things of this nature may be now found at land in *Europe*, some allowance must be made for the event recorded (p 82) of this treatise, when numbers of persons procured Ships and other conveniences, under apprehension of a general Deluge, and probably many of these were made at land in countries far distant from the Sea, as it was supposed that the devastation would reach all over *Europe*: which therefore, as the event did not happen, would be left in the places where they were first made, and in the future ages might be imagined to have been wrecks of ships lost at sea, though the sea never reached these parts; and what parts of the earth the sea has really covered will be best determined by the marks given in the text, in the subsequent pages.



but the artificial things, even those that bear the marks of the greatest antiquity, which are taken up in the inland countries, have no such bodies adhering to them; which is a plain and an undeniable proof, that neither they, nor the places where they are now found, were ever covered by the sea. And here, by the way, we have an easy and certain method of discovering what parts of the earth the sea might formerly have encroached upon, and covered for any length of time, and after have retreated there-from, and what not, viz. by observing whether the rocks and stones, especially the artificial things, found at land, have any marine productions adhering to them or not; if they have none, we may depend upon it, the Sea never reached these parts; if they have some, especially if they are of the same kind with the shells and corals upon the nearest sea-shore, we may conclude it has. But upon the strictest researches I could make with regard to these particulars, I could never find that the Sea had receded above a few miles in length, or a few yards in depth, from its original and first known boundaries; and that only in places where the land was low and flat, and these recesses or retreats chiefly owing to banks thrown up, or canals cut, by the art and labour of man. All Hypotheses therefore to account for these in-land rocks and pebbles (which so apparently carry marks of having been moved, shuffled, or worn round by water) upon supposition that the places where they are now found were formerly the bottom of the sea, must fail, and recourse can only be had, for the explication of these phænomena, to the one Universal Deluge in the time of *Noah*.

## III.

FROM the consideration of things upon the surface of the earth, let us now descend into the *inside*, and see what proofs we can educe from thence of an UNIVERSAL FLOOD.

AND here let us enter the subterranean Kingdom by those easy and convenient passages,—the *natural Caves* and *Holes* of the Earth: and in the first place collect what evidence we can for the point in question from these Caves themselves.

ALL the natural Caverns that I have seen myself, or those that I have read descriptions of, appear to me to be no other than what in the *North* of *England* are called *Swallows*, and in the *West*, *Swallet-holes*. These Holes or Caves are generally nearly circular at top; and from *twenty* to *two hundred yards* or more in circumference. Many of them have a direct perpendicular descent, like the Hollow of a Well, for the depth of several fathoms; in others the descent is somewhat winding and crooked; and generally, at a greater or less distance, there is a large spacious Opening, into which enter several lesser Caves or Conduits; some gently declining from the top, others lying in an horizontal line, and some descending perpendicularly downright to unfathomable depths. The Entrance or Mouth leading into many of these Caverns is *at present* horizontal and very small; and hence Naturalists have been greatly puzzled about the vast Spaces within, and how it came to pass that such small orifices should lead to such spacious Openings; whereas in fact the larger Cavities were made first, and the lesser that proceed from them after: and the true entrance into such Caverns is at top, upon the surface of the earth, and only covered with rubble and mould; and indeed the large Spaces within, in most of these Caverns, reach near to the surface and form part of the true and original entrance; so that they all may

be looked upon as *Swallets*, or *in-land gulphs* that *swallowed* down the waters of the deluge.

HAVING thus far explained myself, I shall now shew in what various parts of the earth, and how distant from each other, these Caverns are to be found.

THE first that I shall mention, and the most noted in *England*, is that called *Elden-hole*, in *Derbyshire*. This is a direct perpendicular Chasm, of an oblong form, as far as the eye can discern its depth; the mouth of it is about *twenty yards* over one way, and *eight* the other. Mr. *Cotton* endeavoured to find the bottom, by plumbing it with a line *eight hundred and eighty-four yards* long, but could not reach it: and upon examining the lower end of the line, he found that *eighty yards* of it had sunk through Water.\* Another gentleman let down a line *nine hundred and thirty-three yards*, without meeting with the bottom.† The Earl of *Leicester*, in Queen *Elizabeth's* days, caused a man to be let down with a basket of stones tied to his middle, in order that by letting some of them occasionally fall, he might judge of the depth of the Cave, and after he had remained at the length of a rope of *two hundred ells* for some time, was pulled up, in expectation of some great discoveries: but when he came up, he was senseless, and died of a phrensy in *eight days*.‡ When I was upon the spot, I found, upon enquiry, that two men had lately ventured down this cavity, upon supposition, that some cattle, that had been missing, might have fallen into it: and when they had descended to the depth of *seventy yards*, they found the carcases of several oxen and sheep; but could get no further; these carcases, together with the stones that had been thrown in by the curious in endeavouring to

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\* See the *Wonders of the Peake*, p. 40.

† *Philos. Transf.* N<sup>o</sup>. 2.

‡ HOBBS *de Mirabilibus Pecci*.

discover its depth, having probably covered and stopped up the leading Cavity. They said also, that after they had been let down about half way, the cavern opens and widens into a spacious vault, and that there appeared to be another great cavity, besides that of *Elden-hole*, leading to the surface of the earth. And upon examination, I observed, that, at about the distance of *two hundred yards* from *Elden-hole*, there was a gradual, nearly circular, Sinking in the earth, near *three hundred yards* in circumference, and from its utmost summit, about *twenty yards* deep: and this appeared to me to be undeniably the true mouth of *this Swallow*, and that *Elden-hole* is no more than a lateral conduit leading into it. *Three miles* Northward of *Elden* is another famous Cavity, called *Peak-hole*, situated almost in the Village of *Castleton*, and at the foot of a semi-circular, or rather semi-cylindrical Rock, (the hollow side facing you as you enter) above *two hundred feet* high, and the diameter of the cylinder about *sixty feet*; at the bottom of this perpendicularly hollowed rock, this Cavern opens its mouth in form of an arch at least *forty feet* high, and *sixty* broad at the bottom; the top part, and the sides of this arch, as also the whole semi-cylindrical rock above, are very smooth, and apparently worn away by the gradual attrition of some such Agent as water; and had not one side of this tubular Hollow been broken down and carried away by the Agent that first formed this perpendicular Channel, it had resembled at the top and in the inside a common well, and at first sight would have been esteemed a *Swallet-hole*; and the not attending to this particular, has caused great perplexity in accounting for the origin of this Cave. From the

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\* If the reader has not seen the place, he may have a just idea of it from N<sup>o</sup>. 8. of Mr. SMITH'S *Prints* of the prospects in the Mountainous parts of *Derbyshire*, &c.

mouth of this Hole to the distance of *one hundred yards* the roof gradually declines, till you are obliged to bend and creep in order to proceed forward, and after you have crept a little way, you enter into a spacious wide apartment; which continues for about *thirty yards*, when the rock almost closes again, and after you have passed (in a little boat) a river that runs through the Cave, the rock widens again into a still greater Opening, till you come to a second stream of water, where it again contracts itself; but as soon as you have passed this Current, another spacious Opening presents itself, which continues in some places higher, in others wider, till the roof of the rock lies upon the very surface of a third Current of water, and puts an end to the traveller's journey; but by agitating this water with our feet, we heard a rumbling undulating noise in some great cavern beyond. From the entrance to the end of this Cave is about *seven hundred yards*. Where the larger Openings were, there were several lesser lateral Cavities or rather Conduits, and some that descended perpendicularly down from the top, and the sides of all, both large and small, are worn as smooth and as round or rather tubular as a constant passage of water could possibly wear them: and as this Agent would exert itself stronger and make more room for itself where the greater number of streams met, hence it is that where the Conduits for the water appear to be larger and more numerous, there the Openings within are wider and more spacious; and where there appear to have been but one or two passages for the water, and those small, there the Cavities are proportionably less. Not that I would suppose that the water tore these passages through the solid rock without any prior opening or fissure: no; there were proper cracks and chasms made for its descent before, as I have shewed, p. 50, 184. But where

these cracks were larger than in other places, there the water would descend in a fuller body and with greater impetuosity, and would work and wind its way through lesser cracks to get into the greater Cavities, and by its frequent passages through both sorts of these Channels, would wear and tear away the rock to a great degree, and so vastly widen the original openings. And as these original Cracks would naturally be irregular, according to the grain or different constitution of the stone or strata in which they were formed, so these irregularities, when opened and widened by the passage of the water, would produce the risings and fallings in this and such-like Caverns. I have been longer in describing and accounting for the origin of this Cave, than I need be with respect to any other, for though there are scarcely two that are exactly alike in every thing, yet there are none, that I have seen, but what agree in the chief and principal particulars. Thus, at about the distance of *eight miles*, South-Weft from *Peak-hole* there is another similar Cavity known by the name of *Poole's-hole* (not far from the village of *Buxton*) about *six hundred yards* in length. In this also there are several risings and fallings, several lesser and larger Openings, with collateral conduits, and the sides of the rock in all much worn, and in many places greatly torn, as appears from the large fragments that lie loose at the bottom. The three above described Caverns are indeed justly esteemed the principal in this County, but there are many that are less, and equally demonstrative of the opinion I have advanced; and there are still a greater number that are, in a manner, undiscovered; for though they cannot be entered and examined, yet these entrances or orifices are very visible, and are easily distinguishable from the mouths of the pits from whence they dig ore, for these latter have generally a

heap of rubbish thrown out all around them, and descend perpendicularly downright, whereas the *Swallet-boles* have no such matter round them, but the rubbish lies in the bottom, and there is commonly a gradual inclination or seeming sinking in of the earth that leads to them. It is not unusual for miners in tracing veins of ore to open some of these concealed Cavities, and when they do so, they generally find as large Caverns within them as either of the above described. This Country indeed abounds with these *covered Swallows* (as they are called) especially upon the *moor-lands*, and I have seen some of the extensive flats there so perforated with them, that the face of the earth resembled, (comparatively speaking) a Sieve. I have also seen several such upon the Mountains in *Wales*, especially upon those above *Tenby* in *Pembrokeshire*; and vast numbers of them upon *Mendip-hills* in *Somersetshire*, particularly in *Charterhouse-liberty* and near *Green-ore Farm*; and *Ookey-hole*, which is about *four miles* distant from the last mentioned place (of which and of some other Caverns near it, there is a particular account in *Philos. Trans.* N<sup>o</sup>. 2) is evidently no other than a *Swallet* itself; as also are the *Caves* lately discovered at *Lockston* and *Banwell*, about *twelve miles* to the North West of *Ookey*; all these being in every material circumstance exactly similar to those I have already described. There are also a few of these *Swallet-boles* in and near *St. Vincent's Rocks*, about *two miles* distant from *Bristol*; and *Penpark-hole* (of which the reader may see a description, and a cut representing the inside of it, in N<sup>o</sup>. 143, of *Philos. Trans.*) which is about *four miles* Northward from the aforesaid Rocks, is manifestly no other. Of the same kind is the Cavern mentioned by *Sir Robert Atkyns*, in *his ancient and present State of Gloucestershire*, p. 230, to have been discovered at *Cold-Ashton*, *ten miles* to the East of *Penpark* (which upon enquiry, I found has been since

stopped up); the description of which is so natural that it is worth reciting, ‘ As a person was plowing with oxen, one of the oxen faltered in a hole, which, when the earth was removed from it, appeared like to the Tun of a Chimney; through which several persons have been let down; where they found a Cavity, in which one might walk above half a mile one way, and it is not known how far the other: and as they walked with candles, they observed several such Tunnels ascending towards the surface of the earth.’ An ingenious gentleman, in giving an account of his Journey over *Crofs-fell* Mountain in *Cumberland* (which is part of that immense ridge of mountains that reach from *Derbyshire* to *Scotland*, and are called the *British Alps*) writes thus: ‘ The *Swallows*, those incontestable remains of *Noab’s* Deluge, begin here [on *Roderic* heights] to be very frequent. Some of these are *thirty* or *forty yards* in diameter, and near as much deep, perfectly circular, but contain no water at any season, the ground having gradually fallen in at the sinking of the waters; but where they happened amid rocks, the holes are left open to incredible depths.’ The same Author says, ‘ That on the top of the same [*Roderic*] heights, is a pretty large Lake, called *Greencastle-loch*, which receives no visible feeder, but emits a small stream Northward to the said burn;’\* and this in all probability is no other than the mouth of a large *Swallet*. Another gentleman gives the following description of *Ingleborough* Mountain in the West-riding of *Yorkshire*;† which as it contains not only an account of

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\* *Gent. Mag.* for August, 1747.

† *Gent. Mag.* for March, 1761. This Mountain is reckoned to be one of the highest in *England*, according to an old saying in the North,

*Pendle-hill, Penigent and Ingleborough*  
Are the highest Hills all *England* thorough.



*Swallet-boles*, but also some other particulars relative to the subject I have been treating of, I shall insert it at large. ‘ This mountain is singularly eminent, whether you regard its height, or the immense base upon which it stands. It is near *twenty miles* in circumference. In this mountain rise considerable streams, which at length fall into the *Irisb Sea*. The land round the bottom is fine fruitful pasture, interspersed with many acres of lime-stone rocks. As you ascend the mountain, the land is more barren, and under the surface is peat-moss, in many places *two or three yards* deep, which the country people cut up, and dry for burning, instead of coal. As the mountain rises, it becomes more rugged and perpendicular, and is at length so steep that it cannot be ascended without great difficulty, and in some places not at all. In many parts there are fine quarries of slate, which the neighbouring inhabitants use to cover their houses; there are also many loose stones, but no lime-stones; yet, near the base, no stones but lime-stones are to be found. The loose stones near the summit the people call *greet-stone*. The foot of the mountain abounds with fine springs on every side, and on the west-side there is a very remarkable spring near the summit. The top is very level, but so dry and barren that it affords little grass, the rock being but barely covered with earth. It is said to be about a mile in circumference. There are likewise discoverable a great many other mountains in *Westmoreland* and *Cumberland*, as also the town of *Lancaster*, from which it is distant about *twenty miles*. The west and north sides are most steep and rocky; there is one part to the south, where you may ascend on horse-back; but whether the work of nature, or of art, I cannot say. A part of the said mountain juts out to the north-east near a mile, but somewhat below the

summit; this part is called *Park-fell*; another part  
 juts out in the same manner, near a mile, towards  
 the east, and is called *Simon-fell*; there is likewise  
 another part towards the south, called *Little Ingle-*  
*borough*; the summits of all which are much lower  
 than the top of the mountain itself. Near the base,  
 there are holes or chasms, called *Swallows*, supposed  
 to be the remains of *Noah's* deluge; they are among  
 the lime-stone rocks, and are open to an incredible  
 depth. The springs towards the east all come to-  
 gether, and fall into one of these swallows, or holes,  
 called *Allan Pott*; and after passing under the earth  
 about a mile, they burst out again, and flow into  
 the river *Ribble*, whose head, or spring, is but a  
 little further up the valley. The depth of this swal-  
 low, or hole, could never be ascertained; it is  
 about *twenty poles* in circumference, not perfectly  
 circular, but rather oval. In wet foggy weather,  
 it sends out a smoak, or mist, which may be seen a  
 considerable distance. Not far from this hole,  
 nearly north, is another hole, which may be easily  
 descended. In some places the roof is *four* or *five*  
*yards* high, and its width is the same; in other  
 places not above a yard; and was it not for the run-  
 of water, it is not to be known how far you might  
 walk, by the help of a candle, or other light.  
 There is likewise another hole, or chasm, a little west  
 from the other two, which cannot be descended with-  
 out difficulty: you are no sooner entered than you  
 have a subterraneous passage, sometimes wide and  
 spacious, sometimes so narrow you are obliged to  
 make use of both hands, as well as feet, to crawl a  
 considerable way; and as I was informed, some per-  
 sons have gone several hundred yards, and might  
 have gone much further, durst they have ventured.  
 There are a great many more holes, or caverns, well

' worth the notice of a traveller: some dry, some hav-  
 ' ing a continual run of water; such as *Blackside Cove*,  
 ' *Sir William's Cove*, *Atkinson's Chamber*, &c. all whose  
 ' curiosities are more than I can describe. There is  
 ' likewise, partly south-east, a small rivulet, which  
 ' falls into a place considerably deep, called *Long-Kin*;  
 ' there is likewise another swallow, or hole, called  
 ' *Johnson's Jacket-hole*, a place resembling a funnel in  
 ' shape, but vastly deep; a stone being thrown into  
 ' it, makes a rumbling noise, and may be heard a  
 ' considerable time; there is also another, called *Ga-*  
 ' *per-Gill*, into which a good many springs fall in one  
 ' stream, and after a subterraneous passage of upwards  
 ' of a mile, break out again, and wind through, *Clap-*  
 ' *ham*; then, after a winding course of several miles,  
 ' this stream joins the river *Lon*, or *Lune*; and, pass-  
 ' ing by the town of *Lancaster*, it falls into the *Irish*  
 ' *Sea*: there are likewise, both on the west and north  
 ' sides, a great many springs, which all fall into such  
 ' cavities, and bursting out again, towards the base of  
 ' the said mountain, fall likewise into the *Irish Sea*,  
 ' by the town of *Lancaster*; and what seemed very re-  
 ' markable to me, there was not one rivulet running  
 ' from the base of the mountain, that had not a confi-  
 ' derable subterraneous passage. All the springs arose  
 ' towards the summit, amongst the *greet-stones* and  
 ' sunk or fell into some hole, as soon as they descended  
 ' to the lime-stone rocks; where passing under ground  
 ' for some way, they burst out again towards the base.  
 ' There is likewise, to the west and north, a great  
 ' many swallows or holes, some vastly deep and  
 ' frightful, others more shallow, all astonishing, with  
 ' a long range of the most beautiful rocks that ever  
 ' adorned a prospect, rising in a manner perpendicular  
 ' up to an immense height.'

BEFORE I proceed to shew, that these *Swallet-boles* are to be found in other parts of the world than *England*, it may be proper to subjoin some other particulars (which could not well be reduced under the foregoing heads, without breaking the narrative too much) which will serve further to prove, that these Cavities were formed by the passage of water.

I. THEN it is common to observe in Caverns of this kind where the Rock contains any extraneous fossils, such as shells, corals, bones, &c. that these extraneous substances are all worn smooth and shaped to the form of the rock. Now it is certain that these bodies have naturally a determinate figure, each different from the other, and all diverse from what we can suppose the inside of a rock to be; and when we see, that parts only of these bodies remain in the rock, here an half, there a quarter, and in another place a third part, and these remaining portions, not of their natural figures, but shaped and curved according to the concavity of the rock, it is manifest that some external force hath carried away the deficient parts; and when we consider the regular smoothness of the rock, and the gradual wear or attrition that these bodies have apparently undergone, we can attribute this work to no other agent than Water; and though in these caverns there are generally drainings and droppings of this fluid, yet the motion of it in this case is so slow and the quantity so small, that the above-mentioned effects can never be ascribed to it; nay, I have observed the above-mentioned phœnomena in *covered Swallets*, and even near the mouths of them, when the mouths themselves had been covered for the depth of several feet with rubble, and yet none of the rubble in the inside of the *Swallet-boles*, so that the wear and tear of these extraneous bodies could never have

been owing to the sluggish motion of the drainings of water from the surface of the earth. And besides, these bodies themselves exhibit full proof, that the water passed through the concavities in which they are, with vast violence and impetuosity; for, it is common to observe in the *natural* and *unworn* fissures of the earth (where the rock happens to contain extraneous bodies) part of a shell or of a branch of Coral sticking in the rock on one side of a fissure, and the other part of the same Shell or Coral on the opposite side, so that it is plain that no force has been here used besides that which made the original crack: but on the contrary in *Swallet-boles* I have often seen part of a large shell or the stem of a spreading branch of Coral on one side of the Cavity and no appearance of any similar substance on the other; so that it is undeniable, that the original fissure has been torn, widened, and the rock carried away, the whole face of the Cavity pointing out, that Water was the Agent, which therefore must have passed through with great force and violence. Another proof that these Caverns were formed by water, or, that rapid currents of that fluid has passed through them, may be drawn from the multitude of *in-land pebbles* that are to be found in most of them. That these pebbles obtained their shape by being agitated in water, and that wherever they are now naturally found, water has been, I have already shewed at large (p. 193) and that this water passed through the Caverns in a full body, and brought down with it vast quantities of these pebbles, is evident from hence, that they are not only to be found at the bottoms or in the lower parts of these Caves, but even high up in the niches and covered cavities in the sides, and many of these pebbles consist of a different kind of stone from that of the rock of the cavern, so that they must have come from far, and the streams that brought them been ra-

pid and strong. Another material circumstance evincing that these Swallows were made by water, is, that where great numbers of them occur together, reaching over perhaps an extent of land of some miles in circumference, there the land is nearly level and flat, without any of the Divisions or breaks in the earth caused by Combs and Dales; and the reason is plain, for the water that would otherwise have torn the ground into gills and dales, passed off through these Swallet-holes, and so tore inward and subterranean Cavities, instead of outward and superficial Hollows. This, I say, is the case where vast numbers of these holes happen to be near each other, but where there are few, not more than *three* or *four*, and those very large, and so close together as to make but one, and no Swallows near them for the space of several miles, there I have observed *two* or *three* small Combs, running in different, almost opposite direction, and meeting in the mouth of the Swallet as in a center. And the reason of this is equally clear for the point in question. For there being here a natural drain for the waters, and that a very large one, and no other similar cavity near it, not only the waters that were immediately over this hole, but even those that were at a distance, would rush towards it and in their access wear and tear the ground into gulleys and combs, and leave the present standing marks of its course and agency. And wherever we see *three* or *four* Combs terminating, from opposite sides, in a point, and a deep sinking in the earth in the center, we may depend upon it there was a Swallet-hole; and this I have frequently observed to have been the case in a low wet marshy bottom, or where there has been a small lake or natural pond. And from the description that I have already given of *Lakes* (p. 143, &c.) we may conclude that most, if not all of them, were

originally *Swallet-holes*, and also that the Cavities of the *Whirlpools*, *Under-currents*, and *Gulphs*, treated of (p. 136, &c.) were the same, and therefore that these holes are to be found all over the face of the earth; and of course the water that passed through them must have been equally extensive.

BUT besides what I have already said; to shew the extensiveness of these effects, I may also add some other accounts from different countries. Mr. *Smith* in his *ancient and present state of the County of Kerry in Ireland* (p. 122) speaks 'of a large and deep Hole, filled with water, called the *Devil's punch-bowl*, on the West-side of the mountains called the *Reeks*;' which certainly can be no other than a Swallow; and the caves mentioned (p. 167) are of the same sort, 'All the lands about *Killeene* are good lime-stone grounds, having, in some places, *considerable Caverns*; a thing not uncommon in such kinds of Soil;' which last observation is so true that I scarce ever saw a lime-stone country but what abounded with Swallet-holes. In *France*; at a place called *Rouffignac*, about *five Leagues* from *Périgueux*, is a famous Cavern called *Grandville's Hole*, which has several *deep cavities*, *collateral conduits*, and *circular holes* in the vaulted roof, rising like *regular cupolas*, similar to those in *Ookey* and in the *Peak-holes*.<sup>2</sup> Bishop *Pontoppidan*; in his history of *Norway* (p. 47) describes a rock or mountain, 'that has an aperture in it passable throughout, *one hundred and fifty ells* in height, and *three hundred* in length;' and (p. 49, 50) he mentions other Caves, 'in some of which he observed smooth beds of little stones or a gravelly bottom.' Dr. *Bebrens* in his *natural History of Hartz-forest, in Germany*; gives a full and particular

<sup>2</sup> *Cent. Mag.* for 1748, p. 581, translated from the French:

account of a great number of *Caverns* that are to be found there; and from the description it appears, that there is such a similitude between them and those found in *England*, that no doubt can be made that they were all owing to the same origin, or formed by the same means. In the *Philos. Trans.* (N<sup>o</sup>. 109, and N<sup>o</sup>. 191) there is a long account of a *little Sea* or rather a *large Lake*, called the *Zirchnitzer-Sea* in *Carniola*, in the South-East part of *Germany*; the water of which retires under-ground through several great holes at the bottom of it, once every year; and then these holes are visible, 'which are in the shape of basons or cauldrons, the breadth of them being from *twenty* to *sixty cubits* more or less; and the depth from *eight* to *twenty cubits*; and in the bottom of them are several lesser holes.' 'And besides these there are also diverse *Caverns* and deep places in this Country, even where there is no water; particularly in the mountain called *Favorrick*, near this lake, there are two Holes or exceeding deep precipices, in which many thousand wild pigeons roost all the winter; and on the top of this Hill is a Hole of an unknown depth, out of which there often proceed noxious steams: and on another mountain are two great and terrible stony caves, which though far distant from each other, have yet the same effect, viz. when it thunders and lightens, do emit water with an incredible force. Near this Lake is the natural Grotto *Podpetschio*, with several channels in it, running diverse ways, and all the channels are formed in a very hard rock, and are smooth or polished as if cut by men's hands.' And the Author shews from several phenomena, that the Country is cavernous for several miles in extent, and though water passes through some of these caverns at present, yet it does not through all,



though all have marks of its force. The famous Grotto, in one of the Islands of the *Archipelago*, called *Anti-páros*, which is reputed to be *nine hundred yards* deep, and has several collateral Cavities and profound Abyffes in it, is certainly a great Swallet, as is abundantly evident from the description, given at large of it, by *Monf. Tournefort* in his *Voyage into the Levant*, Vol. I. p. 146, &c. *Scheuchzer* in his *Itinera Alpina*, Vol. I. p. 281, speaking of a Lake upon one of the mountains of the Alps, writes thus, ‘*Circà hunc Lacum*, &c. You may see, on every side, around this Lake, certain winding traces or furrows worn in the hard rock, which perhaps were owing to the waters of the deluge.’ *Kircher* in his *Mundus subterraneus* gives particular accounts of several Caverns (too long to be inserted here) and shews from a variety of Authors, that such like Cavities are to be found in all parts of the world, both in *Europe*, *Asia*, *Africa*, and *America*; and as no doubt is to be made that similar effects were owing to similar causes; so we may safely conclude, that the Caverns in other parts of the earth were formed by the same means and are of the same kind with those in *England*; and as I have already shewed, that those in *England* were owing to, or at least have been torn and widened by, the passage of strong currents of water, so we must determine of the rest; and of course that the water was as extensive as its force; *i. e.* extended all over the earth, and therefore that there has been an *Universal Deluge*.

I SHALL now subjoin a corollary, or an observation or two, to what has been above discussed, by way of general proof of some of the particulars already advanced.

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\* *Lib. II: Cap. xx.*

1. As the regular descent of Combs, Dales, and Vallies, and the final union of all these in one large furrow, even under the Sea, shewed, that the water that excavated these hollows, descended into some great cavity in the inside of the earth, even beyond the bed of the Ocean, and there formed an *Abyss*;<sup>b</sup> so the collateral Conduits of the Swallet-holes, leading down into one great unfathomable Cavity in the bowels of the earth, prove, that the Water that formed them, descended likewise even through the shell of the earth, and there constituted a part of the above-mentioned subterranean Reservoir.

2. It is not uncommon to find Swallets that have small rivers running into them, and which have no known exit; and when miners are digging very deep in the earth, they sometimes break sideways into a Swallet-hole, and when they do so, they advantageously turn all the water of the mine into it, and moreover throw in all the rubbish they dig out, and yet can discover no bottom. And if those Lakes mentioned p. 143, which receive one or more large rivers into them, are also Swallets (as I have above-shewed they in all probability are) then this also is a proof that there is a *subterranean reservoir of water*. And lest any one should imagine from this particular, that therefore Swallets *in general* might have been formed by *river-water*, let it be remembered that they are *commonly* found upon the *tops* of the *biggest* Mountains especially such as have *extensive flats*, where neither river nor rain-water could have any force to tear such Cavities, and therefore they could not owe their origin to such a Cause. In those places indeed where these holes lie at the bottoms of mountains, such ri-

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<sup>b</sup> See Page 186, &c.

vers as take their rise near the tops, would naturally flow into them; and where the Swallet-holes are *superficial*, or even run for a considerable way under the Earth, but *not deep* into it, would flow out again; in the same manner as the rivers run down the bottoms of Combs and Dales, or any natural declivity or hollow; but as these latter were not formed by river-water, so neither were the former.

3. As Swallet-holes are extended all over the earth, and the water that formed them descended downwards from every side towards the center and passed through the shell of the earth, it would naturally reposit *at the center* all the matter that it tore out in excavating these Hollows, which would there constitute a *nucleus* or *inner-globe*.

4. AFTER the strictest search and examination I could make, either from books or observation, I could never learn that there had ever been any *natural* sea-shell, coral, or coralline discovered in any of the caverns at land in the manner they are frequently found in the caves and cavities in the rocks on the sea-shore, the sides of which are usually lined, and the smaller cracks and crevices filled, with them; but no such being to be discovered in the Caverns and Swallet-holes at land, we may safely conclude, that the parts of the earth where these in-land Cavities are, were never the bottom of the Sea or for any considerable time covered with the Ocean, and therefore that the hypothesis, (lately renewed and refitted by some French philosophers, and favoured by several English) is false, which attributes the manifest appearances of this Globe's having been covered by water, to the primæval inundation of the Sea, by which it is supposed that at the first settlement of things, the water would naturally cover the whole surface of the globe,

and constitute a Sea over every part; but after a long time (by some means or other) it receded and permitted the Sea to retire into the lower and hollow parts of the earth; and to this original inundation or disposition of things are to be attributed all the marks of an inundation on the surface and in the inside of the earth; but had this been the case, these in-land Caves would have been filled with the spoils of the Ocean, and we should see Shells, Corals and Corallines, in their *natural* state, sticking on to the sides and filling the crevices of the rocks; whereas all the shells and corals that ever I discovered in these caverns were in an *extraneous* state, either filled with stone or immersed in the solid body of the rock, which could never have been their natural state; and therefore they could never have been placed in this manner according to the common laws of nature.

5. AND from the same arguing and circumstances of things we may have undeniable marks how far the Sea, in any place for any considerable time, has covered the land; for if in the holes and caves of the earth, in any such supposed place, there be found shells and corals in their natural state, especially if they be of the kinds with those usually growing in the nearest adjoining Sea, we may then justly suppose, that the Sea has covered these parts; but if no such shells or corals be discovered in these caverns, then we may depend upon it, that the Sea has never reached these parts, or covered them in the manner it now covers and overflows its usual and well known bed, or the Sea-shore.

## IV.

ANOTHER general and comprehensive Proof of an UNIVERSAL DELUGE may be drawn from the numerous and various *spoils of sea and land animals and vegetables* that are now found in every part of the earth.

‘ HERE then [to make use of the words of a learned and ingenious Author<sup>c</sup>] we appeal once more to Nature; and find that, in fact, there are, at this day, as evident, as demonstrative, as incontestable proofs of the deluge, over the face of the whole Earth, at the distance of about *four thousand years*, as if it had happen’d but last year. And whereas *Moses* assures us, that the *waters prevail’d fifteen cubits above the tops of the highest mountains*, let the mountains themselves be appealed to for the truth of this assertion: examine the highest eminences of the earth, and they all, with one accord, produce the spoils of the ocean deposited upon them on that occasion; the shells and skeletons of sea-fish, and sea-monsters of all kinds. The *Alps*, the *Apennine*, the *Pyrenees*, *Libanus*, and *Atlas*, and *Ararat*, every mountain of every region under heaven, (where search hath been made) from *Japan* to *Mexico*, all conspire in one uniform, one universal proof, that they all had the sea spread over their highest summits. Search the earth; you shall find the mouse-deer, natives of *America*, buried in *Ireland*; elephants, natives of *Asia* and *Africa*, buried in the midst of *England*; crocodiles, natives of the *Nile*, in the heart of *Germany*; shell-fish, never known but in the *American* seas, together with entire skeletons of whales, in the most in-land regions of

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<sup>c</sup> *Revelation examined with Candour*, Vol. I, p. 192; and for the truth of the subsequent particulars, and many more equally surprizing, the reader may consult Dr. *Woodward’s*, Dr. *Scheuchzer’s* or *Dargenville’s* Writings, or indeed any other eminent Author on the Subject.

‘ *England*; trees of vast dimensions, with their roots  
 ‘ and tops, and some also with leaves and fruit, at  
 ‘ the bottoms of mines and marles; and that too, in  
 ‘ regions where no tree of that kind was ever known to  
 ‘ grow; nay, where it is demonstrably impossible they  
 ‘ could grow.’

THIS has been thought by several to be the chief,  
 and indeed the only argument, that could be brought  
 in proof of an Universal Flood, and hence it has been  
 opposed by every objection; that the infidel could  
 think of. About a century or two ago it was urged,  
 that these fossil Animals and Vegetables were not  
 really what they appear to be, but only *Mock-forms*,  
 or representations of such things; caused by a *lusus*  
*naturæ* or an accidental Sporting of Nature under-  
 ground. But since this affair has been more accu-  
 rately inquired into, and collections of sea and land  
 Productions been made from every part of the globe,  
 and compared with the fossils of the same kind, such  
 a nice resemblance and exact agreement has been found  
 between them;—‘ The fossil ones being of the same size  
 ‘ that the others are of, and of the same shape pre-  
 ‘ cisely; of the same substance and texture; as consist-  
 ‘ ing of the same peculiar Matter, and this constituted  
 ‘ and disposed in the same manner, as that of their res-  
 ‘ pective fellow-kinds at Sea: the tendency of the  
 ‘ fibres and *Striæ* the same: the composition of the  
 ‘ *Lamellæ*, constituted by these fibres, alike in both:  
 ‘ the same *Vestigia* of Tendons (by means whereof the  
 ‘ Animal is fasten’d and join’d to the shell) in each:  
 ‘ the same *Papillæ*: the same *Sutures*, and every thing  
 ‘ else, whether within or without the shell, in its ca-  
 ‘ vity or upon its convexity, in the substance, or upon  
 ‘ the surface of it: answering all Chymical tryals in  
 ‘ like manner as sea-shells do; their parts when dis-  
 ‘ solv’d have the same appearance to view, the same

‘ Smell and taste; they have the same *vires* and effects  
 ‘ in medicine, when inwardly administer’d, to animal  
 ‘ bodies; *Aqua-fortis*, *Oil of Vitriol*, and other like  
 ‘ *Menstrua*, have the very same effects upon both.’<sup>4</sup>  
 Such an exact agreement as this, I say, being found  
 between the fossil and natural bodies of the animal and  
 vegetable kind, it is now universally allowed that the  
 fossil are, what they appear to be, the *Remains* of *de-*  
*stroyed Animals* and *perished Vegetables*.

AND at present a prevailing opinion is, that though  
 these bodies are what they appear to be, yet those, that  
 seem to have belonged to the sea, were never of ma-  
 rine production, nor the vegetables, the growth of  
 the earth, but both sorts were produced and formed  
 in the places where they are now found, the semina  
 of these things having been placed in and dispersed  
 throughout the whole globe of the earth at the time of  
 its Creation, when all things were confusedly mixt  
 together: and since that time these semina have occa-  
 sionally shot out, grown and increased by some plastic  
 virtue or power.

BUT till this plastic virtue or power be further  
 shewn, and proved to exist, it will be looked on by  
 all sensible persons to be no other than the *lusus nature*,  
 or an occult Quality of the Ancients. And with  
 regard to the Semina of these bodies being placed in  
 the earth at the time of the Creation, when the whole  
 earth was in a dissolved chaotic state, it must be re-  
 membered (if we follow the *Mosaic* account, which I  
 have already shewed is the only true, p. 78, &c.) that  
 the *semina* of these things were *not made* till *after* the  
*earth was consolidated* and *dry land had appeared* (Gen. i.  
 12, 20, &c.) so that they could never have sunk  
 through the earth at that time: and if it be supposed  
 that some of them sunk through after, it must have

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<sup>4</sup> WOODWARD'S *Nat. His.* p. 23.

been through the *cracks* and *crevices*, not the solid body, of the earth; but unfortunately for this opinion there are scarce ever any of these bodies, even in a fossil state (never any in a natural) to be found in the cracks and crevices, but commonly all fixed in the solid strata; and as that part of the strata which immediately surrounds these animal and vegetable bodies, has the express image of the outsides of these bodies delineated upon it to the nicest exactness, it is certain that the Rock, Stone, Clay, &c. that contains these bodies, was formed and hardened after them; as certain as that the impression of a Seal upon Sealing-wax was posterior to the seal; and both formed after a different manner, at different times, and in different places. Besides, as *Fabius Columna* argues, "*Natura nihil facit frustra*, Nature makes nothing in vain; but these teeth, bones, shells, &c. were they thus formed in the earth, would be in vain; for they could not have been of any use as teeth, neither could the bones have been of use in supporting of any animal. Nature never made teeth without a jaw, nor shells without an animal inhabitant, nor single bones, much less pieces of bones, teeth, &c. no not in their own proper element, much less in a strange one." Therefore the places where these bodies are now found, could never have been their original. And in order to shew that the *fossil* shells, bones, teeth, &c. that so exactly resemble the *marine* ones of the same species, were really the product of the sea, and not formed in the places where they are now found, I shall make use of a few arguments as they are judiciously drawn up by Dr. *Woodward* in his *Nat. Hist. of the Earth illustrated*, p. 151. "First, the (*fossil*) shells, which are dugged up in places, and found lodg'd in matter, fit to preserve them; and which therefore are firm, sound, and have less felt the injuries of time, yield still a true marine salt such as recent shells taken



out of the sea, or cast on the shores, are wont to yield. 2<sup>dly</sup>. 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<sup>dly</sup>. The shell-fish called the *Purpura*, has a tongue of a considerable length, terminating in a hard boney sharp point, with which, as with an augrè, he bores holes through the shells of other shell-fish, and feeds on the substance of them drawn forth through those holes. Now there are commonly found in the earth, among others, 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<sup>thly</sup>. 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 living creatures in them. 5<sup>thly</sup>. Lastly, The *Echinite*, *Conchite*, *Cochlilitæ*, and other bodies of that kind, consisting of stone, flint, spar, and other mineral matters, which every way match the size, and exhibit the perfect resemblance of the interior part of those shells, from which they have deriv'd their names, could never have been so formed, moulded and shaped, had not those shells been quite empty. But there are other bodies 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*, and *Cochlilitæ*. 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 bodies bear only the resemblance of that vacancy, as having been moulded in it." Now these bodies 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."

OTHERS indeed allow that the fossil animal and vegetable bodies are really what they appear to be, and that the marine ones were produced and bred at Sea; but then they suppose that they were brought to land by *partial deluges*, or *occasional inundations of the sea*. But certain it is, there are no records in history of any such inundations that can by any means be applicable, either with respect to their *Antiquity* or *Extent*, to the phenomena of this kind observable throughout the whole body of the Earth. The *Pyramids of Egypt* are reckoned to be some of the most ancient structures in the known World, and situated also in a Country that is frequently overflowed by the Sea, and yet the Stones, of which these Pyramids consist, abound with *fossil marine shells* and *corals*; (as I have seen in several samples of these stones, and have some specimens by me, given me by Dr. *Shaw*) and these shells and corals are of the same kind with those that are now found in the regular strata of the earth in the neighbourhood of these buildings.\* So that it is evident that these marine bodies were brought to land before the time of erecting these Pyramids. Again, *Steno* (who was an *Italian*, and wrote about a Century ago) in his *Prodromus* to a Dissertation *De Solido, intra Solidum naturaliter contento*, i. e. *Concerning Solids*

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\* See SHAW'S *Travels*, p. 416.

*naturally contained within Solids* (p. 87) says, That in the *foundation-stones* and *walls* of the City of *Volaterra* (the ancient Seat of the *Etrurians*) there are various sorts of *shells*; and the shells are of the same species with those that are found in the stone and natural beds of the Hill on which the City formerly stood. Now it is certain that *Volaterra* was a place of great note and power, long before the foundation of *Rome*: It is now somewhat more than *two thousand five hundred years* since *Rome* was first founded. And certainly several centuries must have passed from the time that the *Etrurians* first settled there, till their City had gained the character and size it had, when *Rome* was first began to be built. Now if we allow but *five or six hundred years* for the completion of this, it will then follow, that these shells have remained there for at least *three thousand years*. And when we consider that this will advance the proof of their existence to within *one thousand years* of the very time when the *Deluge of Noah* happened; surely none will be at a stand to attribute the time of their transportation to this Cause, which in every respect was answerable thereunto, and prior to all accounts of partial Floods. But when we take in the additional circumstance of the *extensiveness of the Effects* of that Deluge in which these things happened, the matter will soon appear incontestably clear. Let any one read the argument in proof of an *Universal Deluge* as stated and described p. 251, and he can never, with the least shew of reason, attribute the *Effects* there related to *partial Floods*. Besides; I have already laid down such marks as will demonstrably shew, how far the Sea in any place has occasionally covered the land; and that the effects of an Universal Flood are visible where partial inundations never reached (p. 230); and also have shewed, that the marine bodies that are discovered at land are

found in *such places*, viz. in the *solid substance* of the strata, where partial floods or any mere inundation of the Sea, how extensive soever, could never have placed them, and that these bodies are scarce ever found in *those parts*, viz. in the *cracks and fissures* of the earth, where such floods would most naturally have thrown them (p. 254); which is an *unanswerable* argument against this hypothesis: and other particulars, to shew the weakness of this Supposition, will occasionally occur in the process of this treatise.

BUT before I finish this head, it may be proper to take notice of *Mons. Le Cat's* argument, against the opinion of the fossil animal and vegetable bodies being placed in the earth at the time of *that Deluge* which is recorded in Scripture: 'The waters of the Deluge, saith he, according to the assertion of Scripture itself, exceeded the highest mountains by fifteen cubits; whence it must follow, that these mountains were before the Deluge. Now in the bowels of these mountains are found animals inclosed in the stones and quarries of which they consist. Therefore those animals, inclosed in the bases of these mountains, must have existed, together with those mountains before the Deluge. The Deluge then is a Revolution which does not account for these phœnomena.' But *Mons. Le Cat* seems not to have considered, or not to have known, that the mountains that were before the flood and those that were after, were not one and the same, but formed at two different times, and with respect to the point in question, vastly different. The mountains that were *before* the flood were formed by the retreat of those waters that *first* covered the surface of the earth, and permitted *dry land to appear*, on the *third day* after the Creation, and *before* any animal or vegetable body was made; and therefore no such could possibly have been found in those mountains.

The mountains that were formed *after*, or at the end of the Flood, had their origin at a time when the earth was replete with animal and vegetable bodies; and as all the solid structure of the earth had just before been totally dissolved (and so all the ante-diluvian mountains wholly destroyed) but these animal and vegetable bodies preserved entire, it could not but be that in the settlement of this dissolved earth these bodies would be found involved therein, and buried at the lowest depths; which could not have been the case with regard to the mountains before the flood; for the reasons above-given: and therefore *Monf. Le Cat's* argument which he is pleased to say is founded upon a 'Reason which admits of no reply,' is, in short, founded upon a *false matter of fact*, and so destroys itself.

THUS I have shewed, by several general and extensive arguments, the certainty of an *Universal Flood*, or that this earth has been covered to an immense height by an inundation of water, and moreover have proved, that this water was brought from the Abyss beneath, and have shewed that in several other respects the effects of the Flood, so observable on and in every part of the earth, are exactly consonant to, and cannot with propriety be attributed to any supposed Event of this kind, other than that Deluge which happened in the time of *Noah*, and is described by *Moses* in his writings.

And

IN the process of these arguments the reader cannot but have observed that I have been very careful and industrious in collecting a variety of testimonies (besides my own) from different Authors, who lived at different times and in different places, in order to confirm and establish the chief particulars upon which each argument depends; so that it appears, that there

is scarce a region under heaven but what bears testimony to the *UNIVERSALITY of the flood*: but lest the reader should suspect these evidences, or rather, would be satisfied in this case by nothing less than *ocular demonstration*, I would desire him to ascend the nearest high mountain to the place where he lives, and carefully examine the upper parts of it, and in all probability he will soon find some marine extraneous fossil, either a shell, tooth, bone, coral, coralline, or else some in-land pebbles, trains of stone, &c. or at least perceive some one or other of the marks already given, whereby he will soon be satisfied that this mountain has been covered to a considerable height by an inundation of water: and if this Mountain was thus covered, certainly the Combs, Dales, and Vallies beneath, (which were formed by Currents of water from this mountain) were equally inundated: or rather, since the parts of water have no tie or connection with each other, but naturally fall away or are carried to the lowest places first, it could not but be that every Comb, Dale and Valley, nay Hill and Mountain over the whole surface of the earth, that was of equal height with this, must have been equally covered. So that, in short, any person, at this day, by giving himself only the trouble of visiting the nearest high mountain may have full proof that that mountain was covered, nay, formed by water; and if any one mountain upon the earth was thus covered and formed, he will readily conclude that they all have been so; and hereby have, from any single Mountain, undeniable testimony that *all the high bills and mountains under the whole heaven have been covered by an inundation of water.*

## T H I R D L Y,

I AM now come to the *third* Division of this Section, wherein I am to shew, that, during the above-mentioned Flood, the Earth, was not only covered by water, but *totally dissolved, all the mineral and metallic matter being reduced to its original corpuscles; and assumed up into the water; so that the whole terraqueous globe once constituted one fluid Mass or Colluvies.*

THE Effects of this *Dissolution* are visible on, in, and throughout the whole body of the earth. For

I. THE very outward form of the earth indicates as much. I have already shewed that all the Cavities upon the earth's surface, such as Combs, Dales, Vallies, &c. were once filled up with beds of matter of the same kind, and placed in the same manner, as their corresponding strata in the sides of the adjacent hills or eminences; so that the earth was once regularly round without any of the inequalities of hills and dales. But this form could never have been the result of matter settling in large separate masses or detached rocks: had the parts of the earth subsided in such enormous fragments as these, the surface of the earth would have been almost as irregular as it is at present. But as the earth, when the parts of it first settled, was perfectly spherical and all the strata lay upon each other, with the nicest exactness, in parallel circular lines; so it must follow, in order that such a regular disposition of things might take effect, that the whole was dissolved, and subsided in the minutest parts or primogénial atoms.

II. THE spherical shape of the earth also may be justly esteemed as the natural result of the equal pressure of the Air upon its once fluid, dissolved parts.

It is certain that whatever is in a fluid state, and is surrounded and supported by the air, is of a globular form; and as the earth is not only buoyed up, but at present pressed on all sides by the air, and was at first formed by its circumambient force, and as this force is not sufficient to reduce Solids (if of a different figure) into a regular spherical shape, unless the parts thereof are so intimately mixed with a fluid, as to be equally susceptible of motion, so the earth, unless it had been dissolved, and the parts of it blended with a fluid, could never have been modelled to a globular form.

III. THE Solidity, or Cohesion of the solid parts of the earth, is another proof that the whole has been dissolved and immersed in a fluid. If you take any of the solid substances of which the earth consists, though reduced to the minutest size possible, and pressed ever so close together, yet if the mass is free from all moist or fluid particles, the whole will still remain in a manner disunited and the parts thereof easily separable from each other, being no other than a congeries of fine dust or dry Sand pressed together; and in order to bring the parts into such a close contact and cohesion with each other as to form a compact Solid, there is a necessity of adding, or rather of intimately mixing with these substances, some fluid body; in which and by which (on account of the lubricity of its parts) the particles of the Solids might be so moved and shifted every way, till at last similar surfaces might meet, press out the fluid between them and come into closer contact with each other than they were before; and this compressure and union still continuing and encreasing by the farther expulsion of the moist particles, the mass would at last be brought into a much narrower compass than it at first



occupied, *i. e.* the parts would be brought into a closer contact with each other, and so the (before) loose, separate, detached Solids be united into one firm compact body. And if this is the general process of Consolidation in the various substances of the earth that we can make any trials, or experiments upon, we may reasonably conclude the same of the whole; and also that the firmer, finer, and closer any body is at present, the greater has been the dissolution and division of its parts.

IV. A FOURTH argument that the earth has been in a *loose fluid* state may be drawn from the consideration of the *Veins* in some sorts of stone, particularly in the hardest and most beautiful marbles. It is common to observe in such, a great variety of matter in the greatest variety of forms and directions; in some part matter that was lighter (to speak in the common acceptance of words) than the neighbouring, pressed down below the place due to its specific gravity, and afterwards elevated to a considerable height, till at last meeting with matter that was heavier and making its way downwards, the whole shall be curved, by the ascent of the one and the descent of the other, into a vast variety of arches, consisting of the finest and most delicate lines: in other parts you may see streaks or seams of different substances proceeding on, as it were, horizontally, in nearly straight lines, till they have been met and opposed by other matter in a contrary direction; and at the point of conflux both species of matter turned back and deflected in all the variety of wave-like dispositions that can well be imagined to have happened to two streams of water, meeting each other in opposite currents: and in short you may see all the diversities of forms and figures in the Solid that any kind of agitation in a fluid could possibly dif-

play: and therefore we cannot but conclude, that the Solid was once in as great a state of fluidity as if it had been a Fluid itself. And though indeed these greatly variegated beds of stone are but few in comparison of the strata that compose the whole body of the earth, yet there are very few strata but what have some such wave like streaks or seams; and as these beds of stone are sometimes found at considerable depths in the earth, and consist of layers of equal thickness throughout, it had been impossible that they should have been in a state of fluidity, unless all the superincumbent strata had been equally fluid, or not formed: nay, when we consider that these veined beds of stone generally constitute the hardest species of marble, we may reasonably conclude, that if they were dissolved, all the other strata of the earth were equally in a state of dissolution.

v. It is common to observe in places where different strata meet, that there has been such an intimate mixture of both, as could not possibly have happened without a free and easy interchange between each, and consequently not without a Dissolution. Thus, for instance, in a country that abounds with chalk, where the chalk ends, and a different soil and different strata begin, (suppose) that of Free-stone, there is commonly to be seen upon the edge of these two countries a kind of substance between Chalk and Free-stone, consisting chiefly of Chalk upon the Chalk side of the Country, and principally of Free-stone upon that of the Free-stone Country; so that on the one side, there is a coarse sort of Chalk, on the other a fine soft species of Free-stone: the former sort gradually coarser and coarser the nearer it approaches the Free-stone, the latter finer and finer the nearer it is situated to the Chalk. And this I have ob-

served for several hundred yards upon the surface of the earth, and for a considerable depth within it. A similar kind of Conjunction or Intercourse I have seen also between the strata of Sand-stone and Lime-stone, between Flag-stone and Iron-stone, and indeed every kind of strata, where they happen to meet in considerable quantities, or large tracts of land abound with them. And generally, the greater the quantities that meet, the more extensive the interchange appears to have been, and of course the Dissolution the greater.

VI. THE Formation and Situation of *Nodules* plainly evince that the Earth has been in a fluid, dissolved state. What these are I have already in part shewed, and also how to distinguish them from sea- or in-land pebbles (p. 196). But besides the species of Nodules principally there spoken of, viz. Those of a stoney or mineral nature, there are others of the metallic or semi-metallic kind, such in particular as the *Pyrites*. This body is found in great plenty; especially in chalky countries; and commonly of a round form outwardly; and its inward texture shews, that itself and all the matter around it has been in a fluid state; for it consists of a multitude of long and extremely fine spiculæ, closely united together, and all driven to a center; and the substance of which it is formed, is of a quite different nature and kind from the matter or stratum in which it is usually found, and bears but a very small proportion to the stratum. Now this body must either have been formed out of the stratum, and afterwards have settled in it, or else been originally formed where 'tis now found: and in either case there must have been a dissolution or separation of the parts of both. For wherever the body was formed (either in the stratum where it now lies,

or in any other above it) as it consists of matter of such a peculiar kind, and is of such a particular shape, as plainly to shew, that its atoms, during its formation, were collected together from above, from beneath, and from each side (otherwise it could never have been of a radiated globular form), so it must follow that there must have been a separation of its own parts and also of the matter around it, in order to permit a free and easy passage for the access of one and recess of the other sort of matter.

Other Nodules there are that were undeniably formed out of the stratum where they now lie, and afterwards settled in it; especially those of the *coated* kind, and in particular where the coats or crusts of the nodules consist of the same kind of substances, respectively, with those that constitute the strata immediately above the bed where they are now found. Now it is certain that these bodies could never have obtained teguments of the same species of matter, and placed in the same order from the center, with the superincumbent strata, unless they had passed through them; for the beds wherein they are now found have no such matter in them (except what immediately surrounds these bodies themselves), and the strata underneath are frequently of a very different kind from either; so that they must have passed through the superior strata, and have procured their coats in their passage; and if so, those strata must undeniably have been soft and fluid, otherwise they could never have passed through them and have collected coats from each, as also must the bed have been so, where they are now found, otherwise they could never have subsided and settled in it: so that the whole was once in a state of *Fluidity*.

VII. BUT the most striking proof of this kind may be drawn from the *extraneous* fossils or those bodies

that are now found in the earth, and which do not properly belong to the places where they are now found, such as corals, sea-shells; the bones, teeth, &c. of sea and land animals; plants, trees, &c. Now I have already shewed (p. 254) that the former sort of these bodies were produced at sea, and the latter, at land; that the broken parts of these bodies once constituted complete forms; that the bones, teeth and shells once belonged to living animals, surviving in their proper elements; that the leaves and branches of the vegetables once grew upon their proper plants and trees: so that the marine productions were originally bred and formed at the bottom of the sea; the terrene, upon the surface of the land: but at present these bodies are found lying promiscuously throughout the whole solid body of the earth; some at the tops of the highest mountains, others at the bottoms of the deepest cavities that were ever dug; and lying too in such a manner as to make but one common mass with the strata in which they are found; and this, not only in the softer kinds of strata, as those of clay, chalk, &c. but in the inmost substances of the hardest and closest marbles; and generally, the harder and more compact the matter is, the closer and more intimately united is the extraneous fossil; which, if a tooth or a shell, has not only the exterior surface or outward lineaments most nicely delineated in the rock, but the inside totally replete with the same substance, every, even the smallest vacuity and slightest indenture being filled up with stoney matter; and in some cases, where the shell has been closed, the cavity through which the matter passed or entered into the shell is inconceivably small; in others the various convolutions and different concamerations are so many and yet so minute, and the passage leading through them so extremely small, as not to exceed in size the

orifice of a capillary tube in the human body, and yet each and every one of these totally filled up with the stoney substance; so that the matter contained within the shell exactly resembleth any liquable substance cast fluid into a mould. If the extraneous fossil be a Leaf, then not only the upper and under-sides are most accurately impressed in the rock, but the very pores filled to the inmost recesses, and the leaf as turgid and as much swelled by the penetration of the stoney matter, as if it had been for a long time soaked in, and most intimately permeated by, the particles of water. Now for a substance,—The texture of which is inconceivably delicate and complicated, and even its largest pores invisible to the naked eye, and which once grew upon the surface of the earth,—to be thus immersed in, and penetrated by, the solid rock, and to have sunk through the solid body of the earth to the greatest depths we ever dig, is an undeniable testimony that the Earth was once as fluid as water itself. And these *extraneous bodies* point out also the *time* when *this Dissolution* happened, viz. at the *Deluge*, and not at the *Creation*, as some have imagined (see p. 253).

VIII. THE eighth argument I shall mention in proof of the Dissolution is drawn from the *internal Structure of the shell of the earth*. It is well known to those that are in the least conversant with philosophical matters, that all the various substances of which the main body of the earth consists, are disposed (as the Chymists call it) *strata superstrata*, or layer upon layer; and it is also well known that such a Disposition of things could naturally be the result of nothing but the *settlement* of these bodies in a *dissolved state* through such a Fluid as *Water*. If, for instance, you take a certain portion of these bodies, and pulverize them to the finest de-

gree imaginable and mix them as confusedly together as possible, and let them fall through a dry Fluid, such as the Air, they will settle just in the same confused state as they were at first, and without the least appearance of forming *strata*: if, on the contrary, you permit them to subside through water, they will settle more or less in parallel strata. Indeed it requires *twenty* or *thirty* times the Quantity of water to earth to make this layer-like subsidence tolerably apparent, even in the mixture of but *three* or *four* bodies. But the greater quantity of water you use, and the finer you pulverize the substances, the more apparent and regular the strata will be: yet after all the Trials that can be made, the distinction of strata will never be so exact as they are in the body of the earth. It is not uncommon to see in the earth vastly large beds of stone, coal, clay, &c. lying each upon the other, at one depth the stone above the coal, at another depth the coal above the stone, in one part the clay above each, in another under all, &c. and yet each of these strata so distinct in themselves, and so nicely sorted, that the stone contains none of the coal, nor the coal any of the stone, nor does the clay partake of either (only each stratum a little tinged on the sides next to the adjoining strata). Now the quantity of *water* requisite for effecting this must have been *immensely great*, and the *whole body of the earth* must have been *dissolved* to its *very elements* or *primogenial atoms*, to produce such a regular assortment of strata.

HAVING thus proved that the whole structure of the earth has been unhinged, the constituent parts thereof separated one from another, and assumed up into a large body of water; I shall now draw some conclusions from what has been advanced.

1. SINCE the quantity of water requisite for the assumption of the dissolved parts of the earth, and the subsidence of them in regular strata, must be vastly greater than what appears of this Fluid on the surface of the earth or in the Seas or Ocean, there must be an *immensely large body of water in the inside*. I have observed already indeed (p. 100.) that the water on the surface of the terraqueous Globe occupies more than two thirds of the earth's superficies: but then it must be remembered, that the land is still continued, in a great measure, under this water: and from the appearance of islands in the midst of large seas, at a great distance from the sea-shore, and from the many known ridges of mountains that run under the sea, and from the time, that, according to scripture, the waters of the deluge were retreating from the surface of the earth, we must conclude that the apertures in the seas thro' which the water descended are, comparatively speaking, but small: so that the shell of the earth is in a manner continued quite under the seas (except where the above apertures occur). And probably the land under any sea equals in bulk that sea itself. So that upon a thorough inspection of the whole shell of the earth, the terrestrial parts vastly exceed the waters. And though there appears water enough upon the surface of the globe abundantly sufficient for *barely covering* the dry-land; yet there by no means appears a quantity sufficient for *dissolving or assuming up the dissolved parts of the earth, and permitting them to subside in the manner we now find them*: and since this quantity does not appear upon the surface or within our reach, it must be in the inside, and there constitute an *abyss of water*.

2. FROM the quantity of water necessary for the sublevation of the dissolved parts of the earth, we see,



that all solutions of a deluge, without having recourse to an *Abyss*, must fail or not answer the effects visible throughout the whole body of the earth. And hence, I am surprized, that a modern ingenious Writer,<sup>f</sup> (whose works I have made some quotations from in this Tract) should attempt to solve it without the introduction of such means. He imagines, that the water of the Sea *only* would be sufficient for the work. And in order to account for the elevation of this water over the tops of the highest mountains, he supposes, That the Omnipotent hand of God or *first Almighty Cause lifted up the bottom or bed of the sea*, and by that means poured its water all over the earth; and by letting it drop down again, restored all things to their former situation: and so the deluge was over. This he is pleased to call *the easiest and most eligible method* of transacting this event: But I suppose that all methods are equally easy to *Omnipotence*; and I could mention an hundred other methods by which God *might have* deluged the world, and yet neither of them the true, though all equally easy to the first Cause. The point to be decided is, *What* was the *method* God *did use*? If we can discover this, we may depend upon it, that *That* was *the most eligible*. Now God himself tells us, that in order to *destroy the earth by a flood of water, he broke up the Fountains of the Abys, and opened the windows of heaven (or the passages of the air through the shell of the earth)* and so *unbinged and dissolved* the whole globe. This I have shewed to be the Case from the state of the earth, from the Center to the Circumference; and all nature bears ample testimony to the truth of the Word of God: and yet Mr. *Borlase* is pleased to ridicule this method and characterize it as attended with ‘*the egregious absurdities of*

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<sup>f</sup> Rev. Mr. BORLASE in his *Natural History of Cornwall*, p. 78.

‘*an Abyss, apertures, disruptions of the shell, and the like:*’ I was sorry to see such words fall from such an Author, and as he gives us reason to think that he will write something farther upon the subject, I hope he will kindly take this friendly hint, and re-consider the affair.

3. FROM the certainty that the whole globe was dissolved during the deluge we may see the impropriety of his Lordship’s opinion,—that the superficial parts only were affected during that catastrophe, and that the *Rubble* and *Slutch* left by the deluge on the surface of the earth are the *only* marks of its devastation; but we have seen that the very form of the earth throughout, its internal constitution, its disposition in strata, and these strata abounding with the exuviae of land and sea animals, &c. manifestly demonstrate its Dissolution in every part. Though indeed there is one circumstance even in the *Rubble* and *Slutch* that indicates the *Dissolution of the whole earth*, and therefore may not improperly be mentioned in this place. After all the researches I could make, or the best testimonies I could procure, I could never learn that there was ever any *ante-diluvian artificial thing*, either utensil or weapon of stone, iron, or brass, &c. found in the Rubble as naturally left there by the waters of the deluge. All things of this kind that I have seen were evidently found in places where the Rubble had been disturbed, such as in old castles, camps, &c. and therefore the things themselves might have been posterior to the Deluge. And, though the *Rubble* itself lies in an irregular manner (with respect to the regularity of *Strata*) yet it is not so irregular, but that had it been disturbed or broken through by digging, &c. the rupture would have been visible:

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\* See of this Tract p. 14, &c.

for as it consists of streaks and seams extended lengthways or inclined in wave-like directions, any perpendicular irruption must have been discernible. So that if the Rubble, left by the deluge, naturally contains no metallic or mineral substance worked by the art of man or engraven by his device, we may then justly conclude that *all such instruments*, and of course all matter of the same kind with them, *i. e.* all the metallic and mineral substances in the whole body of the earth, were *dissolved during the deluge*.

4. It may seem strange to some; how it was possible that *all the dissolved parts of the earth* should float in or be supported by such a thin substance as *Water*. But to solve this difficulty, let it be remembered, that they were *dissolved*, and also to their *finest parts* or *original atoms*. Salt and Sugar, when in masses, will both sink in water, but when the parts thereof are disunited and separated one from another, they are easily sustained thereby: and the quantity of Salt that is swimming in the waters of the Ocean is inconceivably great, and if collected in one mass would be immensely weighty. Then too, there is no water whatever, even the most limpid, but what contains a great variety of earthy particles, as chymical experiments undeniably shew: Nay, that there is a species of water or of a fluid (*Aqua regia*) that will dissolve and support the dissolved parts of the heaviest of terrestriat bodies, *Gold*; and though the particles of the gold shall be swimming in or dispersed through every part of this fluid, yet the whole shall be as clear as chrystal. Or, what is more to the purpose; a Thunder-cloud, big with a deluge of rain, and containing a vast variety of terrestrial substances, is yet supported, at a considerable distance from the earth, by such a thin fluid as the air: now according to Scripture, at the time of the deluge there was a large body of expanding

air in the inside of the earth, acting or pressing from beneath upwards, *i. e.* from the centre to the circumference, which therefore would counter-act and in some degree abate the force of the perpendicular pressure of the air or expanse upon the surface of the earth, and by this means lessen the power, of, what is called, the *Gravity of bodies*, and so make them *lighter*; as is the case in rainy or misty weather, when bodies do not weigh so heavy as at other times, and when, on account of these ascending steams impeding the pressure of the atmosphere, the mercury also in the barometer subsides and sinks. Such being the state of the earth during the time of the deluge, it was really no more wonderful, that the water of the terraqueous globe (which in all probability exceeds in bulk several thousand times the quantity of earth) should sustain all the dissolved strata thereof, with the exuviae of animals and vegetables then destroyed, than that a thunder-cloud should contain and support a vast variety of mineral and metallic effluvia, intermixt with hail-stones of various sizes; for in both cases a body of expanding air was the basis and prop: and *Air*, as I have already shewed (p. 34), will keep water *above* as well as *under* it. That the state of the Earth and Air, during the time of the deluge, was really different from what it is at present, is very manifest from several effects, then transacted, and now visible, in the terraqueous globe. Certain it is, that neither the strata of the earth, nor the heterogeneous bodies enclosed therein, do lie according to the *Laws of specific Gravity*, or as bodies would settle at present. It is as common to find heavier strata above lighter as lighter above heavier: and the same kind of strata (after the interposition of both heavier and lighter ones) repeated; and remitting the whole in a retrograde order. So that this phænomenon seems plainly

to point out the actions of two Agents, one that acted from above downwards, the other, from beneath upwards: from whence it should follow, that at the same time as the downright perpendicular pressure of the Air separated and precipitated any species of terrestrial atoms through the waters of the deluge and formed them into a stratum, the same also did the Air from beneath, with respect to the same species on the opposite side. To effect which also there must have been a *total dissolution* of the terrestrial Globe, otherwise there could never have been such a free and easy access for the Air to and from the Center. And what further shews, that there was a body of Air or some Agent at the center of the earth during the time of the deluge, which counter-acted the force of Gravity; is, the manner in which the diluvian Spars and Crystals are at present found; the shoots of such being in some places perpendicularly upright, in others varied in all kinds of direction, but generally speaking they are in an *horizontal position*, so that the angles and columns meet in and intersect each other from the sides of the vein or fissure. But as the Spar that has been formed since the deluge, or, as the Miners call it, that is forming *at this day*, is always pointed *downwards*, (unless where the rock intervenes, and diverts its natural course) hanging like icicles from the tops and arches of caverns, grotto's, &c. in form of *Stalactites*; it is evident that the pressure of the Air downward is at present stronger than it was at the time of the Deluge: and as many of the diluvian Spars and Crystals are pointing perpendicularly upright, it shews that the force of the air from beneath upwards was then stronger than it is now: and of course that the *gravity of bodies* was less, and so more easily sustainable in the waters of the flood than such bodies would be now.

## FOURTHLY,

HAVING thus proved that all the solid structure of the earth has been dissolved, and the dissolved parts thereof assumed up into, and supported by, a large sphere of water.

I AM now to shew, *that all this dissolved matter, together with the animal and vegetable bodies inclosed within it, subsided again, and formed the present solid strata of the earth.*

I HAVE observed already (p. 156) that there is such a close Connection between the several parts of the Subject I have been treating, or the Heads I have been naturally led to divide it into, that very often one and the same argument would prove several of these heads; and so it has come to pass that the discussion of the former articles of this Section has in a manner exhausted this last. For, in short this last depends entirely upon the truth of the Case as represented in the former. All the arguments that I have there brought in proof of the *Flood*, the *Dissolution*, &c. were entirely taken from the *present state of the earth*. If therefore the foundation, on which those arguments were built, was sound, or the state of the Earth justly given, little more need be said in this place. And in order that the reader should not rely barely upon my testimony, I have subjoined, under each of the former articles, the testimonies of a variety of authors, who lived in different times, and in very distant places: so that in a manner the voice of all mankind, and the face of the whole earth, speaks the truth of what I have endeavoured to prove.

‘ WHAT weight these testimonies ought to have (to speak in the words of the celebrated Author of *Revelation examined with Candour*) the reader will best judge:—Testimonies so numerous, so various, so disconcerted, and yet so connected, is it possible,

' that they can deceive? Could all nations conspire  
 ' with all nations, and all ages with all ages, to im-  
 ' pose upon themselves, and their posterity? Could  
 ' the religion of the true God, and the religion of  
 ' the *Syrian* goddess! the *Jews* and the Heathens,  
 ' that hated them! *Moses* and *Melo* his enemy! tra-  
 ' dition conspire with history, and history with my-  
 ' thology! men of all characters, complexions, con-  
 ' ditions, and persuasions! *Plutarch* with *Berosus*,  
 ' *Benjamin* the *Jew* with *Chrysoptom*, and *Lucian* with  
 ' both! *Plato* with *Pliny*, and *Dio* with *Falconerius*!  
 ' the imaginations of poets, and the experiments of  
 ' naturalists! antiquity, poetry, philosophy, and  
 ' philology! wisdom, and folly! truth, and fiction!  
 ' regions unknown to one another! and regions that  
 ' never heard of one another! the *Greeks*, and the *Hot-*  
 ' *tentots*! the *Persians*, and the *Banians*! *Asia*, with the  
 ' isles of the *Gentiles*! and *America* with both! all con-  
 ' spire to establish one universal delusion!—And ALL  
 ' NATURE join in the attestation; produce all her ani-  
 ' mals, and all her vegetables, all her heights, and all  
 ' her depths, her mountains, her vales, her levels,  
 ' to vouch *one universal lye*, with all the IRRESISTIBLE  
 ' EVIDENCE OF TRUTH.'

SURELY those who see not the Force of the Evidence  
 in this particular must wilfully shut their eyes against  
 the truth; and may justly be characterised with a set of  
 people (if they are not themselves *the very people*)  
 spoken of by *St. Peter*,<sup>b</sup>—*In the LAST DAYS shall come*  
*SCOFFERS walking after their own lusts, and saying,*  
*where is the promise of his (Christ's) Coming; for since*  
*[or as it should be rendered, except that<sup>i</sup>] the fathers*

T. 3

<sup>b</sup> 2 Epist. iii. 3.

<sup>i</sup> See *Hammond* on the text.

*fell asleep, [save only, that our fathers or all the men that have lived upon the earth are dead, and others now live in their stead] all things continue as they were from the beginning of the Creation; i. e. there hath been no material alteration in heaven or earth that can evidence the Interposition of Providence in the affairs of men, either to punish the wicked or reward the good, and therefore we may do as we please, walk after our own lusts, &c. For this (continues the Apostle) they are WILLINGLY IGNORANT OF, That 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: that is, the Eyes of their understandings are so blinded by a wilful pursuit after their passions and lusts that they cannot see, or will not acknowledge, (if they do) the plainest truths in Nature; they will not own, what all the world besides confesseth, what all ages have maintain'd, what is faithfully recorded in the written word of GOD, and what is engraven in the deepest characters all over the face of the earth, and what they may have (which infidels so often demand) ocular demonstration of the truth of, viz. THAT THERE HAS BEEN AN UNIVERSAL DELUGE, and that the Threatning pronounced by GOD, four thousand years ago, on a wicked race of mortals was really accomplished, viz. And GOD said unto Noab, the end of all flesh is come before me, for the earth is filled with violence through them, and I will destroy them,\* i. e. the inhabitants, with the earth that bare them: and which through its abundant fertility (abused by them) furnishes provision only for their lusts, luxury, and idolatry. The Evidences of this Destruction are such, that the very bodies or bones of the persons thus destroyed, together with the*

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\* Gen. vi. 13.



animal creation that perished with them, are still remaining as standing, striking Monuments of this execution of Divine Wrath upon a wicked world, and are to be seen in every part of the Earth, not only upon the surface, but in the very solid substance of it, not only in vallies and dales, but upon the tops of the highest mountains and eminences, and buried also to the greatest depths that human art or labour has ever penetrated.

Certain then it is that this whole earth has been destroy'd, all the solid structure of it unhinged, broken to pieces, and reduced to its original loose chaotic state, and afterwards formed anew into its present solid, beautiful and convenient shape. Effects these so great! that they could never have happened of themselves, never have been the performance of blind inanimate matter. Matter cannot even destroy itself, much less, when destroyed, form itself anew. These transactions therefore must have been effected by a Being superior to all the Powers of Nature: and they carry in themselves such evident marks of *Wisdom, Power, Goodness and Justice*, that they not only prove that there is a GOD, but also that He GOVERNS the World.

It may not be unentertaining nor uninstruative to the reader, with respect to the subject of this book, if (before I conclude) I present him with a paraphrase in verse of the 104th *Psalms*, as composed by my father from the true sense of the Original; since that Psalm contains, among other things, a description of the *two principal Particulars* discussed in this Tract, viz. *the Manner, in which the Earth was at first formed, and the Manner in which it was destroyed and formed anew, at the time of the Deluge.*



# The Hundred and Fourth P S A L M

PARAPHRASED

By the late Rev. Mr. A. S. CATCOTT.

**E**XERT thy reas'ning powers, my vital Frame,  
 And grateful praise the great JEHOVAH's name;  
 Hail thou who ART! resistless in thy might,  
 Array'd in glory and majestick light!

As a wide tent, extended over-head,  
 Thy forming hands the vast *Expanse* out-spread,  
 Whose binding force the fluid Orb restrain'd,  
 And reach'd those atoms the loose mass contain'd.  
 Whence the firm strata, which the Globe compose,  
 Each over each in mounting stories rose.  
 Onward it mov'd, impell'd by grains of air;  
 The wings of winds the floating Orb upbare.  
 With <sup>1</sup> double impulse push'd the *Spirit's* force,  
 And *Light primæval* steer'd it in its course.

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<sup>1</sup> As רוחות being in the plural number, indicates. The Wind or Spirit and the Light or a Flame of Fire were the Agents or Ministers that GOD made use of in garnishing the Heavens and in forming the Earth, as I have shewed p. 26, &c. of this Tract. As the Works of Nature are here spoken of, it is certainly more natural to suppose the material Angels or Agents are here meant than immaterial and spiritual Beings.

On th' *Airs*, as bafes, he machin'd the Sphere,  
 And firmly bid the folid parts cohere.  
 As yet the Shell beneath the waters lay,  
 And future mountains had not feen the day.  
 At thy command th' affrighted waters fled,  
 And fought, tumultous, their appointed bed.  
 O'er hills they roll'd, and followed the defcent,  
 Deep channels tore, and the fplit valleys rent.  
 There lodg'd, in Earth's capacious Womb, they reft,  
 By the ftrong Heav'n's expansive pow'r comprefs'd.  
 Their bound'ries ftill their raging waves confine,  
 Bound'ries unmov'd by any pow'r but thine.  
 Hence rais'd in fteam, they work their fecret way,  
 In lowly vales thro' openings meet the day;  
 Or trickling 'twixt the winding mountains ftray. }  
 Here haunt the Beafts, and find a cool retreat, } *4*  
 And parch'd wild Affes quench their thirfty heat. } *dratt*  
 In neighb'ring trees, amidft the leafy fprays,  
 Birds build their nefts, and chaunt their chearful lays.  
 The oozing fprings bedew the moffy hills,  
 And thence glide down the fertile vale in rills:  
 Hence new in ftrength the faturated Soil  
 With verdant grafs fupports the cattle's toil;  
 With various herbs for human ufe is crown'd,  
 Or yellow harvefts load the fruitful ground.

Hence 'rise th' effects of industry and art ;  
 Hence bread is form'd the strength'ner of the heart,  
 From swelling grapes the foaming wine is press'd,  
 Diffusing gladness o'er the pensive breast.  
 Oil with youth's bloom renews each fading grace,  
 And sheds fresh glories o'er the beauteous face.  
 Trees, sacred emblems, and once *Eden's* pride,  
 From the same storehouse are with sap supply'd ;  
 Cedars, which *Lebanon's* high summits grace,  
 Set there by GOD,<sup>m</sup> coeval with their place :  
 Lodg'd in whose branches Fowls securely rest ;  
 And tow'ring firs which yield the stork a nest.  
 On highest hills the shy Chamois are found ;  
 And delving Conies bore the rocky ground.  
 The Moon's fair Light (her Orb by stated force  
 Impell'd) determines periods by its course :  
 The Sun more glorious runs its known career,  
 And gilds by turns each shifting hemisphere.  
 The light goes off, and night succeeds the day ;  
 The beasts come forth, and proul in search of prey,  
 With hunger pinch'd the whelps of lions roar,  
 And from their Maker's hand their meat implore.  
 Again the Light irradiates on the Sphere ;  
 The Beasts retire to dens, and disappear.

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<sup>m</sup> *i. e.* Set there by *Nature* or *the Author of Nature*, in opposition to those *planted by the Art of Man*.

Men issuing forth their daily toils attend,  
 'Till ev'ning-twilight bids their labours end,

O great JEHOVAH! dreadful, glorious name!  
 What wonders fill this universal frame!  
 In ALL thy sovereign wisdom shines express'd;  
 But thou profusely kind this globe hast bless'd:  
 How vast the Sea! magnificently spread!  
 Of Creatures numberless the spacious bed!  
 O'er the wide level ships pursue their way,  
 And huge sea-monsters tofs the deep in play.  
 All wait on thee, and thou supremely good,  
 In proper season giv'st to all their food:  
 Thou giv'st, They take, thine hand thou open'st wide,  
 Whence all, that live, with plenty are supply'd.

When once from earth thy presence disappear'd,  
 Man's impious race impending vengeance fear'd.  
 The world's great course was chang'd; no more supply'd  
 With vital spirit; all expir'd, and dy'd.  
 Ev'n Nature's adamant chain was loos'd,  
 And things to their primæval state reduc'd.  
 Soon as thou bad'st the *Spirit* work again,  
 And as at first the fluid Orb restrain;  
 New forms appear'd resemblant of the old,  
 And Earth was cloath'd with vegetable Mold.

But he whose *emblem* GLORY is, whose name  
 JEHOVAH is, for ever IS the same.  
 When e'er his works propitious he surveys,  
 Nature proceeds successful in her ways ;  
 But when in wrath his flaming bolts are hurl'd,  
 The mountains smoke, and tremblings shake the world.

So long as Life supports this breathing frame,  
 I'll sing my Saviour, great JEHOVAH's Name.  
 When Thought of him my ravish'd soul employs,  
 I feel a foretaste of immortal joys.  
 While short on earth the pleasures are, that flow  
 From Sin, and follow'd by eternal Woe:  
 My vital frame! the great JEHOVAH blefs,  
 Adore his Goodness, and his Pow'r confefs.





## A P P E N D I X.

**J**UST after I had printed the sheet, relating to the *manner* in which I apprehend *America* was *first peopled*, I had occasion to go to *Oxford*, and took that opportunity of carrying the sheet with me, in order to have the opinion of a friend upon it. He deferred reading it while I was present, and promised to send me an answer by the post. In the mean time he sent it to the Rev. Mr. *Jones*, of *Wadenbo* in *Northamptonshire*, (a common friend to us both) as having heard that that gentleman had particularly considered the subject, and had discovered a method of solving the difficulty. Soon after which I received the following letter from Mr. *Jones*, containing a solution of the affair in the very same manner as that proposed in this Tract: and as his letter has several *corroborating proofs*, I thought proper to affix it here, as also an extract from a *Spanish* Writer, containing *some other strengthening circumstances*, which I did not discover 'till I had printed the above-mentioned sheet.

### The Rev. Mr. JONES's Letter.

S I R,

**I** HAVE lately been favoured with a sight of some printed Pages, containing that part of your work, in which you account for the peopling of the *American* Continent. The point does well deserve to be ex-

amined and cleared up; many writers, of little knowledge and less Faith, having made the obscure state in which that part of the globe remained for so many Ages, an handle for perplexing weak minds with doubts about the authenticity of some Articles related in the Holy Scripture.

I WAS much pleased to find, that, without knowing it, you are come to the same conclusion with myself, and, in part, by the same premises too. As we have both fallen upon the same scheme, without consulting one another, it is to be presumed, that neither of us can be very far from the truth.

THAT the Western Continent did once communicate more nearly with *Europe* and *Africa*, than it does at present, I was first inclined to believe on reading the following account of *Teneriffe*, one of the *Canary* Islands.—That the whole Island is deeply impregnated with *Brimstone*, and is supposed in former ages to have taken fire, and blown up all at the same time.—That many mountains of huge Stones, calcined and burnt, which appear every where about the Island, were raised and heaved up out of the bowels of the Earth at the time of that general conflagration; and that even the *Pico Teneriffe* itself was raised up by this means to that amazing height at which it is now seen. Huge heaps of these calcined rocks, or pumice stones, are spread for three or four miles round the bottom of the *Pico*, in such a manner, as to persuade any beholder that it must have been generated by the sudden eruption of a Volcano: and even to this day, the mountain smoaks and burns perpetually, and there remain the very tracts of the burning rivers of Sulphur, as they ran all over the South-western parts of the Island, and destroyed the ground past recovery. There is a Volcano in another of the *Canaries*, called the *Palme* Island, which raged so about twelve years



before this account was written, that it caused a violent *Earthquake* in *Teneriffe*, though at the distance of near twenty leagues, and the people ran out of their houses, fearing they would have fallen upon their heads.\*

Now as it appeared to me, from this relation, that the *Pico* was certainly thrown up by the eruption of a *Volcano*,<sup>o</sup> and an *Earthquake*, in all probability the most violent that ever happened in the world, and such as must have made strange havock. The *monument* of this *Catastrophe* being so singular in its height, —a Thought suddenly struck me, that in some very remote age, a great alteration might have been made in this part of the globe, and a vast tract of land swallowed up in the Ocean, of which the *Canaries*, *Azores*, and perhaps the great banks of *Newfoundland* also, are so many remaining fragments, standing like pieces of a wreck above the waves, and still exhibiting to us some foot-steps, as it were, of the *ancient path* that once led from *Africa* to the *West-Indies*. I was so possessed with this notion, that I could not help proposing it to some learned friends, long before I had heard of *Plato's* tradition, as a probable conjecture,

\* For these particulars, see *Dr. Sprat's Hist. of the Royal Society*, p. 200.

<sup>o</sup> *This Supposition* will not at all invalidate the Account given of the *Formation of Mountains*, p. 159; for the *Pico* is no other than a *formless Mass* or *huge Heap of Rubbish*, consisting of *burnt Stones* and *Cinders*, and was as certainly thrown out by a *Volcano* as the famous *Monte di Cinere* in the *Lucrine Lake* was, or as those little *Islands* or rather *Moles* in the bay of *Sant-Erini* in the *Archipelago*, were raised by *subterranean fires* and *combustible Explosions* in the year 1707 [see N<sup>o</sup>. 314 of *Philos. Transf.*]. As neither of these *Eminences* have any thing similar to the *horizontal strata* or *internal Constitution of Mountains*; so they cannot come under the denomination of such, nor ought they to be called *Mountains* or *Islands*, as some writers have named them.

whereby the peopling of *America* might be accounted for; and endeavoured to recommend it to their consideration, by placing a terrestrial Globe before them.

You may imagine then, with what satisfaction I found this opinion confirmed even beyond my hopes; when the passage you have extracted from *Plato's Timæus* first occurred to me. This passage is referred to by *Pliny* the natural historian,<sup>p</sup> and it is hardly to be imagined, that such a curiosity in its kind should escape the notice of so indefatigable a Compiler; though it was of much less value to him then, than to us now. *America* was then unknown; and there was no prospect, that the tradition, which *Solon* pickt up in *Egypt*, would ever be confirmed as an article of true history by the discovery of a new world. Therefore *Pliny* speaks of it with some doubt, inserting the words—*si Platoni credimus*: and some of the ancient Commentators on the works of *Plato*, did for the same reason convert the whole into an *Allegory*. And some excuse may be made for the Critics who did it in those days, but none at all for those who would do it now; as it must appear to any person that will consult the judgment of *Serranus* in this matter, who, in his preface to the *Timæus*, is very severe upon these unseasonable allegorizers, and refutes them copiously from the words of *Plato* himself. It was very ill-judged in *Acosta*, therefore to mention this story from *Plato*, and put it off with the obsolete pretence of it's being an allegorical discourse.<sup>q</sup> He hath indeed urged some reasons in defence of what he says, but they are too trivial to deserve any particular consideration. We

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<sup>p</sup> *In totum (mare scil.) abstulit terras, primum omnium ubi Atlanticum mare est, si Platoni credimus, immenso spatio.* Plin. Nat. Hist. Lib. 2. cap. 90.

<sup>q</sup> *Acosta's Nat. and Moral Hist. of the Indies.* p. 72.

are obliged then to understand it as an historical tradition. Those who are inclined to slight it, and think the Earthquake *Plato* has described is incredible, because some fabulous circumstances are blended with the account, should endeavour to shew us, what could possibly give rise to such a Report in the eastern world: for that *Plato* should so expressly describe an *opposite continent* (*Ἰνὸν καὶ ἀντίτινον ἠπείρου*) such as is actually now discovered, together with the way that led to it from the Streights of *Gibraltar*, and that this strange report should be grounded on no antient knowledge of the *American* continent, and prove to be true afterwards only by accident—all this would be more incredible than the matter reported, which, if the natural monuments of this great Earthquake, still subsisting, are taken into the account, has all the appearance of truth that can be desired.

The celebrated *Abbè le Plusche*, Author of the *Spectacle de la Nature*,<sup>p</sup> tells us, it has been asserted by many learned men, that there was formerly a communication between *Africa* and *America*: but he unfortunately supposes this opinion to have been wholly derived from a mistake in *Ptolomy's* antient Chart of the then-known world, which stretches out the continent of *Africa* too far to the West; and observes withal, that the pretension is defeated by what *Herodotus* relates, of the voyage that was frequently made from the *Red Sea*, round the *Cape of good hope*, to the Pillars of *Hercules*; which could not have been, had the continent of *Africa* been extended to the *West-Indies*. This Objection will not in the least affect any thing you have said upon the Subject: for *Herodotus* is speaking of what was done long after the Division of the continents had

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taken place; and even before that division, according to the Geography of *Plato*, there was a *gulf* which afforded a passage round the western coast of *Africk*, to the mouth of the *Mediterranean Sea*.

No reasonable Objection, therefore, can be made to your Solution of this difficulty. Every candid Inquirer into Antiquity and Physical Knowledge, will hold himself obliged to you for the curious Observations you have thrown in by the way; and the piety of your design must recommend it to every sincere friend of Divine Revelation.

BEFORE I conclude, it may not be impertinent to add, that although the more Southerly parts of the continent of *America* were originally peopled, in your way, from the countries that lie near the *Mediterranean*; it is by no means improbable, that the Northern parts may have received inhabitants from some other quarters of the Globe.

IN a Natural History of *Greenland*, written so lately as the year 1741, by *Hans Egidius*, a *Danish* Missionary, we are informed, that it is yet undetermined whether *Greenland* does not join to *America*, on the North-west side, round *Davis's* Streights. The Historian himself inclines to the affirmative. He adds moreover, that the *Norwegians*, who discovered it in 982, were not the first inhabitants; for that they found wild people on the West-side of the country, whom he takes to have been *Americans*. Now the Country of *Greenland*, to the South-east, is not so far, either from *Iceland*, *Lapland*, or *Norway*, but that various accidents in former ages may have occasioned some communication between them. And thus much for the *North-westerly* parts of *America*. If we go to the *North-easterly* parts, it is still more probable, that some colonies may have been transplanted thither from *Tartary*. Father *Avril*, a *Jesuit-Missionary* of *France*, who with some others

undertook the discovery of a new way by land into *China*, met with a famous Naturalist among the *Muscovites*, who gave him the following account.——

‘ That in the extreme parts of *Tartary*, to the North-east, there is a great River, called *Kawoia*, at the mouth of which is a spacious Island well peopled. The Inhabitants go frequently, with their wives and families, upon the frozen Sea, to hunt the *Bebemoth*, an amphibious animal, whose Teeth are in great request. It happens many times, that being surprized by a sudden Thaw, they are cut off from all communication with the land, and carried away, no-body knows whither, on huge floating Islands of Ice. For my own part (added this philosopher) I am persuaded, several of these Hunters have been carried to the most Northern parts of *America*, which are not far off: and what confirms me in this, the *Americans* of those parts have the same countenance and complexion with those unfortunate Islanders, whom a violent thirst after gain, exposes in that manner to be transported into a foreign region.’ The Historian adds from his own Observation, that there are also, in that part of *America*, several of those creatures which are so common in *Muscovy*, and especially *Beavers*, which might have been conveyed by the same means. But to determine a matter of such importance, it should be enquired, whether there is any affinity between their languages; for if that should appear, there would remain no farther doubt.

As to the Author you have undertaken to confute, he, it seems, would have *America* to have been exempt from that Deluge, by which the rest of the world was overflowed. This, as you justly observe, is con-

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futed by a tradition among the *Americans* themselves concerning the Flood: and it is certainly put out of all dispute by the natural Evidence afforded by the country itself, in which the spoils of the Sea are found as plentifully as in other parts of the world. If I remember right, I once communicated to you some specimens of Fossil bodies that came from thence. Since that time, you must undoubtedly have enriched your Collection with a great many more from the *West-Indies*.

I am, Sir,

(Heartily wishing you all success in your laudable Undertaking,)

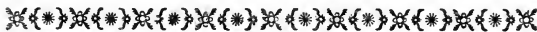
Your very sincere Friend,

WADENHO,

And obedient humble Servant,

June 20, 1761.

W. J.



AN EXTRACT FROM

*L'Histoire de la Decouverte et de la Conquete du PEROU;*

Traduite de L'Espagnol D'AUGUSTIN DE ZARATE,

Par. S. D. C.

A AMSTERDAM; Ann. 1700.

‘MANY doubts and objections have been formed concerning the first people who some ages since dwelt in *Peru*, and it has been often ask'd, How could they get thither, seeing this country is (as it really is) parted by such an extent of ocean from that where the first inhabitants of this world lived? It seems to me that this difficulty may be solv'd by an account given by *Plato* in his *Timeus* or *Dialogue on Nature*, and which he sets down more fully in the following (the *Atlantic*) Dialogue.

‘ There he relates, that ‘ the *Ægyptians* said in honour  
 ‘ of the *Atbenians*, that, after the defeat of some cer-  
 ‘ tain kings who came by sea with a numerous army,  
 ‘ they had part of a vast island called *Atlantique*, just  
 ‘ beyond the pillars of *Hercules*. That this island was  
 ‘ larger than all *Asia* and *Africa* together, and that  
 ‘ it was divided into ten kingdoms by *Neptune*, one  
 ‘ of which he allotted to each of his ten sons, bestow-  
 ‘ ing the largest and best on his eldest son *Atlas*.’ To  
 ‘ this he adds divers particulars concerning the cus-  
 ‘ toms and the wealth of this isle, but above all about  
 ‘ a sumptuous temple in the metropolis, the walls of  
 ‘ which were entirely deck’d and covered with gold  
 ‘ and silver, and the roof covered with copper, with  
 ‘ many other particulars too long to enumerate here,  
 ‘ and which may be seen in the original. It is certain  
 ‘ that many of the customs and ceremonies mention’d  
 ‘ by this author are yet to be seen in the provinces of  
 ‘ *Peru*. From this isle one may pass to other large  
 ‘ islands beyond, and which are not far from the firm  
 ‘ land, near which is the true sea. But hear the words  
 ‘ of *Plato* in the beginning of his *Timæus*, where *So-*  
 ‘ *crates* thus harangues the *Atbenians*, ‘ It is look’d on  
 ‘ as a fact that in times past your city resisted a great  
 ‘ number of enemies who came from the *Atlantic Sea*,  
 ‘ and had taken and possessed almost all *Europe* and  
 ‘ *Asia*; for then this strait was navigable, and near  
 ‘ it was an island just beyond the pillars of *Hercules*,  
 ‘ which they said was larger than *Asia* and *Africa* put  
 ‘ together: from this island was an easy passage to  
 ‘ others that were near it, and opposite the Continent  
 ‘ or the main land bordering on the true sea; for one  
 ‘ may justly call that sea *the true sea* or *ocean*, and  
 ‘ the land I mentioned the *Continent* or *main Land*.’  
 ‘ Just below *Plato* adds, ‘ Nine thousand years ago  
 ‘ happened a great change, the sea surrounding this

“ isle swell’d so high by a prodigious increase of water,  
 “ that in one day and night it cover’d the whole island,  
 “ and swallow’d and totally engulph’d it; and that  
 “ the sea in this place has been ever since so fill’d  
 “ with mud and sands, that no one can sail over it,  
 “ or pass by it to those other islands on the firm land.’  
 ‘ Some deem this relation an allegory as *Marfilius Ficinus*  
 ‘ *cinus* tells us in his notes on *Timæus*. Nevertheless  
 ‘ most commentators on *Plato*, even *Platinus* and *Ficinus*  
 ‘ *cinus* himself look on this account not as a fiction but  
 ‘ an *historical Truth*. Besides; one can by no means  
 ‘ think that the 9000 years which he mentions is a  
 ‘ proof of its being a fable, because according to *Eudoxus*  
 ‘ one must count them after the *Ægyptian* man-  
 ‘ ner, not as *solar*, but as *lunar years*, that is to say,  
 ‘ 9000 months, answering to 750 years. On this  
 ‘ subject one may observe, that all Historians and Cos-  
 ‘ mographers antient and modern, call *that Sea* in  
 ‘ which this island was engulph’d *the ATLANTIC O-*  
 ‘ *CEAN*, retaining even the *very Name* the island bore;  
 ‘ which seems a sufficient proof that there had been  
 ‘ such an island. Admitting then the truth of this  
 ‘ history, no one can deny this island (beginning near  
 ‘ the straits of *Gibraltar*) to have been of that extent,  
 ‘ from the north southward and from the east west-  
 ‘ ward, as to be more than as large as *Asia* and *Africa*.  
 ‘ By the other *neighbouring* islands are doubtless meant  
 ‘ *Hispaniola*, *Cuba*, *Jamaica*, *St. Johns*, and those on  
 ‘ the Coast. By the *Continent* or *Firm-land*, (opposite  
 ‘ to those isles) mentioned by *Plato*, is certainly meant  
 ‘ *That land* which is even *to this day* called *Terra Fir-*  
 ‘ *ma*, with the other provinces, which from *Magellan*  
 ‘ northward comprise *Peru*, *Popayan*, *Cas-del-oro*, *Pa-*  
 ‘ *raguay*, *Nicaragua*, *Guatemala*, *New-Spain*, *Seven-*  
 ‘ *towns*, *Florida*, the *Bacallaos*, and north up to *Nor-*  
 ‘ *way*. Without doubt this vast tract of land is



' larger than the three quarters of the then known  
 ' world. And one must not be surprized at this new  
 ' world's not having been discover'd by the *Romans*,  
 ' or any of those other nations that at different times  
 ' abode in *Spain*; because one may reasonably imagine  
 ' that the fore-mentioned supposed difficulty of na-  
 ' vigating this sea then remained. This indeed I  
 ' have heard said, and can see no difficulty in believ-  
 ' ing that this should easily prevent the discovery of  
 ' this new-world mentioned by *Plato*. The authority  
 ' of this philosopher is enough to convince me of  
 ' the truth of this affair, and I make no question  
 ' but our *new found world* is the same as that main  
 ' *Land* or *Continent* of which he speaks; as whatever  
 ' he has said of it perfectly corresponds with our mo-  
 ' dern Discoveries; particularly in what he says of  
 ' this land, that it is adjacent to the *true sea*, which  
 ' is what we now call the *Great South Sea*; in com-  
 ' parison of the vast extent of which, the *Mediterranen*  
 ' *Sea* and *Northern Ocean* are but as rivers. Having  
 ' cleared up this difficulty thus far it seems no way  
 ' hard to suppose, that men could easily pass from the  
 ' *Atlantic* and its *neighbouring Isles* to what we call the  
 ' *Continent* or *Terra Firma*, and thence by land or  
 ' even by the *South Sea* to *Peru*.

' Thus I have declared what seems to me most  
 ' probable on a subject so perplexed, on account of its  
 ' antiquity, and also because one can get no intelli-  
 ' gence from the inhabitants of *Peru*; who know not  
 ' the use of letters or writing to preserve the memory  
 ' of things past. In *New Spain* indeed they have  
 ' certain pictures which serve them for letters and  
 ' books; but in *Peru* they have nothing but knotted  
 ' strings of various colours: It is true, by means of  
 ' these knots, and the distance they are set at from  
 ' each other they comprehend (though but confusedly)

‘ any thing, as I shall shew at large in this history of  
 ‘ of *Peru*. In regard to the discovery of these vast  
 ‘ tracts of land, what *Seneca* says, as it were in a pro-  
 ‘ phetical sense, in his *Medea*, seems to me to be not  
 ‘ unapplicable,

“ Venient annis Sæcula feris,  
 “ Quibus Oceanus vincula rerum  
 “ Laxet, novosque Tiphys detegat orbés.  
 “ Atque ingens pateat tellus,  
 “ Nec fit terris ultima Thule.’

“ In latest times our hardy sons shall brave  
 “ Stern Oceans’ rage, and stem the distant wave,  
 “ In them reviv’d shall *Tiphys* wond’ring see  
 “ The new-found world, emerging from the sea;  
 “ No more shall *Thule* be the utmost bound,  
 “ But earth from pole to pole be searched round.”

F I N I S.





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