

*obica.* The Sides of this Kettle are very steep, in some Places as steep as the Descent on the outside of the Sugar-loaf. At the Bottom of this Kettle we all were, where lie a great many very large Stones, some of them higher than our Heads. The Earth that is withinside the Kettle, being roll'd up long and put to a Candle, will burn like Brimstone. Several Places within side the Top of the Pike are burning, as on the outside; and in some Places if you turn up the Stones, you will find very fine Brimstone or Sulphur sticking to them. At these Holes where the Smoak comes out, there also comes forth a great Heat, so hot that one cannot endure one's Hand there long. At the *N.* by *E.* side within the Top is the Cave where we found the dead Goat; in which Cave sometimes the true Spirit of Sulphur distils, as they say; but it did not drop whilst I was there.

The Report is false about the Difficulty of breathing upon the Top of this Place; for we breath'd as well as if we had been below; we eat our Breakfast there, and I was up in all for about two Hours and a Quarter.

Without doubt the Quicksilver would have fell very much upon this high Place, if I had had but the good Fortune to have got a couple of Barometers to try.

Before Sun rose, I think the Air was as cold as I have known it in *England* in the sharpest Frost I ever was in; I could scarcely endure my Gloves off. There was a great Dew all the while we were there, till Sun-rising, which we could find by the Wetness of our Cloaths; but the Sky look'd thereabouts as clear as possible.

A little after Sun-rising we saw the Shadow of the Pike upon the Sea, reaching over the Island of *Gomera*; and the Shadow of the upper Part, *viz.* of the *Sugar-loaf*, we saw imprinted like another Pike in the Sky itself, which look'd very surprizing: But the Air being cloudy below us, we saw none of the other Islands but *Grand Canaria* and *Gomera*.

At Six on *Thursday* Morning we came down from the Top of the *Sugar-loaf*; at Seven we came to the Cistern of Water which is reported to be without Bottom. This the Guide says is false; for about seven or eight Years ago, when there was a great *Vulcano* in this Country, the Cave was dry, and he walked all about it, and said that the deepest part of Water, when we were there, was not above two Fathoms.

I guess the Cave to be in Length about 35 Yards, in Breadth about 12, and its ordinary Depth 14 Yards from Top to Bottom.

Upon the furthest Side grows white Stuff, which the *Pike-man* told us was Salt-petre. There was both Ice and Snow in it when we were there; and the Ice was of a great Thickness, cover'd with Water about Knee deep. We let down a Bottle at the End of a String for some of the Water, in which we put some Sugar and drank it; but it was the coldest I ever drank in my life. The Ice was broken just under



under the Mouth of it, where we could see the Stones lie at the Bottom, for it was very clear. A little to the right Hand within this Cave the Ice was risen up in a high Heap, in the Form of a Spire Steeple, or like a Sugar-loaf; and in this Place I believe the Water comes in.

In our Way home we came by a Cave 3 or 4 Miles from the Pike, where there are a great many Skeletons and Bones of Men; and some say there are the Bones of Giants in this Cave; but we know not how many Bodies are laid here, nor how far the Cave may go.

We came home to the Port about Six o'Clock in the Evening on August 15. 1715. N. S.

XII. After I had been at *Zurich*, I resolved to go myself and see the Mountains of Ice in *Switzerland*. Accordingly I went to the *Grinlewald*, a Mountain two Days Journey from *Bern*. There I saw, between two Mountains, like a River of Ice, which divides itself in two Branches, and in its way from the Top of the Mountains to the Bottom swells in vast Heaps, some bigger than *St. Paul's Church*. The Original of which seems to have been this. These Mountains are cover'd all the Year with Snow on their Tops; this Snow has been melted in the Summer, and has fallen to the Bottom, where the Sun never reaches. There it has frozen, which happens more easily to melted Snow than ordinary Water. Thus every Year it has increased, till it has touched the very Top. The Reason why the Water has always frozen, tho' the Sun in the Middle of the Mountain, and higher, shines upon it some part of the Day, is, that the melted Water goes under the Ice already form'd, and there freezes, and so expanding itself, raises the Ice above it, and sometimes makes Cracks in it, that frighten the whole Neighbourhood: The Reason appears plainly, because the upper Surface being solid, cannot be dilated without making great Chinks, and that with a terrible Noise. They told me upon the Place, that every seven Years the Mountain increases, and the next seven decreases: But I doubt their Observation is not exact, and I suspect that they say it to seem to know something that is singular. Besides, there are none there that have themselves observ'd it long enough, to affirm any thing of that kind certainly. If there is any Ground in that Observation, it seems to be, that in the hottest Summers it increases, and in the more moderate ones decreases, there being then less melted Snow; in which Case it is at present, as of late the Summers have been moderate. (*Vid. supra, Vol. II. C. iii. S. lix.*)

*Of the Icy Mountains of Switzerland, by W. Burnet, Esq; n. 320. P. 310.*

XIII. The *Cape of Good Hope*, which is part of *Monomotapa*, and the Southernmost Part of *Africa*, lies in the Latitude of 34 Degrees 30 Minutes South, and 16 Degrees 15 Minutes East of *London*. It was first, that we know of, discover'd by *Bartholomew Diaz*, A. D. 1493, under *John II. King of Portugal*. He gave it the Name of the

*An Account of the Cape of Good Hope, by Mr. J. Maxwell. n. 310. P. 2423.*



*Cape of Tempests*, because of the Storms he met with there, with which 'tis not strange that it is sometimes troubled; as likewise with a Sea that runs very high, and makes it ill riding at Anchor there when the Wind is at North-West, seeing it is a Shread of Land stretch'd out into a vast Ocean on each side: But King *John* gave it the Name of *Bona Esperança*, or of *Good Hope*, which it still retains; because that when that Cape was doubled, he had good Hopes of finding out a Way by Sea to the *East-Indies*.

Hottentots.

The *Hottentots*, Natives of this Place, are a Race of Men distinct both from *Negroes* and *European Whites*; for their Hair is woolly, short and frizled, their Noses flat, and their Lips thick; but their Skin is naturally as white as ours, as appear'd by the *Hottentot* Child brought up by the *Dutch* in their Fort here. Their Stature is universally of a middle Size; they are clean Limb'd, well proportion'd, and very nimble. I never saw a fat Person among them.

They besmear their Faces and Bodies all over with Suet, or other Oleaginous Stuff; which, together with exposing their Bodies to a warm Sun, makes their Skin of a tawny Colour, and causes them to stink so, that one may smell them at a considerable distance to the Windward. They adorn their Hair, which is always clotted with Grease and Nastiness, like the Thrums of a Mop, with Shells, pieces of Copper, &c. Both Sexes are clad with the Skin commonly of a Sheep, but sometimes of such wild Beasts as they happen to kill, the hairy Side outward in Summer, and inward in Winter, of which I have seen 'em pick and eat the Lice in the Streets. The Women wear Skins cut in Thongs about their Legs, to the Length of a great many Yards; which, when dry, with the Inside out, look so like Sheeps Guts, that most Strangers mistake 'em for such. The Men hang their Privities in a Bag, and the Women cover theirs with a Flap or Apron made of Skin. The Women wear a Cap of Skin just dried and stitch'd together, whereas the Men commonly go bare-headed; they go bare-footed; except that when they travel, they wear a piece of Skin fasten'd about their Feet. Their Weapons are Javelins, with which they are very dextrous at hitting the Mark; and Bows with poison'd Arrows, which kill, as I am inform'd, upon drawing Blood: But what they are envenom'd with, I could not learn. Their Houses are Hemispherical, made of Mats, supported with Stakes, so low that a tall Man cannot stand upright in one of them. These they remove upon Occasion, as the Ancient *Nomades* did their Tents.

By all that I have seen and heard of them and other Nations, they are the most lazy and ignorant part of Mankind; there are no manner of Arts practis'd among them, no Plowing or Sowing; no going to Sea, so much as in a Boat; no use of Iron or Money; no Notion of God, Providence, or of a future State; no Tradition of Creation or a Flood, no Prayers or Sacrifices, no Magical Rites; nor, in fine, any Notion of any invisible Being, capable of doing them either Good or Harm,



Harm, upon the strictest Enquiry that I could make of Men of Sense that had liv'd some time upon the Place; so that I believe their Ignorance hardly can be parallel'd. The only thing that looks like the least Knowledge of any thing of this kind among 'em (in as much as I could learn) is a Custom they have in Moon-shiney Nights of dancing in the Fields; of which if you ask them the Reason, all their Answer is, that it is a Custom of the *Hottentots*, and was so of their Fore-fathers; and that is all they can tell you of the Matter. Now whether it be that they rejoice in its Light, which dispels that Darkness of which they are then most sensible; or whether they think it a rational Being endued with Freedom of Will, because of its various Change of Forms, or for what other Reason I will not pretend to determine: However, as to no other thing, so to this do they pray or sacrifice. Nevertheless some Voyagers have upon this ground, how truly I will not say, confidently writ, that they worshipp'd the Moon; and upon Enquiry I could not find that they took so much, nor indeed any such Notice of the Sun or Stars: Which former at least one would think a People so grossly ignorant would pay some Respect to, if they worshipp'd any God, that being the most glorious Object of their Senses; accordingly we find it affected all Heathen Nations, as well the more Barbarous as the most Polite; in which single Object *Macrobius* says all their Worshipping center'd. Their great Ignorance, I suppose, may be in part caused by *Africa's* being peopled (as is probable) by that end of it which joins to *Asia*; so the more the Inhabitants spread themselves towards this Southern Extream, the more they were cut off from conversing with the more civilized Part of the World. It is probable, I think, that they were propagated to this Place by the Eastern Coast of *Africa*, the Western being now, and always having been, as far as we know, inhabited by *Negroes*, from whom it is not very probable that these of so different a Colour should have sprung.

All the Resemblance they have of Government, is, that in every Neighbourhood the Eldest is first in Order and Dignity; his Advice, as to what concerns the whole, being most follow'd, as having most Experience. The Ceremony of Marriage is perform'd among them by the eldest Person in the Company's sprinkling the Persons to be married with his Urine; upon which, and cutting out one of the Man's Testicles, the Business is over. This several that liv'd in the Place affirm'd to me for a certain Truth. Being inquisitive to know the Truth of this, I had the Curiosity to search several of them; in two of which I could find but one Testicle, they (I suppose) being married, as the rest who had two were not: Which however shews the Mistake of *Nieuboff* and others, who assert, that the *Hottentots* cut out one of the Testicles of all their Male Children as soon as they are born (according to *Nieuboff*,) or at the Age of nine or ten Years (according to others,) and that, to make them the more swift and nimble; but how that Fancy should come into their Heads, I cannot tell. When



a Woman bears Twins among them, she exposes one to Death by Hunger or Cold, and nurses the other; the Reason of which two last Customs is alledged by some to be the Fear they have of their Nation's growing too numerous. The Custom of revenging rather than punishing Adultery with Death, has prevail'd among them. I was inform'd there, that they abhorr'd *Polygamy*, tho' some Writers asserted the contrary; but (perhaps) they are as well mistaken in that, as in the Semicastration of all their Males. When any Person grows decrepid with Age, their Children, or nearest Relations shut them up in their Houses, and starve them to death: They bury their Dead with the Skins they wore when alive about them.

Their Food is for the most part Roots, but chiefly one, by the *Dutch* call'd *Ontee*, which is roundish, about the bigness of one's little Finger, and hot in the Mouth; their Drink is Milk and Water. When they kill a Sheep, or a Cow, they eat the Guts and Garbidge, either slightly broil'd, or quite raw; they are great Lovers of *Tobacco* and *Brandy*, to purchase which from the *Dutch*, is all the Use they have of Money. They are not *Cannibals*.

There was a *Hottentot*, who liv'd for some considerable time in *Holland* and the *East-Indies*, and had learned to speak *Dutch* and *Portuguese* very well, whom, upon his Return home, his Wife, Children, or Friends, could not endure; nor would they converse with him, till upon resuming his ancient Habit, Diet, and Customs, he had return'd to their way of Living.

Notwithstanding their great Ignorance, they distinguish several of the more remarkable Stars by Names of their own imposing: Nevertheless, they have no Distinction of Weeks, of Months, or of Years, any otherwise than by their *Rainy Seasons*; for if you ask a *Hottentot* how old he is, he answers so many *Rains*. They watch the *Elephants* where they use to water, whom they shoot in the Eye, where only they can wound them.

*Beasts.*

This Country produces Lions, Tygers, Elephants, Rhinoceroes, Elks, (whose Hoofs are here said not to have that Virtue ascrib'd to them in Northern Climates,) Leopards, wild Asses, of which one sort is finely streak'd with white and dark Brown; several sorts of beautiful wild Goats, Jackalls, Baboons, Monkeys, Deer, large Cows, and large Sheep without *Horns*, with *Hair* like a Goat, instead of *Wool*, and with *large Tails*, but not (in as much as I have seen) so large as some report them, *viz.* of 25 lb. Weight, (the Flesh however of both which, is very good;) small Horses, &c. Ostriches, Pelicans, Hawks, Magpies, wild Peacocks, Cranes, Guinea-Hens, Pengwins, Flamingo's, Rock-Ducks. Partridges, Pheasants, Geese, common Hens, Turkeys, and Ducks, &c. Here are likewise *Manatees*, or *Sea-Cows*; they are low, very thick, and ill-shaped, have very short Feet, and yet are very swift, have no Hair but what grows about their Nostrils, have large Teeth, but are no Enemy to Man; they are not easily wounded, live much in Rivers, and are very shy. Here are Serpents of various kinds,



kinds, with which, however, they are not much infested. Their Soil produces most sorts of Fruits and Plants that grow with us, as Grapes of several kinds, Apples, Quinces, Olives, Oranges, Apricocks, Cherries, Aloes of a great many kinds, but none (that I saw) of the right sort, such as *Socotra* produces, Pompions in abundance, Cabbages, &c. Corn, as Wheat, Barley, &c. of *Dutch* Cultivation. Here are likewise Lizards, Salamanders and Porcupines. This Place is fit to produce whatsoever is planted in it, the Soil and Climate conspiring to its Advantage.

The *Dutch East-India* Company are said to have bought this Place of the Natives; but seeing they have no Government, to whom, in that Case, could they apply themselves? Of whom could they buy it? But if they did, they certainly had a good Bargain of it for a little Tobacco and Brandy: But the *Dutch* are not so very scrupulous as to trouble themselves much about buying, in such Cases, what they can take by Force. Here however they have settled, for the Convenience of a Rendezvous for their homeward bound *East-India* Fleet; and they have possessed themselves of the Country 60 Miles from the Place of their first Settlement: Besides their principal Town in *Table Valley* (so call'd from a neighbouring Hill, call'd *the Table Land*, because of its Figure, from whence also the adjoining Bay is call'd *Table Bay*) where they have a Fort, an Hospital, a supplied Church with about 300 Families; they have two other small Towns in the Country, call'd *Dragenstein* and *Stallambufs*, inhabited for the most part by *French Protestants*, who make most of the Wine the Place produces, which is not inconsiderable, either for Quantity, Quality, or Variety, resembling *French Claret*, *Rhenish*, *Burgundy*, &c. they are about 120 Families, and have one Minister between both Villages, a *Dutchman* who speaks *French*.

In this Place are reckon'd about 2000 Persons fit to bear Arms, and about 600 Soldiers; no Person that is not in their own Service, tho' a *Dutchman*, is admitted into their Fort. They have prohibited the *English* to set up among them, tho' they have served the usual Time five Years in their Service, which Liberty they deny not to those of any other Nation; and this I am inform'd, is their Practice in all their *East-India* Settlements: However, when any *English* Ship happens to touch here, disabled in Masts, Rigging, Anchors, &c. they supply them for their Money out of their Stores.

Instead of Customs and Excise, they use Monopolies; for the Monopolies of Wine of the Growth of the Place this Year 1706, was paid 39000 Guilders, imported Brandy 3000, and so of the rest.

All the publick Payments they make, are either for the Watch, —Lions. or for killing of Lions, 20 Dollars Reward being given for killing a Lion, and 10 for a Tyger. The latter they hunt; but the former they only dare attempt by Stratagem, whom they thus destroy: When a Lion in the Night-time gets among their Cattle, he commonly kills



kills more than he eats at that time, whither he seldom fails to return the next Night to eat up the rest; but before he comes they take Care to set Snares about the Prey, with Muskets so disposed, that in coming at it, he must of necessity draw the Trickers, the Muzzles being so planted, as that they seldom miss him; but if he be not kill'd outright, the Muskets are sure to feel his Fury; for he gnaws the Stocks, and imprints the Marks of his Teeth in the very Iron; and tho' they are able to go away, there they are known to watch for three or four Days to see who comes to look after the Execution, whom they set upon if they be not well aware.

A sort of Pilgrims in the *East-Indies*, whom they call *Fouquiers*, and who often have Occasion to travel thro' Desarts, have a strange Dexterity in killing these wild Beasts; for when he sees one of them making towards him, he faces him, kneeling on one Knee, and holds towards him a short Spear in his left Hand, upon which the Beast making a Leap at him, pitches and fixes his Body, and then he runs down his Throat a Poniard which he carries in his Walking-staff, and so kills him. I had the following Account concerning a Tyger from an Eye-Witness.

The *Colchester*, an *English East-India* Man, was at that time in *Rogues River* in *Bengal*; it was Night when several of the Ship's Company happen'd to be ashoar in a Tent they had pitch'd to be merry in: Mr. *Ravenscraft*, the second Mate, had just put on a clean Shirt; he happen'd to be the farthest in the Company from the Door, with his Face opposite to it, when a Tyger rush'd in among them, seized him, and carried him off in spight of them, without having so much as a Squeak for his Life. I suppose the glaring of the white Shirt, affecting the Tyger the most sensibly of the Objects that were before him, made him fix upon him rather than the rest. The next Day, upon Search, they found some Remnants of his Body in an adjacent Wood. When a Tyger leaps at a Man, if his first Aim be avoided, he never, as they say, makes a second Attempt.

Monsoons.

The Winds which blow at the *Cape of Good Hope*, are of that kind which are called *Monsoons*; for between the Beginnings of *March* and *September*, (which is their Winter) the Wind blows for the most part between the North and the West, during which time they have not much fair Weather, from which rainy Season the *Hottentots* compute their Year; but during the other half Year, the Wind generally blows between the South and the East, accompanied with very fair Weather: There often times come down from the neighbouring Hills most sudden and violent Gusts of Wind upon the neighbouring Parts.

The Company's Garden, which is about 970 of my Paces long, and 230 broad, is not now in that fine Order it was in during this Governor's Father's Time, when it was divided into four Parts; in each grew abundance of the more remarkable Vegetables belonging to its corresponding Quarter of the World; but tho' the Climate, Soil, and Situation



tuation are very favourable, 'tis now much neglected both in respect of its Plants and Walks, neither of which are extraordinary.

I met here with one *Teunis Gerbrantzen*, Master of a *Dutch* Ship, who in the Year 1690 was at *Terra di Natal* on the Eastern Coast of *Africa*, in the Latitude of 30 Degrees South, distant from the *Cape of Good Hope* about 800 Miles, where he said he bought the Place for the *Dutch East-India Company* for 20000 Florins. Coasting thence to the *Cape of Good Hope*, his Ship was cast away; but they all got safe ashore, who, to the Number of 18, set out by Land for the Cape, distant about 200 Miles, where only four of them arrived, all the rest dying by the way, through Extremity of Hunger, Thirst, or Heat, except two or three that were kill'd by the *Hottentots*; they met with no wild Beasts by the way, Elephants excepted, which they saw in great Numbers. In the Year 1705, *Gerbrantzen* went again to *Terra di Natal*, the late King's Son then reigning, to whom he spake of the former Agreement with his Father. *My Father*, answers he, *is dead; his Skins (i. e. Cloaths) are buried with him in the Floor of his House, which is burnt over him, and the Place is fenced in, over which none must pass; and as to what he agreed to, it was for himself; I have nothing to say to it.* So *Gerbrantzen* urg'd it no farther, having no Orders concerning it from the Company. At his last being there, he met with an *English* Man, who was left there *A. D.* 1698; he had two *Hottentot* Wives, and Children by them, but would not return with him to *Europe*, lest his Wives and Children should be slain in his Absence.

When I was at the *Cape of Good Hope*, I met with one Mr. *Kolbe*, —Salt. a *Prussian*, who told me that the common Salt, made use of there by the *Dutch*, was left in hollow Places of the Earth's Surface, after the Sun had evaporated the Rain Water. The Matter of Fact seems to me hardly credible: But if it be so, I think it can hardly proceed from any other Cause, than the Rain's dissolving a Salt contain'd in the Earth, which upon the Rain's being evaporated, remains in the Bottom; which is the more probable, because that within five Leagues of the Fort is the Salt-Bay, which has its Name from the vast Quantity of Salt digged near it.

XIV. The first Letter directed to Dr. *Woodward*, is dated at *Boston* An Extract in *New-England*. Nov. 17, 1712. In this the Writer gives an Ac- of Letters count of a large Work in Manuscript, in two Volumes in Folio, but from Dr. C. does not name the Author. This is a large Commentary upon some Mather, from Passages in the Bible, interspers'd with large Philosophical Remarks, New-Eng- land. n. 339. taken out of Natural Historians, and the Observations of himself and p. 62. others, more particularly as to Matters observed in *America*, whence he entitles the Work, *Biblia Americana*. This Work Dr. *Mather*, recommends to the Patronage of some *Mecænas*, to promote the Publication of. As a Specimen of it, he transcribes a Passage out of it, being a Note on that Passage in *Genesis*, Chap. vi. ver. 4. relating to



Of large  
Bones.

to Giants; and confirms the Opinion of there having been, in the *Antediluvian* World, Men of very large and prodigious Statures, by the Bones and Teeth of some large Animals, found lately in *Albany* in *New-England*, which, for some Reasons, he judges to be human, particularly a *Tooth*, brought from the Place where it was found to *New-York*, 1705, being a very large Grinder, weighing four Pounds and three Quarters, with a Bone, suppos'd to be a Thigh-bone, 17 Foot long. He also mentions another *Tooth*, broad and flat like a Fore-Tooth, four Fingers broad; the Bones crumble to pieces in the Air after they are dug up; they were found near a Place call'd *Cluverack*, about 30 Miles on this side *Albany*. He then gives the Description of one, which he resembles to the Eye-Tooth of a Man: He says it has four Prongs, or Roots, flat, and something worn on the Top; it was six Inches high, wanting one eighth, as it stood upright on its Root, and almost thirteen Inches in Circumference; it weigh'd two Pounds four Ounces *Troy* Weight. There was another, near a Pound heavier, found under the Bank of *Hudson's* River, about fifty Leagues from the Sea, a great way below the Surface of the Earth, where the Ground is of a different Colour and Substance from the other Ground for seventy-five Foot long, which they suppose to be from the rotting of the Body, to which these Bones and Teeth did, as he supposes, once belong. *It were to be wish'd he had given an exact Figure of these Teeth and Bones.*

Plants.

The second Letter is dated *Nov. 18, 1712*, from *Boston*, as all the following are. In this he treats of the Plants of *America*; and in the first Place, offers a Conjecture of his concerning the *Shittim* Wood, mentioned in the Sacred Writings to be made use of for the Ark, &c. It is said to be not, as most other Woods, subject to rot: He judges that it was the black *Acacia*; that the *Gopher* Wood was the *Juniperus arbor tetragonophyllos*, frequent in the *East-Indies*, &c. He observes that the *Indians* often perform very great Cures with their Plants, of which there is a great Variety, differing from the *European*, which he promises a Catalogue and Description of; and, for the present, instances in some. As, a Plant efficacious in curing *Inflammations*, whence, they call it *Anti-erisypelas*; it grows plentifully in the Woods: A Chemical Oil extracted from it, taken inwardly, does Wonders in absorbing scorbutick Salts. Another Plant, which goes by the Name of *Partridge-Berries*, excellent in curing the *Dropsy*; a Decoction of the Leaves, being drank several Days as a Tea, discharging a vast Quantity of Urine, as long as the Disease lasts; after which it may be drank without provoking Urine observably. Gouty Persons drink it with Benefit.

The Root, call'd the *Bleeding-Root*, curing the *Jaundice* in five or six Days.

Another for *Gangreens*, of which he does not give the Name.

Another Specifick for the Bite of the *Rattle-Snake*, and another for *Quinsies*, or sore Throats. A Plant, call'd by the *Indians* *Tattutipang*,  
infallible



infallible for the *Lues Venerea*, the Root being used in a Decoction, and drank half a Pint; a Cataplasm of the same Root, bruised, apply'd to the Ulcers, cures them also.

A Thistle, call'd the *Boar-Thistle*, very short and prickly, with a large and long Root. To this they add a Root call'd the *Cancer-Root*, and a sort of *Devil's-Bit*: A Decoction of which three Roots is a Cure for the *King's-Evil*, tho' very far gone, a small Quantity being drank every Day, and the bruised Roots apply'd to the Scrophulous Tumors.

The third Letter relates chiefly to the *Birds* of that Country; where, *Birds.* he says, they have many of the same *Species* with ours in *England*. He mentions very large wild *Turkeys*, some weighing 50 or 60 Pound; but the Flesh is very tough and hard. He takes notice of a very large *Eagle* with a great Head, soaring very high, as all of that *Genus* do. As to the Itinerants, he takes notice of vast Flights of *Pigeons* coming and departing at certain Seasons: And as to this, he has a particular Fancy of their repairing to some undiscover'd Satellite, accompanying the Earth at a near Distance.

The next Letter relates to *Antipathies*, and the Force of the *Imagina-* *Of the Force*  
*tion.* As to the first, he says, A Gentlewoman of his Neighbourhood *of Imagina-*  
swoons upon the seeing any one cut their Nails with a Knife; which if *tion, &c.*  
done with a Pair of Scissars, has no effect upon her. The Wife of a Person vomiting upon seeing her Husband take a Vomit; the Patient that took it being not mov'd, but forced to take a fresh Emetic.

Some Histories are here related of the *Maculæ Maternæ*. One particularly, of a Woman longing for Peas; but refusing to gratify her Desire, for fear of a sort of Bug, with which at that time most of their Peas were infested, this Woman's Child, when born, had an Excrecence on the Forehead resembling one of those Peas; with a black Speck, as the buggie Peas had, which after some time dry'd away and shell'd out, they fancy'd, as the Bugs are observ'd to leave the Husk of the Pea.

This Letter concludes with an Account of a Stone generated under the Tongue, near the Root.

The fifth Letter gives an Account of some *monstrous Births*, but nothing very observable.

The sixth Letter relates the Stories of some Persons that had Informations of Medicines for the Distempers they lay under in their Dreams.

The next relates the Cures of several Wounds in Persons, which were judg'd mortal.

The next Letter, being the first to Mr. *Waller*, is dated at *Boston*, *—Astrono-*  
*Nov. 24. 1712.* In this he observes, in the first place, That the *Indians* *mical Matters:*  
have no Division of Time, except by *Sleeps*, *Moons*, and *Winters*. Altho' the *Indians* have not divided or distinguish'd the Stars into Constellations, yet it is observable that they call the Stars of *Ursa major*, *Paukunarawaw*, that is, the *Bear*: and this long before they had any Communication with *Europeans*. He says, there is a Tradition among them,



them, that in *November* 1668, a Star appear'd below the Body of the Moon within the Horns of it. In the next place he mentions the *Evening-Glade*, first taken Notice by Dr. *Childrey*, to be constantly observed there in *February*, and a little before and after that Month; adding, that the Cause of that Appearance must be sought for above the Atmosphere. Then he gives a new Method of his own for finding the *Julian* Period, adding a Table for that purpose.

The next relates the Appearances of several uncommon *Rainbows* and *Mock-Suns*. On the 2d of *January*, in a clear Sky, but very cold, the Sun was from ten o'Clock, for near three Hours after, attended with four *Parbelia*, in the Midst whereof were two *Rainbows*.

About six Weeks after this, in a Day much colder than used to be at that time of the Year, the Air a little hazy, a little after one of the Clock, for about half an Hour, four *Mock-Suns* were seen.

He observes, that these Appearances with them are of great Varieties, each usually differing in some respect from the other.

A Murder  
discover'd by  
a Dream.

The next Letter has the Relation of a strange Discovery of the Murder of a Person in *England*, to his Brother *Joseph Beacon*, at that time at *Boston*, in a Dream; the Person wounded appearing with the Wound on his Head; with the Attestations of several Persons as to the Truth of it. The Information by the Dream was on the 2d of *May* 1687, about five of the Clock in the Morning, on the very same Day his Brother died at *London* of the Wounds he had received in *April* before: Of which Misfortune his Brother *Joseph Beacon* neither had, nor could have any Notice, till the next Communication by Shipping, towards the latter end of *June* following; when he had a Letter of his Brother's Death, and the Cause of it, agreeable to his Dream. The Relation seems to be well attested.

Rattle  
Snakes.

The following Letter treats chiefly of the *Rattle Snake*, hinting at the Occasion of its Name, from the Rattle in its Tail, in which he says are sometimes twenty of those loose Rings, though he does not come in with the Opinion, that one is added every Year. Next follow these Observations: That the more Northerly they travel, these Snakes are less numerous, as well as less venomous; nor, as it is said are any seen to the North of *Merimack* River, which is about forty Miles North of *Boston*. Here he relates a Story constantly affirmed by the *Indians*, that these Snakes frequently lie coiled at the bottom of a great Tree, with their Eyes fixed on some Squirrel above in the Tree; which though seeming by his Cries and leaping about to be in a Fright, yet at last runs down the Tree, and into the Jaws of the Devourer. Then he relates, that the Winter-abode of these Snakes is in the Cleft of inaccessible Rocks, from whence in the Spring they come forth a sunning themselves, at first very feeble, which is their chief time of destroying them. At this time the *Cystis* or Gall-Bladder in these Snakes is full of an acid azure-colour'd Juice, which they squeeze out into a Glass; but it is so spirituous, that if the  
Glass



Glass be not immediately stopped, it will soon evaporate: This Liquor therefore they mix with a convenient Quantity of powder'd Chalk, or *Indian Meal*, and use it as a proper Medicine against the venomous Bite of this Snake. Some have named it *Trochisci Connecticutiani*, from the *Connecticot* Colony. It is observable, when the Summer Heats come on, the Snakes have no longer this azure Liquor in their Gall-Bladders, in which there is only found a black thick Sediment, of no known Use; at which time they think the foremention'd spirituous Juice is carried to, and lodged in their Gums, and so conveyed or thrown by the hollow of the Teeth into the Wound, when they bite, having received another Digestion, and higher Exaltation, by passing through several Strainers and Glands, before it arrives to the Gums. As an Instance of the Virulence of this Liquor, he tells us, that a Traveller killing one of these Snakes, suffered the enraged dying Viper to bite the End of his Switch, with the Lashes of which he had disabled him; and a Fly by chance disturbing one of his Temples as he rode on afterwards, he rubb'd his Temple with the other End of the Switch, which, as he relates it, immediately caused his whole Head to swell to a great Excess; the Poison, as he supposes, permeating the whole Length of the Switch. He adds another Relation as to the penetrating Quality of this Poison: A Person provoking a *Rattle-Snake* to bite the Edge of a broad Ax he had in his Hand, the Colour of the steeled part bitten was immediately changed, and at the first Stroke he made with it in using his Ax, the so discoloured Part broke out, leaving a Gap in his Ax. But to return to the *Troches* made of the Gall, he says it is a Cordial Sudorific, and so good an Anodyne, that he knows some who take three or four Grains of it to compose them to Rest after Travel. 'Tis good in all Fevers, especially the malignant. 'Tis an infallible Remedy for Obstructions incident to Women upon catching cold in Child-bed. Being taken in a convenient Quantity, twelve Hours before the Fit, it certainly cures a Quartan Ague. The Dose is fourteen Grains, more or less, according to the Circumstances of the Patient, in any Vehicle.

The next Letter treats of the Effects of *Thunder* and *Lightning* very frequent with them, which from its frequent destroying Animals, without any visible Hurt on the external Parts, he compares to the *Jewish* Punishment of pouring melted Lead down the Throats of the condemn'd, which they called *Combustio Animæ*. Tho' he likewise observes, some have had their Hair singed with Marks on their Skin like those made by small Shot; some have had their Bones made limber like a Gristle. The Captain of their Castle was found dead in his Bed after a Storm of *Lightning*, without any apparent Hurt. Here he relates a Passage, of which an Account has some time since been given in the *Philosoph. Transact.* † but is here confirmed, That July 24th, 1681, a Ship, whereof one Mr. *Lad* was Master, about 100 Leagues from *New-England*, in Lat. 38. met with a violent Storm of *Thunder*, which

—Thunder.  
and Light-  
ning.

† *Vid. supra,*  
V. II. C. I.  
S. lx. 2.



which did much damage to the Ship; at which time a bituminous Matter fell on the Ship, burning with that Violence, as not to be extinguish'd with Water till it was all burnt out, smelling strongly like fired Gun-powder; and when they came to observe the Stars at Night, they found the Polarity or Direction of their Sea-Compasses to be changed, the North Point being turn'd to the South, and so continued to do for the rest of the Voyage for a thousand Leagues. He adds farther, that one of these Compasses continues to do so still. He makes a *Query* whether this may be accounted for by Mr. Boyle's Experiment of heating a Loadstone red-hot, and by altering the Position in which it was cooled, he could change its Polarity. Which, some may say, might happen to this Needle, supposing it was made red-hot, and turned upon its Center in the Storm.

Earthquakes.

From *Thunder* he proceeds to *Earthquakes*, which though he says they have not done with them the Michiefs frequent in *Sicily, Italy, &c.* yet they have had several very sensible and affrightning. In the Year 1663 they had six or seven violent Shakes in the Space of three Days: A Town lying on the River *Connecticut*, has had Scores of them in a Year for many Years together. The *Indians* affirm, that several Rivers have not only been stopt in their Course, and diverted, but some wholly swallowed up by *Earthquakes*. He farther adds a Passage out of *Josselin*, who dwelt in the Neighbourhood, that in the Year 1670, at a Place called *Kenebunch*, near the side of the River, a piece of Clay-ground was thrown up over the Tops of high Oaks, growing between it and the River, which it thereby stopt, and left a Hole in the Place from which it was thrown 40 Yards square, &c. Next, as to Storms of Hail, he relates, that they have had very extraordinary ones, infomuch that they have lain three or four Foot thick on the Ground, some as big as an Hen's Egg, others five times as big. He mentions, as an Accident sometimes happening to them in the Winter, that it has rain'd plentifully, and at Night frozen so extremely, that the Weight of the Icicles has broken the Limbs of the Trees, and not unfrequently split their Trunks. Though they have not those *Hurricanes* to which the *Caribbee*-Islands are subject; yet they have had *Whirlwinds*, or Gusts, drive along a particular narrow Tract, for divers Miles together, with a Violence not to be opposed by any thing on Earth, that if their Towns had stood in the way, they must undoubtedly have been destroy'd. Of these, he says, a thick dark small Cloud has arose, with a Pillar of Light in it, of about eight or ten Foot diameter, and passed along the Ground in a Tract not wider than a Street, horribly tearing up Trees by the Roots, blowing them up in the Air like Feathers, and throwing up Stones of a great Weight to a considerable Height in the Air, throwing down all in its Passage. The Noise this Cloud made was so great all the while, that the Noise of the Mischiefs done by it was thereby quite drowned.

The



The Remainder of this Letter relates to some very ancient Remains, at a Place called *Ammuskeag*, a little above the hideous Falls of *Merimack* River. There is a huge Rock in the midst of the Stream, on the top of which are a great Number of Pits, made exactly round, like Barrels or Hogsheads of different Capacities, some so large as to hold several Tuns. The Natives know nothing of the time they were made; but the neighbouring *Indians* have been wont to hide their Provisions in them, in their Wars with the *Maqua's*; affirming, God had cut them out for that Use for them. They seem plainly to be artificial.

In the next place, he gives an Account of a strange Inscription found on a Rock, in these Words: *At Taunton, by the Side of a Tiding-River, part in, part out of the River, there is a large Rock, on the perpendicular Ssde of which, next to the Stream, are seven or eight Lines, about seven or eight foot long, and about a foot wide, each of them engraven with unaccountable Characters, not like any known Character.* He has not yet been able to procure the whole, but has sent a Copy of two of them, represented in *Fig. 72.*

Fig. 72.

The last Letter of this Collection gives a Calculation of the possible Increase of Descendants of *Adam*: And from this Introduction he proceeds to give an Account of some *Long-liv'd* Persons there, as likewise of their *Fruitfulness*. He says it is no rare thing with them to have an aged Gentlewoman see many more than 100 of her Offspring. He mentions one Woman that had 23 Children, of which 19 liv'd to Man's Estate; another that had 27; another 26, of which 21 were Sons, one whereof was *Sir William Phipps*; another 39 Children. He gives several Instances of Persons living there to above 100 Years of Age. One *Clement Weaver* liv'd 110, his Wife being upwards of 100: This Man, to the last Year, could carry a Bushel of Wheat to the Mill, above two Miles. He relates the Case of an old Man above 100, that lost the Memory of several of the latter Years of his Life, but very well retained the Remembrance of what passed in his younger Days. It does not appear by any of these Relations, that the Persons observed any Regularity or Method in their Diet, Exercise, or the like.

Long-liv'd  
Persons, &c.

XV. I have always had a great Veneration for the Dictates of Nature, and the universal Traditions of Nations; for hereby many things are to be learned, for the establishing of Religion against Atheists, and the Propagation of it amongst Heathens: I shall therefore give some Specimens of the Knowledge of those People whom we call Barbarians, Infidels, and Idolaters, which I have read in their own Books, and gather'd from the Mouths of those who have been the greatest Speakers and Preachers amongst them.

*An Account of  
the Bramines  
in the Indies,  
&c. by Mr.  
J. Marshal.  
n. 268. p. 729.*

Upon what Account or Grounds it is that some Travellers have stiled these People Polytheists, or Atheists, I cannot tell; or whether there be any such People at all in the World, except some of the base common Sort in all Nations, I much question. It is very observable here, that



that their Priests, or *Bramines*, and holy Men, whom they call *Jogees*, when they have occasion to write any thing, they always put a Figure of one in the first place, to shew, as they say, that they acknowledge but one God, whom they say is *Burme*, that is, immaterial. When they preach to the People, and instruct them, which is commonly every Feast-day, Full Moon, or the time of an Eclipse of either Luminary, they tell the common People much of God, Heaven and Hell, but very imperfectly, obscurely and mystically. They say, that when God thought of making the World, he made it in a Minute.

They account this World the Body of God; for all that, they say he's Immaterial; and say that the highest Heavens are his Head, the Fire his Mouth, the Air his Breath and Breast, the Water his Seed, and the Earth and the Foundations thereof his Legs and Feet: but assert in general, that God is the Life of every Thing, yet is the Thing neither greater nor less for him.

They hold that God dwelt in a Vacuity before that he created the World; and that as he dwelt in that Vacuity, he created several Beings out of himself; the first were Angels, the second Souls, the third Spirits, all differing in degrees of Purity, the first being more pure than the second, and the second than the third. The Angels, they say, neither act Good nor Evil; the Souls, either Good or Evil; but the Spirits, or *Dewta's*, as they call them, act scarce any thing but Evil.

They have a good Opinion of the Angels, and think their State mighty happy, hoping that when they die they shall be made Partakers of the same Bliss and Pleasure.

They believe that every thing that hath Life hath a Soul, but especially Man; and they accordingly affirm, that as these Souls behaved themselves in their pre-existent State, so are their Actions in this World either good or bad by a sort of fatal Necessity, which is very hard to conquer, or to overcome. Hence it is, say they, that there are so many different Humours and Dispositions of Men; for their Souls, before their Entrance into their Bodies, being tainted with different Affections, causes the like Differences in the Parties, whose Bodies are their Vehicles. So that if a Man happen to have a sudden or unfortunate Death, they immediately ascribe the same to the Party's own Wickedness, or the bad Life that his Soul led before it enter'd into his Body: For, say they, the afore-acted Evil, that his Soul did in its other Life, brought these Accidents upon him, by getting the upper-hand of him, and by being too powerful and strong. And those that die thus, they believe that their Souls turn immediately into Devils. They maintain *Pythagoras's* Transmigration or *Metempsychosis*, but in a grosser Sense than he did. For they believe that Mens Souls, that have not lived so well as they ought, go, as soon as the Body dies, not only into Birds and Beasts, but even into the basest Reptiles, Insects and Plants, where they suffer a strong sort of Purgation to expiate their former Crimes: But as for the Souls of the *Jogees*, or *Fuche's*,



*Fuche's*, that is, of religious Men and Saints, they fancy that they go and inhabit with the good *Dewta's*, or Angels, amongst the Stars.

As for the Spirits, or inferior Angels, they believe that they are very evil, and have a hand in all Wickednesses, Murders, Wars, Storms and Tempests; so that when they solemnize the Funerals of those that are dead, they always present Dishes of Meat, as Offerings unto those Spirits, and sometimes sacrifice unto them, that they may not hurt the Souls of the Dead.

As they acknowledge the Being of a mighty God, so they hold that he created the World, and every thing therein. They believe that there are almost infinite Number of Worlds, and that God has oftentimes annihilated and re-created the same. But how he came first to create the World and Mankind, they relate to have been thus: — Once on a time (say they) as he was set in Eternity, it came into his Mind to make something, and immediately, no sooner had he thought the same, but that the same Minute was a perfect beautiful Woman present immediately before him, which he called *Adea Suktee*, that is, the first Woman. Then this Figure put into his Mind the Figure of a Man; which he had no sooner conceived in his Mind, but that he also started up, and presented himself before him; this he called *Manapuisse*, that is, the first Man. Then upon a Reflection of these things, he resolved further to create several Places for them to abide in; and accordingly assuming a subtil Body, he breathed in a Minute the whole Universe, and every thing therein, from the least to the greatest.

They constantly believe that the Universe cannot possibly last longer than 71 *Joogs*, which is a Measure of Time with them, and is . . . . Years. Which when it is come, God does not only annihilate the whole Universe, but even every thing else, as well Angels, Souls and Spirits, as inferior Creatures; and then he remains in the same State that he was in before the Creation: But say, that after he has a while respired thus, he breathes again, and every thing is created afresh, as well Angels and Souls, as all other things; but as for the Spirits, they are no more thought of. Yet for all this, after 71 *Joogs* more, all is annihilated again. How many *Joogs* are pass'd since the World was last created, they cannot certainly tell; only it is observable, that in an Almanack of theirs, written in the *Sanscript* Language in 1670, they make the World then 3892771 Years old from its last Creation.

The *Bramines* of *Persia* tell certain long Stories of a great Giant that was led into a most delicate Garden, which upon certain Conditions should be his own for ever. But one Evening, in a cool Shade, one of the wicked *Dewta's*, or Spirits, came to him, and tempted him with vast Sums of Gold, and all the most precious Jewels that can be imagined; but he courageously withstood that Temptation, as not knowing what Value or Use they were of: But at length this wicked *Dewta* brought to him a fair Woman, who so charmed him, that for her sake he

he



he most willingly broke all his Conditions, and thereupon was turned out.

They tell a great many Stories, absurd and ridiculous enough, of the first Ages of this present World, which would be too tedious to take notice of; only I shall here give you out of one of their own Books, what they tell us, of a great Flood that formerly happened. They say, that about 21000 Years ago, the Sea overwhelmed and drowned the whole Earth, except one great Hill, far to the Northwards, called *Bindd*, and that there fled thither only one Woman and seven Men, the Names of whom were, *Deboolab*, *Sunnuk*, *Sunnaud*, *Trilleek*, *Sannotab*, *Cuppyloshaw*, *Suraschab*, and *Burroopung*. These, understanding out of their Books that such a Flood would come, and was then actually coming, prepared against the same, and repaired thither; to which Place also went two of all Sorts of Creatures, Herbs, Trees and Grasses, and of every thing that had Life, to the Number in all of 1,800,000 living Souls. This Flood (say they) lasted 120 Years, 5 Months, and 5 Days: After which time all those Creatures, that were thus preserved, descended down again, and replenished the Earth. But as for the seven Men and Woman, only one of them came down with her, and dwelt at the Foot of the Mountain; the other six turned *Fuchees*, or holy Men, and spent there the Remainder of their Days.

They hold in general the *Ptolemaic* System of the Universe, and say that there are eight or nine Heavens, counting the Air and Earth, every one exceeding another in Beauty and Glory.

Their Religion consists of nothing that I could ever see or learn, but the leading of a pure Life, the washing away of their Sins in the River *Ganges*, their muttering over of divers Prayers, and their doing of strange and incredible Penances.

They say, that God is such a one, that whosoever seeks him, let it be after what Manner he pleases, whether by thinking that the Sun is he, or the Moon, or the like, if they do it but sincerely and honestly, with a right affected Heart, they shall be received of him.

They report, that on a time a *Mussulman* seeing a *Hindoo* or Pagan Priest in Heaven, he ask'd God how that Infidel came to have Admittance thither, whom *Mahomet* so often calls by the Name of *Bitter Roots*. To whom God answer'd, What, if a bitter Root bring forth sweeter Fruit than any of you, why should I not receive it? Upon which the *Mussulman* had no more to say.

They hold, that such as suffer not their Minds to wander after the Lusts of the World are perfect *Jogees*, or Saints, and hold, that God is always present with them in all their Actions.

It is to be found in many of their Books, that there was a Time a good while ago, in which God took upon him the Shape of a Man, and spent many Years in reforming the World, and giving better Rules to walk by than had been before: But at length having left them,



them, they soon forgot him and his Rules, and return'd to their former Courses; upon which he told them, that he would leave them to their Ways, and never undertake any such thing again.

The Religious at some certain Seasons of the Year come unto the River *Ganges* (which they call the Holy River) in vast Multitudes, even from many Parts of *Tartary*, to wash away their Sins, and make Expiation for their Faults.

This *Ganges* is a delicate fine River, chiefly for the sake of its most sweet, pure, and clear Waters, which have got it the greatest Esteem of any River in the East. I have oftentimes sailed many Miles up it, and have found it in some Places not to be above a Mile broad, in others not half so much, and in one or two Places not above one eighth of a Mile. In *April*, when the Water is at the lowest, it is almost dry in many Places; but when it is at the highest, which is commonly about the middle of *September*, it is very deep, and many Miles broad.

When the People are here gathered together, they have a great many strange Customs and Ceremonies, and pay a kind of divine Honour and Worship to the River, too long to mention. The *Hindoos* and *Bramines* preach then every Day to the People, teaching them their Duties, and ordering them to say such and such Prayers; but above all things to be charitable to the Poor and Needy.

It is reported, that upon the Hills by *Casmere* there are Men that live some hundreds of Years, and can hold their Breaths, and lie in Trances for several Years together, if they be but kept warm; and that every Year some of them come down unto the People at *Ganges*, and do many great Cures; for whom they have such a Veneration, that they frequently drink the Water they wash their sweaty Feet in.

The Penances and Austerities that they undergo are almost incredible: Most of them, through their continual Fastings, and lying upon the parching hot Sand in the Heat of the Sun, are so lean, dry'd and wither'd, that they look like Skeletons or Shadows, and one can scarce perceive them to breathe, or feel their Pulse beat.

When any great Man dies amongst them, but especially any of their *Jogees*, or Saints, they make great Preparations for their Funeral; the Corpse is laid on its Belly, and Salt and Rice laid round about it at every corner on the ground. Then the nearest Relations to the Party deceased carry a Pot of Water on their Shoulders several times about the Funeral-Pile, when they burn them; then breaking it in pieces, spill the Water. Which Ceremony being ended, the Pile is fired, and then all the Relations begin to howl, and embrace one another; then washing themselves in some neighbouring River, they depart every one to his Home; and as for the remaining Ashes, if he be rich, they gather them up, and cast them into the *Ganges*, or the Sea.

Sometimes it happens that the Wife of the deceased Party, if she have no Children, and be old, or ill to live in the World, will burn herself with the dead Body; but this happens very seldom. It is said,



that in such Cases the *Bramines* give the Woman a stupifying Liquor, which by the time that they are in the Fire makes them senseless of any Pain.

To know into what Body the Soul of the deceased is transmigrated, they do thus: They strew the Ashes of the Dead upon the Place where he was first laid after his Death, and Handfuls of odoriferous Flowers about the same; and returning again in 44 Hours, they judge, by some pretended Impression or other in the Ashes, into what Body it is gone. If the Foot of an Horse, or Dog, or Ox, or such like, appear, then they certainly give out that it is gone into such like Creatures; but if nothing appear, then they think it is certainly gone to the starry Regions.

As for their Learning and Knowledge, it is but little. They have indeed several Books writ in divers Languages; but they contain nothing but a great deal of Stuff and Cant about their Worship, Rites and Ceremonies.

They are ignorant of all Parts of the World but their own: They wonder much at us, that will take so much Care and Pains, and run thro' so many Dangers both by Sea and Land, only, as they say, to uphold and nourish Pride and Luxury. For, say they, every Country in the whole World is sufficiently endow'd by Nature with every thing that is necessary for the Life of Man, and that therefore it is Madneſs to seek for, or desire, that which is needless and unnecessary.

The last time that I was at *Modufferpore* in *Indoſtan*, I had a great deal of Talk with a *Bramine* somewhat more learned than any of the rest; his Name was *Ramnaunt*; he told me a great many Secrets in Physick, and told me many Traditions and Stories. He says, that if you bury a Piece of Money for some considerable time in the Mouth of a live Frog, and then dig it up again at Midnight, that this Piece of Money, to whomsoever you give or pay it, will always return to you again.

He says, that if the little Worm in the Wood *Lukerakera* be cut in two, and the one Part stirs, and the other not; if the stirring Part be bruised, and given with half a Beetle to a Man, the other half to a Woman, this Charm will keep them from ever lying absent one from the other.

They have Books full of the like Absurdities, and cabalistic Complication of Figures: As for Example, if you write these following Numbers, 28, 35, 2, 7. — 6, 3, 32, 31. — 34, 29, 8, 1. — 4, 5, 30, 33. in the Squares of a square Figure, and your Enemy's Name under it, and wear it always about you, your Enemy shall never be able to hurt you.

So if you write the following Figures in the like manner upon the Left-hand, 2, 9, 2, 7. — 6, 3, 6, 5. — 8, 3, 8, 1. — 4, 5, 4, 7. — with Turmeric, and wash the same off with fair Water of *Ganges*, and drink it, it will cure all manner of venomous Bitings.

Many



Many such like ridiculous Fancies they have ; all which they seem to have borrow'd from the *Cabala* of the *Saracens*, which is full of such like.

I lately heard a *Bramine* say, that if some of the Pieces or Knots of the Cloth (in which a Woman hath been burnt with her Husband) be saved, and made up in the Form of a Wick, and fitted for a Lamp, and lighted, and set in a dead Woman's Skull, that it would make the dead Party appear. This he said he had done ; but I did not believe him.

When they have any mad Men amongst them, they take them and put them into a close Room, just big enough to hold them, and almost smother them to death with Musk and cold Smells, which soon brings their Brains into their right Temperature, and so recovers them, &c.

There happened two things in our Voyage hither, which I thought very observable. The first was, that all our Tornadoes brought much Rain with a Stink ; and if the Seamen did but lay their Cloaths by for 24 Hours, they became all full of little Maggots. The second is, when we came out of *Europe*, we took in some Water at *St. Jago's* ; and when we were almost at our Journey's End, our Cooper going with a Candle to open one of the Casks, he had no sooner done it, but the Water immediately took fire and burnt his Face, Hands and Fingers ; but he suddenly turning about, quench'd the same, by setting his Breech on it. It stunk pretty much also at the same time, but afterwards came to its native Sweetness, &c.

*Tornadoes.*

*Water stinking, and recovering its Sweetness. Vid. supra, Vol. iii. P. 547.*

XVI. We arrived at the Island of *Borneo* on the 17th of *July*, where we staid but two Days, the Season of the Year being so far past ; and from thence made the best of our way through the Streights of *Banca* with favourable Winds and Weather, till we came on the Coast of *China* the 13th of *August* : Then we had variable Winds, which carried us abreast of *Emuy* the 19th following, at which time the North-East Winds setting in fresh, put us in great fears of losing our Passage ; whereupon we were forced to turn it up against Wind and Current all the way, the Weather so favouring us, that we were never but by our Topfails, else we should have lost more Ground in one Day, than we could have gain'd in eight. The last of *August* we came to an Anchor under the *Crocodile* Islands, both to shelter us from the bad Weather, (which is generally expected on this Coast at new and full Moon, and has been fatal to a great many Ships) and also to look for fresh Water, which was now grown scarce with us, not having recruited since we came from the *Cape of Good Hope* : These are three small Islands lying in the Latitude of twenty-six Degrees, about six Leagues from the River of *Hocksheu* ; on two whereof we found very good fresh Water, with a convenient Watering-place on the South-West-side of the innermost of the three ; and by the Assistance of a few *Chinese* Fisher-men we procured some fresh Provisions from the main Land, because we did not reckon it safe to adventure ourselves thither, lest we should have been brought into Trouble by the Go-

*An Account of the Island of Chufan in China, &c. by Mr. J. Cunningham, n. 280. p. 1201.*



vernment there. While we lay here, on the 5th of *September* we had a sudden short Shift of the Monsoon to S. W. the Fury whereof others felt, in coming upon the Coast of *China* at the same time. The 8th of *September* we put to Sea again, turning to Windward Night and Day without all the Islands, which are very numerous along this Coast, to which we were altogether Strangers beyond *Emuy*; and the Hydrography thereof is hitherto so imperfect, that there was no trusting to our Draughts, which made our Navigation somewhat more dangerous: However, on the first of *October* we got into the Latitude of 30 Degrees, where we came to an Anchor near the Land, until we found the way by Boat to *Chusan*, about 12 Leagues within the Islands; from whence we had a Pilot, who carried us safely thither on the 11th of *October*. Upon this Island the *Chinese* have granted us a Settlement, and Liberty of Trade, but not to *Ning-po*, which is six or eight Hours sail to the Westward, all the way amongst Islands. This being the largest, is eight or nine Leagues in Length from East to West, and four or five Leagues in Breadth, about three Leagues from that Point of the Main-Land called Cape *Liampo* by the *Portuguese*, but *Khi-tu* by the *Chinese*. At the West-End of this Island is the Harbour, very safe and convenient, where the Ships ride within Call of the Factory, which is built close by the Shore on a low plain Valley, with near 200 Houses about it for the Benefit of Trade, inhabited by Men, whose Jealousy has not as yet permitted them to let their Wives dwell here; for the Town where they are, is three quarters of a Mile further from the Shore, environ'd with a fine Stone-Wall, about three Miles in Circumference, mounted with 22 square Bastions placed at irregular Distances, besides four great Gates, on which are planted a few old Iron Guns, seldom or never used: The Houses within are very meanly built. Here the *Chumpeen* or Governor of the Island lives, and betwixt three or four thousand beggarly Inhabitants, most part Soldiers and Fishermen; for the Trade of this Place being newly granted, has not as yet brought any considerable Merchants hither. The Island in general abounds with all Sorts of Provisions, such as Cows, Buffalo's, Goats, Deer, Hogs wild and tame, Geese, Ducks and Hens; Rice, Wheat, Calavances, Coleworts, Turnips, Potatoes, Carrots, Beets and Spinach: But for Merchandize there's none but what comes from *Ning-po*, *Hancheu*, *Nankin*, and the Inland-Towns. Here also the Tea grows in great Plenty on the Tops of the Hills; but it is not in that Esteem with what grows on more mountainous Islands. Although this Island is pretty well stored with People, yet it is far from what it was in *F. Martinius's* Time, when he describes *Cheuxan*. And this puts me in mind, that the superstitious Pilgrimages thereto, mention'd by him, must be meant of the Island *Pou-to*, which lies nine Leagues from hence, and three Miles to the Eastward of this Island; whither the Emperor design'd to go and worship (on his Birthday, and in the fortieth Year of his Reign) in an ancient Pagode there,



there, famous for Sanctity, having sent one of his *Bonzes* thither to get all things in order. But after all things were prepared there for his Reception, he was dissuaded from his purpose by some of his *Mandarins*, who made him believe that the terrible Thunder there was very dangerous. This *Pou-to* is a small Island, about five Leagues round, at the East-End of this Island, famous for the superstitious Pilgrimages made thither for the Space of eleven hundred Years: It is inhabited only by *Bonzes*, to the Number of three thousand, all of the Sect call'd *Hofhang*, or unmarried *Bonzes*, who live a *Pythagorean* Life; and there they have built four hundred Pagodes, two whereof are considerable for their Greatness and Finery, being lately cover'd with green and yellow Tiles brought from the Emperor's Palace at *Nankin*, and inwardly adorn'd with stately Idols finely grav'd and gilded, the chief whereof is the Idol *Quon-em*. To these two great Pagodes belong two chief Priests, who govern all the rest. They have several Ways and Avenues cut through the Island, some whereof are paved with Flag-stones, and overshadowed with Trees planted on each Side. Their Dwellings are the best I have yet seen in these Parts; all which are maintain'd by charitable Devotions; and the Junks which go from *Ning-po* and this Place to *Japan*, touch there both going and coming, to make their Offerings for their good Success. There is another Island called *Kimtong*, five Leagues hence in the way to *Ning-po*, whither, they say, do retire a great many *Mandarins* to live a quiet Life after they have given over their Employments: On that Island also are said to be *Silver Mines*, but prohibited to be open'd. The rest of the circumjacent Islands are either desert, or meanly inhabited by a few fishing People, but all of them stored with abundance of Deer; for it is not long since this Island of *Chusan* began to be peopled. 'Tis true, in *Martini's* days, about fifty Years ago, it was very populous for the Space of three or four Years, at which time the Fury of the *Tartarian* Conquest was so great, that they left it desolate, not sparing so much as the Mulberry-Trees (for then they made a great deal of Raw-Silk here;) and in this Condition it continued till about eighteen Years ago, that the Walls of the Fort or Town, which now is, were built by the Governor *Ting-bai*, for a Garison to expel some Pirates, who had taken Shelter here. About fourteen Years ago, the Island beginning to be peopled, there was a *Chumpeen* or General sent to govern it for three Years, to whom succeeded the late *Chumpeen* (who procured the opening of this Port to Strangers) whose Government continued till *April* 1701, being translated to be *Chumpeen* of *Tiencing Wei* near to *Pekin*, and was succeeded by the present *Chumpeen*, who is Son to the old *Chunkoon* of *Emui*.

They have no Arts or Manufactories here, but making of lacker'd Ware, a particular Account whereof I cannot as yet send. They begin to plant Mulberry-Trees, to breed up Worms for the Production of Raw-Silk; and they make some Tea, but chiefly for their own Use.

The



Of Tea.

The three Sorts of *Tea* commonly carried to *England* are all from the same Plant, only the Season of the Year, and the Soil makes the difference. The *Bobé* (or *Voiii*, so call'd of some Mountains in the Province of *Fokien*, where it is chiefly made) is the very first Bud, gather'd in the beginning of *March*, and dried in the Shade. The *Bing-Tea* is the second Growth in *April*: And *Singlo* the last in *May* and *June*, both dried a little in *Tatches* or Pans over the Fire. The Tea-Shrub being an Ever-green, is in Flower from *October* to *January*, and the Seed is ripe in *September* and *October* following, so that one may gather both Flowers and Seed at the same time; but for one fresh and full Seed, there are an hundred naught. These make up the two sorts of Fruit in *Le Compte's* Description of Tea: As for his other Sort, which he calls *symic Pease*, they were nothing but the young Buds of the Flowers not yet open. Its Seed-Vessels are really *tricapular*, each *Capsula* containing one Nut or Seed; and although two or one *Capsula* only comes to Perfection, yet the *Vestigia* of the rest may be discern'd. It grows in a dry gravelly Soil, on the Sides of Hills, in several Places of this Island, without any Cultivation.

*Le Compte* is mistaken in saying (*pag. 96.*) that the *Chinese* are wholly Strangers to the Art of grafting; for I have seen a great many of his paradoxical Tallow-Trees ingrafted here, besides some other Trees. When they ingraft, they do not slit the Stock as we do, but cut a small Slice off the outside of the Stock, to which they apply the Graft (being cut sloping on one side, agreeable to the Slice cut from the Stock,) bringing up the Bark of the Slice upon the outside of the Graft, they tie all together, covering with Straw and Mud, as we do.

The Commentator on *Magalben* seems doubtful in the Length of the *Chinese Che* or Cubit. Here they have two Sorts; one of  $13 \frac{7}{10}$  *English* Inches, which the Merchants commonly use: The other is of eleven Inches used by Carpenters, and also in Geographical Measures.

Albeit *F. Martini* is censured by *F. Magalben* for spelling a great many *Chinese* Words with *ng*, which the *Portuguese* and others have done with *m*; yet his Way is more agreeable to the *English* Pronunciation, only in some Words the *g* may be left out, as in *Pekin*, *Nankin*, &c.

Having made Enquiry about *Martin's* Account of sowing their Fields at *Ven-cheu* with Oyster-shells, to make new ones grow; I was told, that after they have taken out the Oysters, they sprinkle the Shells with Urine; then putting them into the Water again, there grow new Oysters on the foresaid Shells.

*Martini* says he could never find a *Latin* Name for the *Fula Mogerin* of the *Portuguese*: I'm sure it is the same with the *Syringa Arabica* *Flore peno albo* in *Parkinson*. He says also, that the *Kieu-yeu* or Tallow-Tree bears a white Flower like a *Cherry-Tree*; but all that I have

seen



seen here bears a Spike of small yellow Flowers like the *Julus* of a *Salix*.

The Bean or *Mandarin* Broth, so frequently mention'd in the *Dutch* Embassy, and other Authors, is only an Emulsion made of the Seed of *Sesamum* and hot Water.

Their chief Employments here are Fishing and Agriculture.

In fishing they use several sorts of Nets and Lines as we do; but because they have large Banks of Mud in some Places, the Fisherman, to go more easily thereon, has contriv'd a small Frame about three or four Foot long, not much larger than a Hen-Trough, elevated a little at each end; in which he rests upon one Knee, leaning his Arms on a cross Stick, raised so high as his Breast, and putting out the other Foot often upon the Mud, he pushes forward his Frame thereon, and so carries himself along in it. Fishing.

As to their Agriculture, all their Fields (where any thing is planted) whether high or low, are made into such Plots as may retain the Water on them when they please. They plow up the Ground with one Buffalo or one Cow. Where they are to sow Rice, they prepare the Fields very well, by clearing it of all manner of Weeds, moistening to a Pulp, and smoothing it with a Frame drawn across; on which they sow the Rice very thick, and cover it only with Water for two or three Inches high; and when it has grown six or eight Inches long, they pull it up by the Roots, and transplant it (by Tufts in a strait Line) to Fields overflown with Water; and where a Field is subject to Weeds, when the Water dries up, they prevent their Growth, in overturning the Mud with their Hands in their Interstices where the Rice is planted. When they sow Wheat, Barley, Pulse, and other Grains, they grub up some superficial Earth, Grass, and Roots, and with some Straw they burn all together: This Earth being sifted fine, they mix with the Seed, which they sow in Holes made in a strait Line, and so grows up in Tufts as the Rice does, the Field being divided into Beds, and harrowed over both before and after the Seed is sown: This makes them somewhat resemble Gardens. Although they meliorate their Fields where they sow Rice, only by letting the Water on them; yet for other Grains, where Ground requires it, they make much Use of Dung, human Excrements, Ashes, &c. In watering their Fields here, they use the same Instrument mentioned by *Martini* in the Preface to his *Atlas*, being all of Wood, and the Contrivance the same with that of a Chain-Pump. Agriculture.

Their Method in making of Salt is this: All the Shores here being Mud, instead of Sand, in the Summer-Season they pare off the superficial Earth, which has been overflown with the Salt-Water, and lay it up in Heaps for Use: When they are to use it, they dry it in the Sun, rubbing it small; then digging a Pit, they cover the Bottom thereof with Straw, at which, through the side of the Pit, they pass a hollow Cane, that leads into a Jar, which stands below the Level of The making of Salt.

of



of the Pit's Bottom ; they fill the Pit almost full with the aforesaid Earth, and pour Salt-Water thereon till it be cover'd two or three Inches with Water, which drains through into the aforesaid Jar, and is afterwards boil'd into Salt.

I find the printed News-Papers last Year take Notice of a singular Root brought from *China* by *F. Fontaney* : I have seen one here called *Hu-chu-u*, (which I take to be the same) whereto they ascribe wonderful Properties of prolonging Life, and turning grey Hairs into black, by drinking its Infusion for some time, insomuch that they say it is to be had in Value from 10 *Tael* to 1000 or 2000 a single Root ; for the larger it is, the more is its Value and Efficacy. It is mentioned in *Gleyer's Medicina Sinica*, N<sup>o</sup>. 84, under the Name of *Ho-xeu-u*, according to the *Portugal* Spelling ; it is likewise painted in the 27th Table of those Plants Mr. *Petiver* had of me.

The Story of its Discovery is this : That once upon a time a certain Person going a simpling upon the Mountains fell by Accident into such a steep Valley, that he could by no means get out of it again ; whereupon looking about for something to sustain his Life, he spy'd this Root, of which he made tryal, and found, that in eating thereof it served him both for Provisions and Cloathing, by keeping his Body in such a Temperature, that the Injuries of the Weather had no Influence upon him during his Stay there, which was some hundreds of Years ; till at last an Earthquake happen'd in that Place, whereby the Mountains were rent, and he found a Passage to his House, from whence he had been so long absent. But the many Alterations that came to pass there in such a space of Time, would not permit them to give Credit to his Story ; till consulting the Annals of their Family, which gave an Account of one of them lost at that time, they were confirm'd in the Truth of his Relation.

*Of the Way of taking and taming of Elephants in the Island of Ceilan, by Mr. Strachan, n. 277. p. 1051.*

XVII. All the Natives within twenty Miles from the Sea-Coast betwixt *Matura* and *Negumbo* are subject to the *Hollanders*, and know the Duty and Service which their *East-India-Company* requires of them ; therefore when Orders are given to hunt the Elephants, they pitch upon a convenient Place for a Warren or Park, which is broad at the Entrance, and turns farther into the more narrow, so that at the End it is so narrow that the Elephant cannot turn himself ; yet this narrow Place is so long, that twenty Elephants may stand one behind another. The Park being perfected, the *Koolrale*, who is the Head or Chief of the *Kool* (in *English* a Shire) does order the Inhabitants who dwell thereabout to their Places, who make a Circumference about the Woods where they know that Elephants are, which will be the length of sixty *English* Miles. At first one Man stands from another at the distance of about five Poles, or twenty-five Yards, and kindles Fire in the Spaces between them ; then by shouting, crying, beating of Drums, sounding of Horns, the Elephants retire towards the Park ;



Park ; and so from time to time the Men follow, shouting and making a noise, until the Circumference be so little, that they stand upon one another's Side. The Elephants, when they find themselves inclosed within the Park, make more Resistance, some turning back upon the Men ; but Posts are ready standing betwixt the Men and the Elephants, and long Stakes lying upon the Ground ; they have only to lift these Stakes, and make the Ends of these Stakes fast to the Posts, and thus the Elephants are inclosed within the Park. Then by following the Elephants, and casting off Fire-brands, they chase them still farther toward the End of the Park, and closing up the Passage behind them, by setting up, and laying Stakes athwart the Posts, until at last they are all entered into the narrow Place, where they cannot turn themselves. But because there are many Sorts of Elephants, some being a great deal higher before than behind, and many who never have the two long Teeth ; others are of a more savage Nature, which are known by their Eyes and Face, having a fierce Tyger-Look, and will be for no Service, although they be kept 10 Years : such ones the King of *Candie* keeps for punishing of Transgressors, for they kill all Persons that come within their reach. One of them the late King of *Candie* sent to the *Hollanders*, in recompence of some Presents which the *Hollanders* had sent to him. The *Hollanders* kept the same Elephant in a Place by himself still tied, being at great pains every Day to bring him to the Water-side betwixt two tame Elephants. Such like Elephants being among the other Elephants in the Park, are kept out of the narrow Entrance, by casting Firebrands upon them when they draw near the narrow Entrance, and endeavour to kill them by Guns, and cutting off their Snout, by which they take all their Victuals ; which being cut, they perish for Hunger when they are escap'd ; for the Natives being very swift, will come very near them with their Swords. When all the Choice of the Elephants are enter'd into the narrow Passage, there are Posts put athwart, so that none can come back. The rest that are not fit for Service, have liberty to escape.

It is easy to conceive how the Natives did invent the chasing Elephants by Drums and Noise, because it is observed that they themselves are affrighted by Drums. I heard an ancient *Portuguese* relating, that when his Countrymen were in Possession of this Island, they did pursue the Natives too far up among the Woods and Hills : The *Ceilanese* by this means got the Advantage of the *Portuguese*, and killed every Man of them, except one Drummer, who observing them not to draw near where they heard the Drum, he therefore beat upon his Drum continually ; the *Ceilanese* thinking that the greatest Power was where the Drum did beat, did not come near him, and by this means he saved his Life.

When the Elephants have been a while settled in the narrow Passage, they are one by one taken to the Stable, being tied fast between



two tame Elephants bred for that Purpose, the Point of whose long Teeth are cut. If the wild Elephant be troublesome, they will hold his Trunk with their Trunk, and beat him with their Teeth, a Man sitting upon each of the tame Elephants, to direct them by a Staff, upon the End of which is a little Hook, wherewith he touches his Head, and orders the tame Elephant as he pleases, without a Bridle, or the like. When they come into the Stable, they are led betwixt two Posts, and Stakes put athwart before their Breasts and under their Bellies, and so tied that they cannot stir, nor lie down upon the Ground; for if they should be permitted to lie down, they would turn heavy, sorrowful, and would not eat, and die. They are this way fed and nourished with the Trunk of *Waltugas*, or *Plantains*. The Trunk of this Tree they love better than any other Food, and with these Trunks they are fed in the Ships. When they have been nourish'd so six Weeks, they begin to be tractable, and are fastened only with one Foot tied with Cords; and if the Merchants come from *Bengal*, they are sold and convey'd to the Ships. If the Merchants don't take them, they feed them with Leaves of the *Cocoa*-tree, until twelve Weeks be past after their being taken, and then they are as tame as a Dog, and eat Grass with the Oxen in the Fields.

When the Elephants are put on board the Ships, there is a thing prepar'd of 15 or 20 double Sail-cloth, which is laid about his Breast, Belly and Sides, and is tied together upon his Back, whereunto Ropes are fastened; then he is led into the Water betwixt Elephants bred for the purpose, upon which a Man sits to govern him, and another Elephant (upon which sits a Man) goes behind the Elephant that is to be shipp'd: and when this Elephant is unwilling to enter the Water, the Elephant that is behind puts his Head to the foremost's hinder Parts, and presses him forward, which would make any one laugh to see. When he is got deep enough in the Water, he is tied to the Boat, the other Elephants return, and he swims after the Boat to the Ship, where he is haled over into the Ship.

But there is lately invented a more convenient Way, which is thus: There is prepared a big Vessel, flat-bottom'd, cover'd with Planks like a Floor, so that this Floor is almost of the Height of the Key; then the Side of the Key and the Vessel are adorned with green Branches, so that the Elephant sees no Water till he is in the Ship.

When one Elephant swims to the Ship, or otherwise crosses a deep River, nothing of him can be seen only his Snout, through which he breathes: And when he is washed upon a River-side, he ordinarily lies with his Head upon the Bottom of the Water flat alike with his Body; and altho' one Side of him be above Water, his Head will be under, holding only his Snout above Water, through which he breathes.

When the Elephants are tame, they are very docile and tractable, so that they will lie upon their Belly when Men are to get up and ride upon them.



If they fall at any time, altho' upon even Ground, they either die immediately, or languish after that until they die; their Body being of so great a Bulk, is the Cause of the Harm they get by a Fall.

If an Elephant frequents a Plantation of Fruit-Trees of the Natives, (for no Hedges can keep him out) they make a Point upon a heavy Piece of Wood, and hang it on a Branch of a Tree, under which the Elephant uses to come; and at Night a Man sits watching upon that Branch, and when the Elephant comes under the Branch, the Man cuts the Cord, and so the Point of the Wood falls a Foot deep in his Back, by which means the Elephant languishes and dies: but when the *Hollanders* get Intelligence hereof, they are punish'd severely.

XVIII. The Way they catch Water-Fowls is this: In Loughs and Waters which are not very deep, the Fowler puts an earthen Pot upon his Head, in which Pot are bored Holes, through which he may see; then he wades in the Water, nothing being seen but the Pot which covers his Head, and thus enters in the midst of all the Fowls. They, thinking it to be a Block, or the like, driving, do not take notice of it, although it be upon their Side; then he takes hold of one by his Foot, and draws him under Water, and wrings his Neck about. The rest of the Fowls not perceiving this, sit still; then he goes to the next Fowl, and does the same; and so going forth, he catches as many as he pleases.

*Of the Ways of catching Fowl and Deer in Ceilan, &c. by Mr. Strachan. n. 278. p. 1094.*

Those that have Guns make a Frame, which they cover with green Branches, which are so broad as to cover their whole Body. They stand behind it; then carrying the Frame before him, the Bird or Deer seeing nothing but the green Branches, is not affrighted; and thus the Hunter being advanced near enough, gives fire.

It is wonderful to consider how some Beasts are affrighted by Fire, as Lions, Tygers, wild Swine, and other Beasts; and as the *Ceilanese* chase the Elephants, wild Swine and Tygers from their Plantations by Fire, and the Natives at the *Cape of Good Hope* chase the Lions from their Cattle; so also do the *Ceilanese* catch Harts, Deers, Elks and Hares, which they do in this manner. In the Night-time two Men go into the Wood; one of these takes an earthen Vessel upon his Head, wherein is Fire burning, made of Sticks and a kind of Resin; and in one Hand he carries a Staff, whereon are fastened eight Bells, which the more harmonious they are, so much the better: the other Man goes behind with a Spear in his Hand. Whenever the Deer perceiveth the Light, and hears the Bells, he draws near to it, standing and beholding it as amazed, for he sees not the Men; in the mean time the Man with the Spear pierces his Body, and catches him. Now Elephants, Tygers, Serpents and wild Swine run when they see the Fire, so that the Hunters need not fear them.

There are two Sorts of *Serpents* that *Capt. Knox* does not mention, which are thought not to be venomous, and a *Ceilanese* will not kill.



The first is of a bluish Colour, and comes frequently into Houses, and searches for Rats only, and eats them; he creeps into their Nest, and makes a Destruction among them: He is of the Thickness of an Inch and a half Diameter, and about two Yards and a half long.

The other is green like a Leaf of a Tree, who winds himself, and climbs upon the Trees, and catches the Birds, lying still at the time, as if he had no Motion, until he sees a fit Opportunity to catch. He is about one half Inch Diameter, and a Yard long.

*The Ant-Bear.* The *Talgoi* will lie as if he were dead beside these little Nests which are built by these Ants called *Waia*, letting his Tongue stick out as far as he can: These Ants will immediately fix themselves in great Numbers round about, and upon his Tongue, to carry away the Slime which is upon the Tongue; then he draws in his Tongue, and swallows them; and then he shoots forth his Tongue again, and continues so to do until he has satisfied his Hunger.

*The Elephant.* If a Man be lying or sleeping, an Elephant will not mind him. A Company of *Dutch* Soldiers marching from *Columbo* to *Gurbewil*, one of them did stay behind to rest himself, and did slumber upon the way-side. An Elephant coming out of the Woods, went within two Paces of him; but when he was passed by about seven or eight Paces, the Soldier awaked, and seeing the Elephant, and not thinking it safe to run, because the Elephant did not mind him, lay still until he perceived the Elephant to be gone.

*Cinnamon-Trees.*

There are two Sorts of *Cinnamon-Trees*; of which, the Tree which is esteemed the best has a Leaf much larger and thicker than the other; but otherwise no Difference is perceived. If these Leaves, as well one Sort as the other, be distilled, they yield an Oil and Water, as if Cloves had been in the Still.

Upon the Root of the Tree is a thick Bark, which, when it is distill'd, as the former, yields Oil and Camphire; which is separated by covering the Receiver with a Linnen Cloth, and the Camphire will remain in the Cloth in a Lump together, and the Oil and Water will run into the Receiver. This Camphire has the same Colour, the same discussing, dissolving, and healing balsamic Quality as the Camphire of *Japan*; the Oil is of the same Virtue; anointed upon Scabs, Itch, and Excoriations, it cures them in a short time.

To drink the Water among common Water cures Fluxes, and does good to those who are under that languishing Disease, called by the *Hollanders* the *Land's Disease*, and by the *Ceilanese*, *Pipa*.

I never did see the Natives make use of Cinnamon, although they scarcely have a Meal without Pepper: Neither is it used by the *Europeans* either in Meat, or distilled among the Rack, or infused in Drink, for it is thought that it occasions Shortness of Breath; but this I have no Experience of. Whether this be the Cause of it, or whether the *Ceilanese* are fearful to bring it to particular Men, seeing the *Hollanders* have severe Laws against the selling of it, I cannot tell.



XIX. There is great quantity of a kind of white *Coral* upon the Shore betwixt *Gale* and *Mature*, and many other Coasts in the *Indies*, of which the *Hollanders* cause Lime to be burnt for building of Houses, and the Walls of the Fortifications. There are great Banks of the said Coral; it is porous, neither so firm and smooth as the upright, which grows in little Branches; and when they are come to the full Growth, there grows other betwixt these, and then upon these grows other, until it is become like a Rock for Thickness. These Branches are not softer when they are young, than when they are ripe; yet I observed a Slime upon them always when they are under Water, which I suppose is the Substance which petrifies.

*Observations  
on Coral,  
Rubies, &c.  
and the Gods  
of the Ceila-  
nese, by Mr.  
Strachan.  
v. 282.  
p. 1248.*

I have seen (three Leagues from *Batavia*, upon that Island, where the *Hollanders* turn up the Keel of the Ships to dress and mend them) *Oysters* of a Foot Diameter. The Shell of one of these did grow till it was three Foot in Diameter broad, and a Foot thick, after the Flesh was putrified; upon these Shells, lying only three or four Foot under Water, I also always did find a Slime. Upon the Coast betwixt *Gale* and *Gindere* lies always *Os Sepiæ*, and in the River at *Catoene* there are found Rubies; and if one is desirous, and seeks among the Sand in the Water, he will find above a Drop weight of Rubies in the space of one Hour: but they are very small, for 20 of them will scarcely weigh a Grain weight.

*Large Oy-  
sters.*

Upon the Sea-Coast upon the Sand do lie a kind of little Cockles of the Bigness of Crabs Eyes, or *Oculi Cancrorum*. There is no Cavity within; if beat in Powder, they have the same Effect as *Testaceous* Powders, and are used instead of *Oculi Cancrorum*.

*Cockles.*

There are several Trees, one of which will be above six Fathom high, whose Root (I may say) grows above ground, after the following Manner: When the Twig is about half a Foot high above ground, there grows out of the middle of the Stem a little Knot, which grows downward, making an Angle with the Stem of 30 Degrees, or thereabout, until it touches the Ground; then it fixes in the Ground, sending forth small Sprigs, which before it touch'd the Ground had neither Branch nor Leaves, but all over green like a Shoot. While this Shoot grows, and the Stem grows higher, it still shoots forth other Shoots, which always come out of the middle of the Tree or Trunk. Thus it continues shooting forth these Shoots, until the Tree be at his full Growth; and the higher the Trees grow, the Knots and the Shoots are the thicker and longer; so that one of the Shoots which grows last, will be a Foot thick of Diameter, and three Fathom long.

*A sort of a  
Ficus Indica.*

Now the Flower which is called *Happumal* grows upon a Tree that grows after this manner, and grows only two Fathom high. If they are planted round an Orchard, they are an excellent Hedge, for the Leaves are thorny and full of Pricks. When the Flower decays, it carries a Fruit like a Pine-apple, but is for no Use.

Some



Some Naturalists affirm all Plants to have a Heart, or something analogous to it; it would be worth the Enquiry in what Place the Heart of these kind of Trees is, as also the Palmito and Coco-tree.

Of the Gods  
of the Ceilane-  
nese.

It is very difficult to know which of these two have a greater Respect given to them, the *Budun* or *Sakradewendra*.

*Sakradewendra* commands and governs all the rest of the Gods, and did hear formerly the Prayers that were offered up to him from distressed People here upon Earth, and did grant their Request; but now the Golden Chair whereupon he used to sit, is gone; and the Prayers which are offer'd up to him now have no effect, because the Foot of that Chair was made of a kind of Wax, which would turn soft by the Prayers and Tears of the Supplicators, and would sink downward, by which means the *Sakradewendra* would look down and take notice of the Prayers of the SupPLICANTS, and grant their Request.

This Chair being of fine Gold, was distributed among the Poor; which is the Cause why he does not now perceive or know when any Man makes Supplication to him; therefore there are but few People that have any Benefit of the Prayers and Tears which they offer to him.

He can indeed look far when he turns his Eyes towards any Place; for his Forehead resembles the Peacock's Tail, it is so full of Eyes; and so sometimes it chances that he looks down and takes notice of Men: but this is but seldom; therefore there is a Necessity for one to pacify these wicked Spirits which trouble us here on Earth. I could never understand of them how long this *Dewendra* had been a God, or how long he would reign; for none trouble their heads to regard him any more.

The *Budun*, whereof the *Banapots* (or their Bibles, if I may call them so) make great mention, has had the Life of all the Species of living Creatures that are in the World, having been first an Insect; after his Death his Soul was regenerated into a Mouse, after that an Ox, then a Monkey, &c. then a Man, and still by his good Life and Merits was still born in a better Condition, until he is become the supreme of all the Gods.

Of the Me-  
chanic Arts,  
and Phyfic of  
the Indians,  
By Father  
Papin, ex-  
tracted from  
the Letters  
of the Missio-  
nary Jesuits.  
n. 337.  
p. 225.

Of the *Buduns* there have been three; every one of these Reigns has been counted after this manner; there is a great Hill about half a Mile of perpendicular Height, and about six Miles in Circumference; from the Hill a certain Bird comes once in a thousand Years, and takes one Grain to a certain Place, and continues every thousand Years once, until he has removed that Hill to another Place.

XX. This Country of *Bengal* furnishes Materials for Mechanic Arts and Sciences more than any Country that I know of. The Artisans here have wonderful Skill and Dexterity: They excel particularly in making Linnen Cloath; which is of such Fineness, that very long and broad Pieces of it may easily be drawn through a small Ring. If



If you tear a Piece of Muslin into two Pieces, and give it to one of their Fine-Drawers to set it together again, it will be impossible for you to discover where it is joined; tho' you mark it on purpose to know it. They will place together so artificially the Pieces of Glass or *China* Ware, that one cannot perceive it was ever broken.

Their Embroiderers work in Filigreen very curiously: They imitate exactly any Work made in *Europe*, tho' the Engine they make use of, and all their other Utensils, do not cost them above the Value of a Crown.

The Looms that their Weavers use, do not cost them more: With these they sit in their Courts and Yards, or on the side of the Highway, and work those fine Stuffs that are so highly esteem'd over all the World.

They have here no need of Wine to make *Aqua Vitæ*; but make it of a Syrup, Sugar, some certain sorts of Barks, and Raisins: it burns better, and is stronger than that made in *Europe*.

They paint Flowers, and gild very finely upon Glass. I was surpriz'd to see their Vessels, which they use to cool Water in, and are not thicker than two Leaves of Paper pasted together.

Their Watermen row after a different manner from ours; they move the Oar, with their Feet, and their Hands serve instead of the *Hypomochlion*, or Roller on which it turns.

The Liquor which their Painters use, does not any way lose its Colour, nor is it tarnish'd by Lye.

The Husbandmen in *Europe* prick their Oxen with a Goad to make 'em go faster; but here they only twist or wring their Tails. These Beasts are very docile: They teach them to lie down and rise up when they take up or lay down their Burthen.

They make use of a kind of Hand-Mill to break their Sugar Canes, which does not cost them above the Value of ten Pence.

The Person that grinds, works and fashions the Stone himself with Lac and Emery.

Their Masons will pave the largest Room with a sort of Cement made of Brick-dust and Lime, so that it shall seem to be but one Stone, and is much harder than Gravel.

I saw them make a sort of Pent-house, that was forty Foot long, eight Foot broad, and five or six Inches thick; which they raised up in my presence, and fixed it to the Wall on one side only, without putting any Prop under it to support it.

Their Pilots take the Altitude (or Latitude of Places) with a Cord that has several Knots in it. They put one end of the Cord between their Teeth, and by means of a Piece of Wood fixed to it, that has a Hole through it, they easily observe the Tail of *Urfa minor*, which is commonly called the *Polar* Star, or North-Pole.

Their Lime is usually made of Sea-Shells: That which is made of Snail-Shells serves to whiten their Houses; and that which is made of  
Stones



Stones they chew with the Leaves of *Betel*. I have seen some of them that would take as much of it in a Day as the Quantity of an Egg.

They make their Butter in the first Pot that comes to hand; they cleave a Stick into four Quarters at one end, and stretching them out asunder in Proportion to the size of the Pot that contains the Milk, they turn the Stick round different ways (backwards and forwards) by means of a Cord twisted about it; and by this means in a short time make the Butter.

Those that sell Butter have the Art of making it pass for fresh, when it is old and rank. To do this they melt it, and pour upon it four curdly Milk; and in eight Hours after they take it out in Lumps, and strain it through a Cloth for Sale.

Their Chymists make use of the first Pot they meet with to revive Cinnabar, and other Preparations of Mercury, which they do after a very simple Manner. They easily reduce all Metals into a Powder; as I my self can witness. They set a great Value upon *Talk* and *Brass*, which consume, as they say, all viscous Humours, and remove the most stubborn Obstructions.

Their Physicians are more cautious in using *Sulphur* than they are in *Europe*: They correct it with *Butter*, and put Broth upon it made with long *Pepper*, in which are boiled the Kernels of the *Indian Pine-apple*. *Wolfs-bane* corrected in *Cows Urine*, and *Arsenic* corrected with Juice of *Lemons*, they use with success in *Fevers*.

A Physician is not permitted to take care of a sick Person, unless he can guess at his Disease, and what Humour is most predominant; which they easily know by feeling the Pulse of the Patient. Nor are they often deceived.

The principal Diseases that reign in this Country are, 1. The *Mordechin*, or *Cholera morbus*. The means by which they cure it, is, by not suffering the Patient to drink, and by burning the Soles of his Feet. 2. The *Sonipat*, or Lethargy; which is cured by putting into the Person's Eyes bruised *Pepper* mixed with *Vinegar*. 3. The *Pilbai*, or Obstruction of the Spleen; for which they have no Specific Remedy, unless it be that of the *Joghis*, (or converted *Indians*;) They make a small *Incision* under the *Spleen*, and put in between the Skin and Flesh a long Needle; from whence, by sucking with the end of a Horn, they draw out of the Orifice a kind of fat Matter that resembles *Pus* or Corruption.

Most of the Physicians have a Custom of putting a Drop of Oil on the *Urine* of the sick Person: If it spreads abroad, they say it is a sign that the Patient is very hot within; but on the contrary, if it keeps together entire, it is a sign that he wants Heat.

The common People use very simple Medicines. For the *Megrin*, they smoak, like Tobacco, the dried Bark of a *Pomegranate-Tree* reduced to a Powder, and mixt with four Corns of *Pepper*. For the common *Head-ach*, they smell to a *Nodule*, compos'd of a Mixture of



*Sal-Armoniac*, *Lime*, and *Water*, tied up together in a *Linnen Rag*. Such *Dizzinesfes* of the *Head*, as proceed from a cold thick *Blood*, they cure by drinking *Wine*, in which are steep'd a few *Grains* of *Frankincense*. For *Deafness*, occasion'd by too great a *Quantity* of cold *Humours*, they drop into the *Ear* a *Drop* of *Juice* of *Lemons*. When the *Brain* is charged and opprest with watery *Humours*, they smell to black *Cummin-seed*, bruised and tied up in a *Nodule*. For the *Tooth-ach*, they put upon the *Tooth* affected a *Paste* made of *Crums* of *Bread*, and the *Seed* of the *Stramonium*, which stupifies the *Part* affected, and eases the *Pain*. In an *Hæmorrhage*, or *Flux* of *Blood*, they make the *Person* smell to bruised *Mother-wort*, or *Wormwood*. For a too great a *Heat* of the *Breast*, and *Spitting* of *Blood*, they cover over with *Paste* a *Giraumont*, (which is an *Indian Fruit* like a *Gourd*, and tastes like a *Citrus*) which they bake in an *Oven*, and drink the *Water* that comes from it. For the *Cholic*, that proceeds either from *Wind* or watry *Humours*, they give to drink four *Spoonfuls* of *Water* in which *Aniseeds* and a little *Pepper* have been boiled to a *Consumption* of half. They also bruise an *Onion* with *Ginger*, and apply it to that *Part* of the *Belly* where there is most *Pain*. For the *Lientery*, they roast a *Clove* of *Garlick* under the *Ashes*, and when they go to *Bed*, they hold it in the *Mouth*, and suck out the *Juice* of it. If they drink the *Juice* of the *Leaves* of *Cucumber* bruised, it purges and vomits them. They cure a *Difficulty* of *Urine*, by drinking a *spoonful* of *Oil* of *Olive* well mixed together, with a like *Quantity* of *Water*. For a *Looseness*, they torrify a *Spoonful* of white *Cummin-seed*, and a little powder'd *Ginger*, which they swallow mixt with *Sugar*. I have seen them cure *Fevers* which begin with a shivering *Fit*, by giving the *Patient* three large *Pills* made of *Ginger*, black *Cummin*, and long *Pepper*. For *Tertian Agues*, they give the *Person* for three *Days* together three *Spoonfuls* of the *Juice* of *Teucrium*, or great *Germander*, with a little *Salt* and *Ginger*.

XXI. 1.] Having received Orders to accompany the Reverend *Father Antonio Fuccio* of *Sicily*, our new *Provincial* of this *Country*, in visiting with him our religious *Houses*, I travelled over the *Country* of the *Pintados*; which are large *Islands* separated from one another by *Arms* of the *Sea*, whose ebbing and flowing renders their *Navigation* very difficult and dangerous.

At the *Town* of *Guivam*, in the *Isle* of *Samal*, the last and most *Southern* *Island* of the *Eastern Pintados*, we found twenty-nine *Palaos*, or *Inhabitants* of certain new discover'd *Islands*. The *Easterly Winds*, that blow on these *Seas* from *December* to *May*, have driven them three hundred *Leagues* from their own *Islands*, to this *Town* of the *Isle* of *Samal*, where they arrived in two small *Vessels*, called *Paraos*: Of which we receiv'd this following *Account*.



They embarked, to the Number of thirty-five Persons, to pass over to one of the neighbouring Islands, when there arose a very strong Wind, that forced them out into the main Sea, so that they could not gain the Island they design'd for, nor any of the neighbouring ones. They were driven before the Wind for seventy Days together, without being able to make any Land: At last they found themselves in Sight of the Town of *Guivam* in the Isle of *Samal*. A *Guivamois*, that was then on Shoar, perceiving them, and judging by the Make and Smallness of their Vessels, that they were Strangers, and out of their Way, took a Piece of Cloth, and made them a Signal of entering the Road he directed, to avoid the Shoals and Banks of Sand they would otherwise run upon. These People were so frighted at the Sight of this Stranger, that they began to put out again to Sea; but notwithstanding all their Endeavours, the Wind forced them back a second time towards the Shoar. When they were near, the *Guivamois* again made the Signal as before; but seeing they did not mind it, but would unavoidably be lost, he threw himself into the Sea, and swam to one of their little Vessels on purpose to bring them safe into shoar. He was no sooner got to them, but the Women with their Children at their Backs, and all that were in the Vessel, threw themselves over-board and swam to the other: He, seeing himself alone in the Vessel, resolv'd to follow them, and getting aboard the second, shew'd them how to avoid the Shoals, and brought them safe to Land. In the mean time they stood immoveable, and resign'd themselves up entirely to the Conduct of this Stranger, as so many Prisoners. They landed on the 28th of *December* 1696. The Inhabitants of *Guivam*, running to Shoar, received them very kindly, and brought them Wine and other Refreshments. They eat Coco's very freely, which are the Fruit of the Palm-Trees of this Country: The Pulp of them is somewhat like that of Chesnuts, except that it is more oily, and furnishes them with a sort of sweet Water, very pleasant to drink. They gave them Rice boil'd in Water, which is eat here and all over *Asia*, as Bread is in *Europe*. They looked on it with Surprize; and taking some Grains of it, threw it on the Ground, imagining it to be Worms. They rejoice if one brings them great Roots, call *Palavan*, which they eat greedily.

In the mean time they brought to them two Women, that had formerly been driven on shoar on the Coast of *Guivam*; who knowing a little the Language of this Country, it was by their means they learnt what I shall relate. One of these Women found among those Strangers one of her Relations, who, as soon as they knew one another, fell a weeping. The *Father*, who has on him the Care of this Town, having heard of the Arrival of these People, sent for them to *Guivam*. As soon as they saw him, and what Respect was paid him, imagining that he was the King of the Country, and that their Lives were in his Hands, they threw themselves on the Ground, to ask his Pardon, and beg



beg their Lives. The Father, moved with Pity to see them so disconsolate, did all he could to comfort them.

The Inhabitants of *Guivam* strove one with another, who should entertain these Strangers at their Houses, and furnish them with Provisions and Clothes, and whatsoever else should be necessary; which the Father granted them, on condition they did not separate those that were married, or take less than two of them together, for fear any should die of Grief if left alone. Of thirty-five Persons that embarked, there remained but thirty; five dying thro' want of Provisions and other Hardships in so long a Voyage; and some time after their Arrival here died another.

They relate that their Country consists of thirty-two Islands; which cannot be far distant from the *Mariana's*, as may be judged by the Make and Smallness of their Vessels, and Form of their Sails, which are very like those of the *Marianois*. It is likely these Islands may be eleven or twelve Degrees of Northern Latitude, more Southern than the *Mariana's*, and under the same Degree of Longitude as *Guivam*; for sailing directly from East to West, they came ashore at this Town. It is also probable, that it was one of these Islands that was discover'd some Years ago at a distance, when a Ship belonging to the *Philippines*, leaving the common Road, which is from East to West under the third Degree of Longitude, and running further to the South-East, first perceived it. Some called this Island *Carolina*, from *Charles II.* King of *Spain*; and others the Island of *St. Barnaby*, because discover'd on the Day of that Apostle. It was again seen last Year by another Vessel that a Storm had driven out of its Road, in going from hence to the *Mariana's*.

These Strangers add, that of these thirty-two Islands there are three of them that are uninhabited, unless it be with wild Fowls; but the others are very well peopled. If one asks them the Number of Inhabitants, they point to a Heap of Sand, to shew that their Number is infinite. The Names of these Islands are *Pais*, *Lamululutup*, *Saraon*, *Yaropie*, *Valayyay*, *Satavan*, *Cutac*, *Yfalcu*, *Piraulop*, *Ytai*, *Pic*, *Piga*, *Lamurrec*, *Puc*, *Falait*, *Caravaruvong*, *Ylatu*, *Lamuliur*, *Tavas*, *Saypen*, *Tacaulap*, *Rapiyang*, *Tavon*, *Mutacusan*, *Piyla*, *Olatan*, *Palu*, *Cucumyat*, *Piyalacunung*. The three that have nothing on them but wild Fowls, are *Piculat*, *Hulatan*, *Tagian*. *Lamurrec* is the most considerable of all these Islands: It is there that the King of the Country keeps his Court; the Governors of all the other Islands are subject to him. Among these Strangers there is one of these Governors, and his Wife, who is the King's Daughter. Tho' they go half naked, yet their Carriage, and a peculiar Air of Greatness, sufficiently distinguishes them from the rest. The Husband has his Body painted all over with certain Lines, in such manner that they form several Figures: The rest of the Men are also painted in like manner, more or less. The Women and Children are not painted at all. There are



nineteen Men of them, and ten Women, of different Ages. The Make and Colour of their Face is much like that of the *Philippinois*. The Men have no other Clothes than a sort of Sash, several times wrapt about their Body, that covers their Reins and Thighs. They wear upon their Shoulders above an Ell and a half of coarse Linnen Cloth, like a Cowl, tied before, and hanging loose behind. Both Men and Women are dressed much alike, except that the Women have a piece of Cloth somewhat longer, that hangs from their Waist down to their Knees.

Their Language is different from that of the *Philippines* and *Mariana's*: Their manner of pronouncing it comes nearest that of the *Arabs*, as some who understand that Language have observ'd. The Woman, that seems the most considerable amongst them, has several Rings and Necklaces of Tortoise-shell, (call'd here *Carey*) and others made of a Substance yet unknown to us, much resembling Ambergrise, but not transparent.

The manner of their Living at Sea, which was for seventy Days together, continually driven by the Wind, was thus: They cast out a sort of Net, made of a great Number of little Twigs of Trees tied together, having a large Mouth for the Fish to enter in at, and ending in a Point to prevent their getting out again. The Fish they took after this manner, was all the Nourishment they had, and Rain-water saved in Coco-shells, which is the Fruit of the Palm-Tree, of the Figure and Size of a human Skull.

They have no Cows in their Islands: As soon as they saw them, they ran away, as they did likewise at the barking of a Dog in one of the Missionaries Houses. Neither have they Cats, Stags, Horses, or in general any Quadruped. Nor any Fowls but Sea-Fowls; excepting Hens, which they breed up, but never eat their Eggs.

Notwithstanding this their want of every thing they are very merry and contented with their Condition. Their Songs and Dances are exact and regular: When they sing, it is all together; every one observing the same Humour and Gestures; which makes it very agreeable.

They are surprized at the Government, Politeness, and Manners of the *Europeans*, of whom they had not the least Knowledge. They admire not only the Solemnities and Ceremonies of the Church in celebrating Divine Service; but also the Musick, Instruments, Dances of the *Spaniards*, and their Arms: But Gunpowder is what raises in them the greatest Admiration. They wonder at the Whiteness of the *Europeans*, in respect of whom they are perfectly tawny, as well as the Inhabitants of this Country.

It does not yet appear, that they have either any Knowledge of a Deity, or that they worship Idols. Their Life is perfectly savage, taking care of nothing but eating and drinking, in which they observe no set time, but eat and drink at any Time or Place, when hungry or thirsty,



thirsty, or they can find any thing to satisfy themselves; yet they eat but little at a time, and never enough to suffice for a whole Day. They shew a great Respect and Deference for their King, and Governors of their Towns, and obey them very precisely.

Their Civility and Respect consists in taking hold of the Hand or Foot of the Person they honour, and rubbing gently his Face. They have among their Utensils some Saws, not made of Iron, but of a large Shell, called here *Taclobo*, rubbed and sharpen'd upon a certain kind of Stone. They were surprized at a Merchant Ship that was building at *Guivam*, to see the Number of Carpenters Tools that were used about it: They viewed them all, one after another, with a great deal of Admiration. They have no Metals in their Country. The Father Missionary made each of them a Present of a large Piece of Iron, which they received with as much Joy, as if it had been so much Gold; and are so afraid it should be stole from them, that they lay it under their Heads when they go to sleep. They have no other Arms but Lances or Darts, made of human Bones, very well sharpen'd and fixed on. They are very peaceful of themselves; but if any Quarrel happens among them, it is decided with some Blows on the Head with the Fist, which yet very rarely happens; for when they would come to a close Fight, they separate them, and they are soon reconcil'd again. They are not dull and heavy, but, on the contrary, have a great deal of Liveliness and Courage. They are not so lusty as the Inhabitants of the *Mariana's*, but nevertheless are well proportioned, and of a Shape much like those of the *Philippines*. Both Men and Women let their Hair grow long, and hang loose on their Shoulders.

When they understood they were to be conducted to the Presence of the Father Missionary, they painted their Bodies all over with a yellow Colour, which is look'd upon by them as a great Beauty. They are so well satisfied with finding here Plenty of every thing that is necessary for Life, that they offer'd to return home, and bring with them their Countrymen to enter into a Commerce with these Islands: Which Design our Governor liked very well, in hopes thereby to gain this Country to the King of *Spain*. The oldest of these Strangers was once before cast on the Coast of *Caragan*, in one of our Islands; but finding there none but Infidels, that lived in the Mountains and Deserts, he returned home again, without knowing any thing of the Plenty and Riches of these Islands. They are very expert at diving; and they say, they lately, in fishing, took two large Pearls in their Shells, but threw them into the Sea again, not knowing the Value of them.

2.] I here send a Map of the New *Philippines*; which is one of the most extraordinary Discoveries that has been made in these last Ages. It is strange that these Islands, being situate between the *Molucco's*, the

—on the same,  
by Father Le  
Gobien. *Ibid.*  
Fig. 73.  
Old



Old *Philippines*, and the *Mariana's*, which have been known near these two hundred Years, should remain undiscover'd till now. They are eighty-seven in Number, and make one of the finest *Archipelago's* in the East; being inclosed on the North and South between the Line and the Tropick of *Cancer*, and on the East and West between the *Mariana's* and *Philippines*.

Fig. 73.

This Map was not made by *Europeans*, for none have yet been upon these Islands, but by the Islanders themselves, after this manner: Some of the most skilful of 'em ranged upon a Table as many little Stones as there are Islands belonging to their Country, and marked out, as well as they could, the Name of each, its Extent and Distance from the others: And this is the Map, thus traced out by the *Indians*, that is here engraved.

The Natives of these Islands never offer any Violence to one another: Murder and Homicide are unknown to them; and they have a Proverb among them, That *one Man never kills another*. It is probable these Islands may abound in Gold, Amber and Drugs; being situate nearly under the same Degree of Longitude as the *Molucco's*, from whence we have Nutmegs, and other valuable Spices.

Tho' these People seem barbarous to us, yet they have among themselves a sort of Politeness and regular Government. Every Island obeys its Chief, who himself is subject to the King of the Country. This Prince holds his Court in the Island of *Falu*, called likewise *Lamuirec*; which Multiplicity of Names seems to be the Reason that we cannot find in this Map scarce any of the Names mention'd in *Father Clain's* Letter; or perhaps because at first, from the Natives Pronunciation of the Names of their Islands, they were written by the *Spaniards* after a different manner from what they are at present.

Tho' these Islands were never heard of in *Europe* 'till within these five or six Years, yet 'tis a long time since from the high Mountains of *Samal* they have discover'd thick Smoaks on that Coast; which commonly happens in Summer-time, when these Islanders set fire to their Woods and Forests to clear up the Ground. These Smoaks, which the Fishermen of *Mindanao* and other Islands have also observed when far out at Sea, have made them conjecture, that there was Land East of the *Philippines*; but they never had any certain Knowledge of it, till some time before the above-mention'd Arrival of these Islanders at *Samal*. Which happened thus:

The King's Brother of these New *Philippines*, in a Sea Voyage, was driven on the Coast of *Caragan*, in the great Island of *Mindanao*. The *Spanish* Fathers received this Prince with a great deal of Honour and Friendship, and instructed him in the *Christian* Religion; which he was so well pleas'd with, that he never thought of returning again to his own Country. In the mean time the King, dissatisfy'd at the Loss of his Brother, fitted out a Fleet of an hundred small Vessels, which he sent to every Island under his Dominion, to see if they could learn  
any











any News of him. One of these little Vessels was forced by a Storm on the Coast of *Caragan*, at the same place as the King's Brother was before: Where landing, they immediately knew him, and with Tears told him the Occasion of their Journey, the Discontent of the King his Brother, and desired him to return back with them. The Prince thanked them for the Trouble they had been at, and desired them to satisfy the King, that he was well and contented; but could not, by any means, be persuaded to return home again.

*The Figure in the midst of every Island shows how many Days sail it is Fig. 73. in Circumference.*

*The Figure between each Island shews how many Days are required to pass from one to the other.*

As for Instance. *The Figure 30, in the Isle of Panlog, shews that it is 30 Days in Circumference; and the Figure 3, between the Cape of Guivam and the Isle of Panlog, shews that it is three Days Passage to it.*

*The Indians, who were the Occasion of those Islands being discovered, embarked in the Island Amorot, marked in the Map by the Letter C, with a design to pass to the Isle of Paiz, marked by the Letter B; but were driven by a Storm out to Sea, and after 70 Days Sail cast on the Cape of Guivam in the Island of Samal, called by the Spaniards Ibabao.*

*A. the largest of these Islands, named Panlog.*

*D. the Isle of Falu, or Lamuirec, where the King holds his Court.*

XXII. I shall give an exact and faithful Account of the Discoveries and Settlements that Father *de Salvatierra* and my self have made in *California* for these five Years past.

We embark'd in *October* 1697, and pass'd the Sea that separates *California* from *New Mexico*. As soon as we set foot on Land, the People being ignorant of our Design (as not understanding our Language, nor we theirs) imagining that we came to take from them the Pearl Fishery, as had been attempted several times before by others, came in great multitudes against us, who had but an inconsiderable Number of *Spaniards* to defend us. The Violence with which they attack'd us, and the multitude of Darts and Stones they threw at us, our Soldiers sustain'd so vigorously, that they beat them back with success, and soon put them to flight.

These *Indians*, after this Defeat, became more tractable: and seeing they could not gain any thing on us by Force, deputed some amongst 'em to come and treat with us. We receiv'd them very friendly, and soon learned of them enough of their Language, to let 'em know the reason of our coming into their Country. These Deputies undeceived the rest; so that being satisfied of our good Intentions, they came to us in great numbers, and shew'd a great deal of Joy to see that we were willing to instruct them in our Religion. This happy Dispo-

*Of a Passage by Land to California, and a Description of that Country by Fr. Maria Picolo, taken from the Letters of the Missionary Jesuits. n. 318. p. 232.*



Disposition encouraged us to study throughly the *Monqui* Language ; in which, and instructing the People, we spent two Years.

Fig. 74.

After this we thought of discovering other Nations ; which that we might do more successfully, the Father *de Salvatierra*, and my self, resolved to separate, and take two different ways : He went to the North, and I to the South and West. By this means Father *de Salvatierra* by little and little discover'd all those Habitations, that, at present, compose the Missions of *Loretto*, *Concho*, and *St. John of Londo* ; and I, all that Country, at present call'd the Mission of *St. Francis Xavier of Biaundo*, which extends itself to the South-Sea.

In proceeding each of us his way, we observed several Nations of different Tongues mixt together : Some of them spoke the *Monqui*, which we understood ; and others the *Laymon*, which yet we knew nothing of. This obliged us to learn the *Laymon*, which is of greater Extent than the *Monqui*, and seems to be universal in this large Country. We apply'd our selves so close to the Study of this second Language, that we learnt it in a little time, and began to preach indifferently in either.

Since our second Discoveries we have divided all this Country into four Missions. The first is that of *Concho*, or *Our Lady of Loretto*. The second that of *Biaundo*, or *St. Francis Xavier*. The third, that of *Yodivinegge*, or our *Lady of Grief*. And the fourth, which is not yet founded, or so well establish'd as the other three, is that of *St. John of Londo*.

Fig. 74.

Every Mission contains several Towns : That of *Loretto-Concho* has nine belonging to it ; *viz. Liggige*, two Leagues from *Concho* ; *Jetti*, three Leagues ; *Tuiddu*, four Leagues. These three lie to the North, and the six following to the South : *Vonu*, two Leagues distant ; *Numpolo*, four Leagues ; *Chuyenqui*, nine Leagues ; *Liggui*, twelve Leagues ; *Tripue*, fourteen Leagues ; *Loppu*, fifteen Leagues. There are eleven Towns in the Mission of *St. Francis Xavier of Biaundo*, *viz. Quimiauma*, or the *Guardian Angel*, at two Leagues distance ; *Lichu*, or the *Mountain of the Knight*, at three Leagues ; *Yenuyomu*, at five Leagues ; *Undua*, at six Leagues ; *Enulaylo*, at ten Leagues ; *Picolopri* at twelve Leagues ; *Ontta* at fifteen Leagues ; *Onemaito*, at twenty Leagues. These eight lie to the South, the two following to the North ; *Nuntei*, at three Leagues, and *Obbee* at eight Leagues : *Cuivuco*, or *St. Rosalia*, at four Leagues Distance towards the East. The Mission of our *Lady of Grief* comprehends only *Unubbe*, on the North ; *Niumqui*, or *St. Joseph* ; and *Yodivinegge*, or our *Lady of Grief*, which gives name to the whole Mission. *Niumqui* and *Yodivinegge* are two Towns very well peopled, and near one another. Lastly, the Mission of *St. John of Londo* contains five or six Towns. The principal are *Teupnon*, or *St. Bruno*, three Leagues distant to the East : *Anchu*, at the same Distance to the North : *Tamonqui*, at four Leagues ; and *Diutro* at six, both towards the East : Besides *Trippue* and *Loppu*, two Towns to the South, lately discovered.

Having











Having given an Account of the State of Religion in this new Colony, I proceed to relate what we observed concerning the Customs and Dispositions of these People, their Manner of living, and the Product of their Country.

*California* is pretty well placed in our common Maps. The Heats in Summer are very great along the Sea-Coasts, and it seldom rains; but the *Air* of the Inland Countries is more temperate, and the Heats not so excessive. It is the same in Winter proportionally. In the rainy Season there are Floods; but when that is over, instead of Rain the Dew falls in such Plenty every Morning, that one would think it had rained; which renders the Earth very fruitful. In the Months of *April, May* and *June*, there falls with the Dew a sort of *Manna*, which congeals and hardens upon the Leaves of Reeds, from whence they gather it: It is as sweet as Sugar, tho' not altogether so white.

—The Air of California.

The Climate must needs be healthy, if we may judge of it by our selves and those that were with us: For during the Five Years we were in this Kingdom, we continued very well in Health, notwithstanding the great Fatigues we underwent: And of the other *Spaniards* there died but two; one of which was a Woman, who occasion'd her own Death, by imprudently bathing herself when she was near lying in.

There are in *California* large Plains, pleasant Vallies, excellent Pastures at all times for great and small Cattle; fine Springs of running Water, Brooks and Rivers, with their Banks cover'd with Willows, Reeds, and wild Vines. In their Rivers they have Plenty of *Fish*, especially Cray-fish, which they keep in a kind of Conservatories, till they have occasion for them; three of these Conservatories I have seen, that were very large and beautiful. There is also plenty of *Xicames*, of a better Taste than those of *Mexico*. So that we may conclude *California* to be a very fruitful Country. On the Mountains there are all the Year long *Mescals*, a Fruit peculiar to this Country; and in most Seasons, large Pistachio's of several sorts, and Figs of different Colours. The Trees are very beautiful; and, amongst others, that which the *Chinos* (who are the Natives of the Country) call *Palo Santo*, bears a great deal of Fruit; from this they draw excellent Frankincense.

Fish

Fruit.

As this Country abounds in Fruit, it does no less in *Grain*; of which there are fourteen sorts that the People feed on. They use the Roots of Trees and Plants, and, among others, those of the *Xyuca*, to make their Bread of. There are excellent Skirrets; a sort of red Strawberries, of which they eat plentifully; and Citrons and Water-Melons of an extraordinary Size. The Land is so good, that most Plants bear Fruit three times a Year: So that with some Labour in cultivating it, and Skill in managing the Water, they render the Country extremely fertile. Nor is there any sort of Fruit or Grain, but what they gather in great abundance; which we experienc'd ourselves: For bringing with us from *New-Spain* Corn, *Indian* Wheat, Pease, Lentils, &c. we sowed them, and had a very plentiful Increase, tho' we had not any Cattle or proper Instruments to till the Ground.



## Animals.

Besides several sorts of *Animals* that we knew, which are here in plenty, and are good to eat, as Stags, Hares, Coneys, and the like, we found two sorts of *Deer*, that we knew nothing of: We call them *Sheep*, because they somewhat resemble ours in Make. The first sort is as large as a Calf of one or two Years old: Its Head is much like that of a Stag; and its Horns, which are very large, like those of a Ram: Its Tail and Hair are speckled, and shorter than a Stag's; but its Hoof is large, round, and cleft as an Ox's. I have eaten of these Beasts; their Flesh is very tender and delicious. The other sort of Sheep, some of which are white, and others black, differ less from ours: They are larger, and have a great deal more Wool, which is very Good, and easy to be spun and wrought. Besides these Animals, that serve for Food, there are Lions, wild Cats, and many others of the like, as in *New-Spain*. We brought to *California* some Cows, and Store of small Cattle, as Sheep and Goats; which would have increased very much, had not the Necessity we were once in, obliged us to kill the greatest part of them. We likewise brought with us Horses and Colts to stock the Country, and began to breed up Hogs; but as these do a great deal of Damage in the Villages, and the Women are afraid of them, we have resolv'd to extirpate them.

## Fowls.

As for *Fowls*, there are in *California* all that are in *Mexico* and *New-Spain*; as Pigeons, Turtle-Doves, Larks, Partridges of an exquisite Taste, and in great Quantities, Geese, Ducks, and many other sorts both of River and Sea-Fowls.

## Sea-Fish.

The *Sea* affords great Plenty of very good *Fish*: They take Pilchards, Anchovies, and Tunnies; which last they catch with their Hands on the Shoar. We often see Whales, and all Sorts of Tortoises. The Shoars are fill'd with Heaps of Shells, larger than those of Mother of Pearl. The Salt that they have is not from the Sea, but out of Pits: It is as bright as Crystal, and so hard, that they are often forced to break it with Hammers. It is a very good Commodity in *New-Spain*, where Salt is scarce.

*California* has been known near these two Centuries; and its Coasts are famous for the Pearl Fishery, which has made the *Europeans* so desirous of establishing a Trade hete. It is certain, if the King would erect a Fishery here at his own Charge, he might draw great Advantage from it. Nor do I doubt but that there are Mines to be found in several Places, if they were sought for; since the Country is under the same Degree as the Provinces of *Cinalao*, and *Sonora*, where there are very rich ones.

Though Heaven has been so bountiful to the *Californians*, and the Earth brings forth for itself what it does not produce elsewhere without a great deal of Labour and Pains, yet they make no Esteem of the Plenty and Riches of their Country; contenting themselves with what is only necessary for Life, they take little Care for the rest. The Inland Parts of the Country are very populous, especially towards  
the



the North: And tho' there is scarce a Town but what has 20, 30, 40 or 50 Families in it; yet they have no Houses, but defend themselves from the Heat of the Sun in the Day-time under the Shade of the Trees, and of their Leaves and Branches make a sort of Roof against the Inclemency of the Night. In the Winter they shut themselves in Caves in the Earth, and live there together little better than like so many Beasts.

The *Men* go naked; at least all were so that we saw. They wear about their Head a fine Linnen Fillet, or sort of Net-work; and about their Neck, and sometimes about their Arms, for Ornament, Mother of Pearl in divers Figures, very finely wrought, and prettily intermixt with little round Fruits, somewhat like the Beads of a Chaplet. They have no other Arms than Bows and Arrows, and a sort of Javelin, which they always carry in their Hand, either to kill their Game, or defend themselves from their Enemies; for their Towns often make War upon one another. *The Men.*

The *Women* wear from their Waist down to their Knees a kind of Apron made of Reeds, very neatly wrought and matted together. They cover their Shoulders with the Skins of Beasts, and wear about their Heads, like the Men, a very curious kind of Net-work; which our Soldiers find so convenient, that they make use of them to tie up their Hair with. They, as well as the Men, have Necklaces of Mother of Pearl, mixt with the Stones of some sorts of Fruit and Sea-shells, hanging down to their Waist; and Bracelets in like manner of the same. *The Women.*

The common Employment of both Men and Women is *Spinning*. —*Spinning.* They make their Thread of long Plants, which serve them instead of Hemp and Flax; or else of a Cotton-like Substance found in the Shell of some sorts of Fruit. Of the finer sort of Thread, they make the Ornaments above-mention'd; and of the coarser Fishing-Nets, and Sacks or Bags of several Uses. The Men moreover, of certain Plants, whose Fibres are very close and thick set, and which they are very well skill'd in working, employ themselves in making Dishes, and other Kitchen Necessaries, of all Fashions and Sizes. The smaller Pieces serve for drinking Cups; those that are larger, for Plates and Dishes, and sometimes for Umbrello's for the Women; and the largest sort for Baskets to gather Fruit in, and sometimes for Pans and Basins to dress their Meat in: But they take care to keep them continually moving while they are over the Fire; for if the Flame catch them, they are soon burnt.

The *Californians* have a great deal of Liveliness, and are naturally addicted to Raillery, as we found when we began first to instruct them: For if we committed any Error in their Language, they jested and made Sport at us. But after we were grown better acquainted and more familiar with them, if we committed any Faults, they civilly advised us of them. And if at any time we explain'd *The Temper of the Californians.*



any Mystery, or Point of Morality, not conformable to their Prejudices and Errors, they waited for the Preacher after Sermon, and disputed against him with a great deal of Force and Wit: If we could give them god Reasons for it, they listen'd very attentively; and, when at last convinced, submitted, and did accordingly. We have not found among them any Form of Government, Religion, or regular Worship. They adore the Moon, and cut their Hair (as I remember) in her Decrease, in honour of their Deity, which they give to their Priests, who employ it to several superstitious Uses. Every Family makes Laws as they please, which is plainly the Reason that they are so often at War with one another.

*Of a New  
Island raised  
near Santeri-  
ni, in the Ar-  
chipelago,  
May 12, 1707.  
by Dr. W.  
Sherard. n.  
314. p. 67.*

XXIII. 1.] I just now receiv'd a Letter from our Consul at *Milo*, with the following Account of a New Island: That on the 12th of *May*, 1707, there began to rise up an Island a Musket-shot distant from the Island of *Santerini*, which continually increasing from day to day in the same manner, and troubling the Sea, there rose up several Rocks that fix'd themselves to this Island, so that it was about half a Mile in Circumference on *June 21. N. St. 1707.*

*—from the  
Paris Ga-  
zette, ibid.*

2.] *From the Paris Gazette, dated April 14, 1708. Constantinople, Jan. 4. 1708.]* They write from the Island of *Santerini* in the *Archipelago*, about 28 Leagues North of the Town of *Candia*, of the first of *December* last, that there was sprung up an Island from the Bottom of the Sea, which at that Place is very deep, formed of Stones cast up by a *Vulcano* under Ground at the Bottom of the Sea, which has often produc'd the same Effects, and after the same Manner. In the Year 726, in the time of the Emperor *Leo Isauricus*, there was form'd an Island on the North-side, call'd the *Burnt Island*, by Matter vomited up and heaped together by this *Volcano*. In the Year 1427, in the Month of *December*, this *Burnt Island* was increased by great Rocks, cast up by subterraneous Fires. In the Year 1650, in the Month of *September*, the *Volcano* again took fire, and produced the same Effects, without forming any Island, but only a Shelf or Bank 10 Fathom under Water in the Sea, where it has no Bottom.

Lastly, in the Month of *November* last, 1707, the *Volcano* made an Island, which is already two Miles in Circumference, and increases yet (this first of *December*) by Rocks and other New Matter that is thrown up. This Burning was preceded, as at all other times, by violent Shakings of the Earth, followed by a thick Smoak that rose out of the Sea in the Day-time, and Flames in the Night, and accompanied with a terrible roaring under Ground. There is no Example of the Effects of any *Volcano* at Land like these in the Sea; and yet what renders them the more credible, is, that the Island of *Santerini* itself is almost all of it composed of burnt Rocks and Pumice-



mice-stones: It produces some sorts of Grain, but has neither Rivers nor Springs, nor any other Water but what is saved in Cisterns.

3.] On Monday the 23<sup>d</sup> of May, O. S. 1707, at Sun-rising, we observ'd between the two *Burnt Islands* (commonly call'd the *Little* and *Great Cameny*) something which look'd like a floating Rock; which at first we thought might have been some Vessel shipwreckt on that Coast, and seem'd as if it would in a little time be dash'd to pieces against the *Lesser Cameny*, that was hard by: On which some Mariners put out to see what it was, and brought us word that it was a Shoal, which began to spring up from the Bottom of the Sea, and was not as yet very plainly to be discern'd. The next Day several Persons went out of Curiosity to satisfy themselves, not easily believing what the Mariners related: But they were no sooner got to the Place, than their Eyes fully convinced them that it was Matter of Fact. Some of 'em were so bold as to get ashoar on this new Shoal, which was still moving, and sensibly increasing under their Feet. They brought us back several Curiosities, and among others a kind of Oysters, very large, and of an exquisite Taste, which they found sticking to the Rock, and raised out of the Water, as the Shoal had increased in Height. Above all I observed a sort of Stone, that at first sight look'd much like Bisket, but in reality was nothing but a very fine Pumice-stone, surpassing all that I ever saw in *France*, or any other Parts of *Europe*.

—On the same, by Mr. Bourguignon Taken from the Memoirs of the History of Arts and Sciences at Tre-voux, for July, 1708. n. 317. p. 200.

Two Days before the springing up of this Shoal, on the 21<sup>st</sup>, between twelve and one at Noon there was an Earthquake over the whole Island; which we cannot reasonably attribute to any other Cause than the rising up of this Mass of Rock. From its first Appearance, to the 13<sup>th</sup> or 14<sup>th</sup> of June, it has continually increased very sensibly, as well in Bigness as Height, without any Noise.

This Shoal is very pleasant to look on, of a white Colour, and round Figure. The Earth that it is composed of is light, with a small Mixture of Clay. This new Island, according to the Report of some learned and skilful Persons that were upon it in the beginning of June, is half a Mile in Circumference, and from 20 to 25 Foot high. Its increasing for 4 or 5 Days was not so sensible as before, insomuch that most were persuaded that it had entirely ceased: Every body then thought themselves safe, and that there was nothing further to be fear'd; but they were afterwards convinced of the contrary. For the Sea, already much troubled by the raising up of this Mass of Earth, appeared more troubled every Day than other; not so much by reason of this Shoal lately removed, and still floating, as on account of the Mixture of a vast Quantity of different Matters continually thrown up Night and Day from the Bottom of the Sea; so that one might easily distinguish several sorts of Minerals by the Diversity of Colours they made on the Surface of the Water; but Sulphur was in greatest abundance, insomuch that the Sea was colour'd



coloured with it about *Santerini*, to near 20 Miles distance. The excessive rolling of the Waves about the new Shoal was greater than ever; and a more than ordinary Heat was sensible to any one that approach'd too near, which undoubtedly was the cause of such Quantities of Fish being found dead on the Shoar. Every body perceived a horrible Stench, that infected the neighbouring Air; and which we ourselves, tho' more than three Miles distant, often found of dangerous consequence. The boiling of the Waters, which some before doubted of, proved now too true; and, instead of decreasing, grew every day considerably greater. This struck all People with a fresh Fear, and changed the Resolution of those, who were so bold before as to venture on this new Island. But their Fear was increased, when on *Friday, July 16*, at Sun-set, they perceived between this new Island and the *Lesser Cameny*, as it were a Chain of black Rocks, that rose up from a prodigious Depth of the Sea, to the number of seventeen or eighteen, not very distinct from one another, but seem'd as if they would shortly unite together, and join themselves to this new Island, as they actually did some few days after. Next day, being *Saturday*, we saw them plainer; and those whose Tops we could only see the Night before, now appear'd extraordinary large. On *Sunday* we first perceived Smoak to break forth, much resembling, in Thickness and Colour, that of a burning Furnace; and at the same time heard certain Murmurings under ground, which seem'd to proceed from the Center of this new Island, as yet too deep in the Sea to be plainly distinguished.

Every body then was more frightened than ever, and thought of nothing, but how they should shelter themselves from the approaching Danger, and avoid the Fire that they foresaw in all likelihood would soon follow. Whole Families went for Refuge to the neighbouring Islands; and others contented themselves only with changing their Habitations, and living in the open Country, thinking themselves safer there. In the mean time, the Rocks abovementioned united together, and seem'd already to form another Island distinct from the former. The Smoak appear'd in greater abundance; and the Fire, which we so much dreaded, at last began to break forth about the 19th of *July*: It was so little at first, and of so dull a Colour, that few believed it so be really so; but afterwards increasing by degrees, as the Island increased, and breaking out more and more, and in different Places, all were sufficiently convinced of it.

It was no less frightful and amazing, than curious, to see every Night on the Top of this Mount, that Nature had lately formed a vast Number, as it were, of burning Furnaces, all of a bright Flame; in Order and Position not unlike those Illuminations of the *Minarets*, which the *Turks* usually make at certain times every Year. One Night at the End of *July*, about an Hour after Sun-set, as we were observing the different *Phænomena* of this new Island, there

appear'd



appear'd of a sudden, in the middle Region of the Sky, a fiery Lance, seeming to come from East to West; but it disappearing again too soon, we could not exactly observe the Dimensions of it. In the mean time the Burnt Island increased prodigiously, and extended it self principally on the South and North Sides. The Sea also seemed much more disturbed and loaded with Sulphur and Vitriol. The boiling of the Water was more fierce and violent: The Smoak thicker, and in greater abundance; and the Fire bigger and more frightful. But above all, a Stench, that infected the whole Country, grew so insupportable, that Persons of the strongest Constitutions could scarce breathe in it; others, that were weaker, fell into frequent Faintings; and almost every body was seized with Vomitings. I could not then but imagine my self on board some Man of War; where, at a general Discharge of all the Guns, the confused Stink of the Powder, Tar, and Stench of the Ship, especially in foul Weather, often overcomes the strongest Seamen. Just such a nauseous Stink we were forced to breathe in, without being able any ways to avoid it, or defend our selves from it. But as we were infested with it but at times, and as the Wind brought it; so it was sometimes more in one Place than another, and more or less tolerable, as the Wind fate. This ill Scent was very mischievous: It spoiled most of the Vines; and a great Smoak, that rose out of the midst of this new Island like a Mountain, joining it self to a thick Fog, that commonly hangs over *Santerini* when the Wind is at South, burnt and destroy'd, in the Beginning of *August*, in less than three Hours time, all the Fruit that was ripe, and ready to be gathered, especially in such Vineyards as lay most exposed to the South. A few Days after I was obliged to go to *Naxus*, so that I was absent 13 or 14 Days; in which short Space of Time there was so great an Alteration in these two new Islands, that I scarce knew 'em again at my Return; so different they were from what I left them. The White one, that did not seem to increase any more, was now grown considerably higher; and the Black one was much longer. Both of them, tho' different in Colour, were now united together, and made but one Island, as they remain at this Time. The Fire and Smoak had made new Vent-holes, and the Noise under ground was more frequent and audible. They told me, that in my absence they heard from the midst of the Island as it were so many large Cannon shot off, and at the same Instant saw a great Quantity of burning Stones thrown into the Air: of which a few days after I was an Eye-Witness. I watched Day and Night these furious Discharges, which made the Doors and Windows of our Chambers shake, and sometimes the very best-built Houses; and saw more than once Stones all on fire darted into the Air out of sight, and after fall again like a Bomb, and quench'd in the Sea at more than five Miles distance.

When



When these Discharges happen'd, which were as loud as those of a Cannon, we commonly saw immediately a great Flash of Fire like Lightning; and after that, there sprung up very swiftly a black and dismal Smoak, mixt with Ashes, and so prodigiously thick, that, when spread in the Air, it made a thick Cloud of several Colours; which, by degrees, dissolving it self in a fine Dust, fell like Rain on all the neighbouring Country, and more particularly on our Island, where it was in such abundance, that the Ground was often covered with it. The Noise grew stronger, and was louder than if six or seven Cannons had been discharged together: The Fire made it self every Day more Vent-holes, and became more dreadful. We commonly sat up the greatest part of the Night to observe it.

Every Night Nature represented as great Variety of Scenes, as the Fire broke forth in different Forms. Sometimes burning Ashes spread themselves in the Air, like a Plume of Feathers, which falling again on the Shoal, made it appear all of a light Fire: Other times one would think it was actually the discharging of so many Mortar-pieces, which threw entire Rocks, like so many Bombs, capable of destroying the largest Ships; tho' for the most part these Stones were of a middle Size, but in such Quantities, that I often saw this little Island all cover'd with them, and so pleasantly illuminated, that one would never be weary of looking on it.

These dreadful Discharges were less frequent at the End of *August*, but increased in *September*, were daily in *October*, and at this time are almost incessantly. 'Tis true, the Noise is not so loud; the Stones that are cast up are not so big, nor so many, the Boiling and Disorder of the Water is much abated; the Sea begins to recover its former Colour; the Stench, that was before insupportable, has been very little for these six Weeks. Yet the Smoak grows every Day thicker, blacker, and in greater abundance: The Fire is more than ever, and seems sometimes to strike the very Sky: The subterraneous Noise is continual, and so violent, that it can't be distinguish'd from Thunder: Dust and Ashes fall daily on this our Island. The Countryman is dejected at the Loss of his Corn, which, scarce sprung out of the Ground, begins to fade already; and the Mariner, not so bold as before, contents himself with viewing it at a distance, since the loss of a Bark of this Country, which going too near, took fire and was burnt.

This new Island grows every day more curious, more dreadful, and less accessible; and is so far from ceasing to increase at the Approach of Winter, as some would persuade us, that we see it continually increasing on the South-West side; where Nature seems as if she labour'd to make a large Port, capable of holding all manner of Ships, which may one day render *Santerini* not so practicable as heretofore.

This,



This is what I thought most remarkable, in relation to this New Island, from the first beginning of it, to this 20th of *November*. I have only this to add, that this new Shoal seems to be at present at least three Miles in Circumference, and more than from thirty five to forty Foot high.

4.] Among the Prodigies of Nature, we may very justly reckon an Island which rose up from the Bottom of the Sea, about four Years ago, in the Bay, which makes the Harbour of the Isle of *Santerini* in the *Archipelago*; especially if we consider the Situation, Manner, and all the other Circumstances of the Formation of this new Island. For what can be more surprizing, than to see Fire not only break out of the Bowels of the Earth, but also to make itself a Passage through the Waters of the Sea, without being extinguished? Or what can be more extraordinary, or foreign to our common Notions of things, than to see the Bottom of the Sea rise up into a Mountain above the Water, and to become so firm an Island, as to be able to resist the Violence of the greatest Storms? I know that subterraneous Fires, when pent in a narrow Passage, are able to raise up a Mass of Earth as large as an Island: But that this should be done in so regular and exact a manner, that the Water of the Sea cannot any ways penetrate to, and extinguish them; that the Fire itself, after having made so many Vent-holes and Passages, should notwithstanding retain a Force sufficient to raise up so great a Mass; and in fine, after the Fire is extinct, that this great Mass should not fall or sink down again thro' its own Weight, but still remain of the same Height that the Fire had raised it: This is what to me seems more surprizing than any thing that has been related of Mount *Gibel*, *Vesuvius*, or any other *Volcano*.

—on the same,  
by Father  
Goree.  
n. 332.  
p. 354.  
Fig. 75.

Yet this is not the first time that these Prodigies in Nature have been seen at *Santerini*: For, if it be not true, that this Island itself, which was anciently call'd *Tbera*, was in like manner raised out of the Sea (as *Pliny* assures us it was,) it is at least most certain, that three other small Islands (two of which lie within the Bay of *Santerini*, and the third a little without it) have been form'd and raised up above the Sea by subterraneous Fires.

The first of these Islands, which was anciently call'd *Hiera*, because it was (as it is thought) dedicated to *Pluto*, is now named *Megali Kammeni*, that is to say, the *Great Burnt Island*. *Justin* (l. 30. c. 4.) speaking of the first War of the *Romans* with the *Macedonians*, and of the two Months Truce which *Philip* King of *Macedon*, and Father of *Perses*, then demanded, and which he obtained, according to *Salianus*, the 4th Year of the 145th Olympiad, and the 196th Year before the Birth of our LORD, tells us, that this Island rose up from the Bottom of the Sea this very Year after an Earthquake. His Words are these:

*Eodem anno inter Insulas Theramenem & Therasiam, medioutriusque ripæ &*



*maris spatio, terræ motus fuit ; in quo, cum admiratione navigantium, repente ex profundo cum calidis aquis insula emerfit.*

It became half as big again in the Year of our LORD 726, by the joining of another Island to it ; which, according to the Relation of *Theophanes*, a Greek Author, cited by *Baronius*, rose also out of the Sea, and raised itself exactly to the same Height as the Island *Hiera*, and united so well to it, that at this time there remains no other Mark of its joining, than only a Cleft or Fissure, which reaches from one end of the Island to the other, and in several Places is not half a Foot broad.

The same thing happen'd a second time in the Year 1457, as appears by a *Latin* Inscription upon a Marble at *Santerini* ; but with this Difference, that the subterraneous Fire, after having raised to the Height of five or six Foot above the Water, a vast Quantity of Rocks, which formed a Space about a Mile in Circumference, open'd a Passage for the Sea-Water to enter, by which it was extinguish'd ; and the middle of that Space remain'd so low, that the Sea flowing into it by a subterraneous Canal, made there a small Lake, which continues to this day.

Fig. 75.

As to the second Island, which is a little without the Bay, and is call'd in Greek *Aspronisi*, or the *White Island*, because the Earth, with which it is cover'd, is white like Lime ; *Pliny*, who liv'd in the time of the Emperor *Vespasian*, says that it rose out of the Sea, and appeared in his time.

The third Island, which is the least, and is called by the Greeks *Mikri Kammeni*, or the *Lesser Burnt Island*, was formed in the Year 1573, according to the Relation of several old People, who learned it of their Ancestors : And it is between this little Island and the *Great Kammeni*, that on the 23d of *May* (New Stile) in the Year 1707, at Break of Day, this new Island was first discover'd.

Five Days before it appear'd, viz. On the 18th of *May*, between one and two of the Clock in the Afternoon, there was at *Santerini* an Earthquake, which was not violent, and continued but a Moment : And the Night, between the 22d and 23d, there was also another, which was yet less sensible than the former.

It is natural to imagine, that it was then that the new Island first began to move and raise itself from the Bottom of the Sea : Yet if we consider, that these two Earthquakes were not violent, and lasted but a Moment ; and that the Bottom of the Sea was in this Place from 80 to 100 Fathom deep, it seems difficult to believe that in five Days time it could rise to this height. What inclines me to think the contrary, is, that the Height it is at present above the Surface of the Sea, and which it did not arrive to in less than three Years time, is much less than that from the Bottom of the Sea to the Surface of the Water, as I shall show. Add to this, that a long time before these Earthquakes, the Fishermen perceived an ill Smell every time they passed by that Place ; which shows that the  
Island



Island had then begun to move: Notwithstanding it is very certain, that there have not been any other Earthquakes at *Santerini*, than those, which, 14 or 15 Years ago, continued for several Days, and were very violent. Howsoever it was, some Seamen discover'd this Island early in the Morning; but not being able to distinguish what it was, they imagined it to be some Vessel that had suffer'd Shipwreck, and was driven thither by the Sea. They went immediately to it; but as soon as they found that it was a new Island, they grew afraid, and returning as hastily back again, spread the Report over the whole Island; which was the more readily credited, because all the Inhabitants knew, and several of them had themselves seen, what happen'd in the Year 1650. There was then a new Island, like to the present, which between the Islands of *Santerini*, *Nio* and *Andro*, rose up by means of subterraneous Fires, which caused several violent Earthquakes, accompanied with a roaring Noise under Ground, sulphureous Exhalations, and insupportable Stench, and a black Smoak, which rose out of the Sea with Flames to the Height of 10 or 12 Cubits. The Sea was then so tossed backwards and forwards by the terrible Shocks of the Earth, that it overflowed and destroyed 30000 Perches of Land in *Santerini*; and the Air was so infected with Exhalations which came from the Fire, that 25 Persons, and a great many Beasts were stifled. At last, when this Island had not above eight or ten Fathom of Water to rise, so as to appear above the Surface of the Sea, the Force of the subterraneous Fire was so violent, as to open a Passage, before its time, by which the Water of the Sea entering in like a Torrent, extinguished the Fire, and this Mass of Earth and Stones did not rise any higher.

How great soever the Fright of the Inhabitants of *Santerini* was at the first Sight of this new Island, yet a few Days after, not seeing any Appearance either of Fire or Smoak, some of them took a Resolution to go and view the Situation of it: Which they did accordingly: and not imagining any Danger, went on Shore upon it. They passed from one Rock to another, upon which they met with several very remarkable Curiosities; among which we may reckon a sort of white Stone, which cuts like Bread, and resembles it so well in Form, Colour, and Consistence, that were it not for its Taste, any one would take it for real Bread. There was also a great Number of fresh Oysters, which they found sticking to the Rocks; which being very scarce in that Country, by reason of the Depth of the Sea, they got as many of them as they could.

While they were busy about this, they perceived the Island move and shake under their Feet. This was sufficient to make them leave it immediately. In short, the rising of the Island was visible to the Eye, and it increased not only in Height, but also in Length and Breadth. Tho' it was already between 15 and 20 Foot high above the Sea, it could not yet be seen from the Mountain *Merovigli*, or the



*Of a New Island raised out of*

Castle of *Scaro*, which stands upon the Shore, by reason the *Lesser Kammeni*, above-mentioned, lay between, and hinder'd the Sight: But at 15 Days end, they began to see it from *Merovigli*, and in a few Days after from the Castle of *Scaro*, situated upon another Mountain, which though it be very high, in respect to the Sea, yet it is much lower than that of *Merovigli*, to which it joins. From whence we may judge how much this new Island grew in Height in a few Days.

As the Motion, by which this Island increased every Day in Height, was sometimes equal, and at other times unequal, in respect to all the Parts of so great a Mass; so it did not always rise equally on every Side. It often happen'd, that while it grew in Height and Length on one Side, it sunk down and decreased on the other. I one day saw a Rock rise out of the Sea, at 40 or 50 Paces distant from the Island, which I continued to observe for four Days together; at the end of which time it sunk again into the Sea, and did not appear any more: But this was different from what happen'd to some others; which having disappear'd, as this did, they re-appeared again some time after.

The *Lesser Kammeni*, which lies very near, was often shaken with the Motion which raised this new Island. From a small Cleft, which we observ'd upon the Top of this little Island, sometimes Stones would break loose; which rolling down its Sides into the Sea, would raise as it were a Cloud of Dust, which some People took to be Smoak, but in reality it was not so.

At this time, the Sea, which is contain'd within the Gulph or Bay of *Santerini*, several times changed its Colour: At first it appear'd green, afterwards reddish, and some time after of a yellowish Colour; with a Stink, which spreading itself over great Part of *Saterini* made us imagine that this Colour proceeded from nothing else but the Sulphur with which the Sea was cover'd.

The Smoak appeared first upon the 16th of *July*: At which time, from a Place in the Sea, where (they assured me) they could never before find any Bottom, and which was above sixty Paces distant from the new Island (which they then called the *White Island*) there arose up a Ridge of black Stones, which the *Greeks*, by reason of their Hardness, call *Sideropetres*, or Iron Stones, which formed another Island, named by the Inhabitants the *Black Island*; and which was afterwards not only the Center of the whole Island, but also of the Fire and Smoak, and great Noise that was heard some time after.

The Smoak, which issued out of this Ridge of Stones, or Black Island, was very thick and white, as if it had proceeded from five or six Lime-Kilns joined together; and being carried by a North Wind towards the Castle of *Acrotiri*, it went into the Houses of the Inhabitants, but without causing any great Annoyance, because it had no very ill Smell. Four Days after the Smoak had thus appear'd, they saw in the Night-time Fire issuing out from the same Place.



It was then that the Inhabitants of *Santerini*, and especially those of the Castle of *Scaro*, began to be afraid. They considered that their Castle was situated upon a Promontory, that was very narrow, and near to the Black Island; and that the time drew near, in which they must expect it either to be blown up into the Air, or overturn'd by some Shock of the Earth. They had continually before their Eyes Fire and Smoak; and this dismal Spectacle made them apprehend, that there might be several Mines of Vitriol and Sulphur in the Island of *Santerini*, which would soon take fire; and that therefore the safest way for them was to abandon the Country, and retire to some other Island. And some took this Resolution; and there was no other way left to satisfy the rest, but by telling them, that if they would retire further into the Country, they would be safe there; and that if the Castle was in danger, yet they must necessarily see the *Lesser Kammeni* first entirely destroyed, not only because it lay between the Castle and the Black Island, but also because it was much nearer to it than to the Castle.

The *Turks*, who were then at *Santerini* collecting the Tribute which this Island pays yearly to the *Grand Signior*, were not less afraid than the other People. Being amazed to see Fire break out of the Sea where it was so deep, they intreated the Christians to pray to God, and especially to make their young Children cry *Kurie Eleeson*; because, as they said, the Children not having offended God, they could more easily appease his Anger than older Persons. The Fire was then but very little, being not above the Breadth of the Mouth of a Furnace, and did not appear in the Day-time, but only in the Night, from Sun-setting to Sun-rising; and was so far from spreading the whole Length of the Ridge of Stones above-mention'd, that it possess'd but one small part of it, which was always afterwards the common Passage for the Smoak and Fire.

As for the first Island, or White Island, we did not see there either Fire or Smoak; yet it continued to grow bigger; but the Black Island increased much faster. We saw every day great Rocks rise up on every side of it, which made it sometimes longer, and at other times broader; and by the Height of them we could very nearly judge how many Foot it rose up every Day or Night. Sometimes these Rocks joined to the Island, and at other times they were at a distance from it; so that in less than a Month, there were four little black Islands, which in a few days after united together, and made but one Island.

As the Smoak increased very much, and there was no Wind stirring, it rose up to the middle Region of the Air, so as to be seen at *Candia*, *Naxos*, and other Islands; and in the Night-time it appear'd of a Flame to 15 or 20 Foot high. The Sea was at that time covered with a Matter or Froth, which in some places was reddish, and in others yellowish; from whence there proceeded so great a Stench over the whole Island of *Santerini*, that for fear of being infected, several Persons were obliged to burn Incense, and others to make Fires upon

the



the Tops of their Houses, to disperse it, and to purify the Air. It did not continue above a Day and a half; for a strong South-West Wind arose, which, together with the Motion of the Sea, did indeed disperse this frothy Matter, but occasioned otherways a great Damage to the best part of the Island of *Santerini*. At that time they were in great Hopes of having shortly a very plentiful Vintage; when this Wind carried all the Smoak upon their Vineyards, which burnt them up in such a manner, that the Grapes (which were not yet ripe) turned in one Night's time like dried Raisins, so that they were forced afterwards to throw them away, because of their Sourness.

Nor was this the only Effect occasion'd by this thick Smoak; for it is farther remarkable, that Silver and Copper were changed black by it: And tho' some People, who were forced to pass thro' the Smoak in going to their Houses, assured me, that it had no very ill Smell with it; yet several of them were, that and the next day after, troubled with great Pains of their Head. At this time the White Island, which seemed to be above the *Lesser Kammeni*, and could be seen from the first Floor of the Houses in the Castle of *Scaro*, sunk down so low, that it could not be seen from the second.

Hitherto the Sea had not been observed to boil up, or any Noise heard upon the Black Island: But upon the 31<sup>st</sup> of *July*, the Sea was seen to emit Smoak at two several Places; one of which was about 30, and the other above 60 Paces distant from the Island. In these two Places, both of which were perfectly round, the Water of the Sea looked like Oil, and seemed to rise up and bubble: Which it continued to do for more than a Month; in which time there were a great many Fishes found dead on the Shore, occasioned by their happening to have been too near these two Places.

The Night following there was heard a dull hollow Noise, much like that of several Cannons shot off at a distance: And at the same time there was seen to rise out of the midst of the Funnel, Flames of Fire, which darted very high into the Air, and disappeared immediately. Next Day there was heard several Returns of the same Noise, which was followed by a Smoak, not white, as usual, but blackish; and which, notwithstanding a very fresh North Wind, rose up in a moment to a prodigious height, in form of a Column, and in the Night-time would, in all probability, have appeared as if it were all on fire.

*August* the 7<sup>th</sup>, the Noise alter'd; and from being dull, as before, it became very loud, and resembled the Noise which is made when several great Stones are thrown all together into a very deep Well: And I believe that this great Noise was occasioned by several large Pieces of Rocks, which after having been raised up with the Island by the Violence of the Fire, broke off by reason of their Weight, and fell back again into the subterranean Caverns. What confirms me in this Thought, is, that I saw then the Ends of this Island in so great a Motion, that after having appear'd for some Days, they then disappear'd,



pear'd, and afterwards re-appear'd again a-new. Howsoever it was, this Noise after having continued so for near a Month, was followed by another much louder and more extraordinary: It so nearly resembled Thunder, that when it did really thunder, as it happen'd to do three or four times, there was very little Difference between the one and the other.

As the Passage, which the Fire had made itself by its Violence thro' so many Rocks, was not, in all probability, in a strait Line, and was in some Places narrower, and in others larger and more free; so it is probable that the Fire, or rather the sulphureous and burning Exhalations, caused this great Noise, by turning from side to side in these winding Caverns, and endeavouring to get a Passage out, which was difficult for them to find: Which was the Cause that the Noise of this subterraneous Thunder was sometimes not so loud, and a little while after grew more violent, and sometimes was so stunning, that People talking together could scarce hear one another speak; and that the Black Island, which was already very high, seem'd to crack on every side; and in short, that the inclosed Fire, after several Windings and Turnings, having collected a sufficient Force, was able to break out with a noise equal to that of several Cannons discharged at once.

*August 21.* The Smoak diminish'd considerably, as also the Fire: There did not appear any in the Night; but the next Day both returned with greater Force than at any time before. The Smoak was reddish and very thick, and the Fire so great, that the Water of the Sea smoak'd, and bubbled up all round the Black Island. In the Night I view'd with a Telescope the great Fire that appeared upon the Mountain of this Island, and I number'd 60 Openings or Funnels, which threw out all of them a very bright Fire, and were divided from one another by Rocks. In all Probability there were others, and perhaps as many on the other side of the Mountain, which I could not see. Next Morning I observ'd that the Island had been very much rais'd in the Night; that a Range of Rocks about 50 Foot long was rose out of the Water, which made the Island broader than it was before; and that the Sea was almost covered over with the reddish frothy Matter above-mention'd. This Matter, or Froth, appeared upon the Sea every time that the Island increased considerably, and occasioned a Stink, much like that of the Sink of a Ship: Which we may imagine to arise from a slimy Earth mixed with Sulphur, which being rais'd up with the Rocks, and coming to be washed off by the Waves, was loosened and diluted by the Water, and so sent up to the Surface the Salts with which it was loaded.

The Fire had hitherto appeared but only in one Place, upon the top of the Black Island; but on the 5th of *September* it made it self another Passage, and appeared at the End of that Island, on the side next *Terasia*, which is another Island, which some Authors say was formerly joined to that of *Santerini*, and was separated from it, by an Earthquake. The Fire did not continue at this End but a few days, during

which



which it decreased at the Place whence it used commonly to issue out. And here we saw the Fire three several times dart out from this Place without any Noise, and rise up in the Air like a large Rocket. The following Days there was much the same Spectacle; for the subterraneous Thunder, after having made a great noise, broke out from time to time with a Clap as loud as that of a Cannon, and was accompanied with a very beautiful and large Fire, which shooting up in an instant to a great height, fell again on the Island, and illuminated it almost all over. I cannot better represent the Figure that the Fire made in the Air, than by comparing it to a certain artificial Fire-work I have seen in *France*, and is there called the *Gerbe*: But with this Difference notwithstanding, that this Fire, of which I am speaking, rose much higher, and was much larger, but not so distinct as that of the *Gerbe*. And immediately after the Fire was darted out in the manner of a Rocket, there appeared in the Air a Blaze, in the form of a long fiery Sword, which continued some time, without moving, over the Castle of *Scaro*, and afterwards disappeared.

At that time also, the White Island and the Black Island, having increased in Length, in proportion as they rose in Height, united together; and the End of the Black Island, towards the South-East, began not to increase any more either in Height or Length, while the End toward the West increased very sensibly to the Sight: Which makes me imagine, that the Mine of Sulphur being at this Place, and the Fire not finding any Passage out here, had force to raise up this Part, and not the other; for in the middle of the Island it always found Openings to issue out at, together with the Smoak. It had then four Passages there, which were so near one another, that one could not well distinguish them asunder but by the Smoak: I do not mean that Smoak which commonly issued out, and was continual, but that which rose up at some certain times with a great Force; for this Smoak came forth sometimes from one Passage, and sometimes from another, and sometimes out of all four together; sometimes with a great Noise, and at other times without any Noise at all, tho' then also it issued out with the same Impetuosity.

Out of these Passages also there came a whistling Noise, like that of an Organ Pipe, with Variety of Sounds.

One would think that the Noise of this Thunder should not then be so loud, by reason of the several Passages of which I have spoken; yet, notwithstanding, it was not at any time so great and so frequent as it was then, and as it was above six Months after. It was then like the Report of a Cannon: And there did not pass a Day or a Night, but we heard five or six, sometimes 10 or 12 of 'em; and at the same time several great burning Stones were thrown into the Air; some of which falling one day upon the *Great Kammeni*, set fire to some Thickets of Bushes upon that little Island; and others being cast a great way into the Sea, had certainly destroyed a small Vessel that passed by at above a Mile's distance, if it had gone by never so little later. These Claps

were



were always attended with this Smoak I have mention'd, which was very different from that which issued out continually from the Gulph of Fire almost in the middle of the Island; for this was much thicker and blacker, and rose in an instant much higher, and was not dispersed till some time after, and then fell in Ashes upon the Country, or into the Sea; some of which the Wind sometimes carried as far as *Anacuphi*, an Island about twenty-five Miles distant from the Bay of *Santerini*.

Some Persons had the Curiosity to gather some of these Ashes, (which were of a Colour between black and white) and put them into the Fire, imagining they would burn like Gun-powder, which they very much resembled; but they produced no other Effect, than only making a small hissing Noise.

September the 18th, two Hours after Midnight, there was an Earthquake at *Santerini*, with which they were the more surprized, because they least suspected it; the subterraneous Fires having had so free a Passage for so long a time, it did not do any Damage, and had no other Effect than to enlarge very much the Island, and to remove for some Days the Fire and Smoak into other Places, through new Passages which it made, and to increase very considerably both of 'em: And I never saw so much Fire, or heard such terrible Claps, as after this Earthquake. By the Violence of these Claps, Houses were shaken at above three Miles distance; and out of the midst of a great Smoak, which rose up and appear'd like a Mountain, one might see and hear great Pieces of Rocks fall down into the Sea and upon the Island, which were thrown out with the same Violence and Noise, as a Bullet out of the Mouth of a Cannon.

The *Lesser Kammeni* was several times quite cover'd over with great Stones cover'd with burning Sulphur; several of which rolling afterwards from the Top of this little Island into the Sea, made a very bright Light and pleasant Appearance in the Night. I thought at first, that the Fire had passed under ground from the new Island to this, because they are not very far asunder: But I soon found my Mistake, and that this Fire proceeded only from these Stones sulphur'd over; for the Sulphur with which they were crusted over, being consumed, they were all extinguish'd in half a quarter of an Hour's time, except some few which remained light above half an Hour. One day, when the *Lesser Kammeni* was all on fire, after one of these furious Claps, and the Air was so too, thro' the frequent Flashes of Fire that appear'd in the Clouds, we saw, by a surprizing Accident, three Flashes come out of the Places where the Fire was, which one could not distinguish from real Lightning, but that they were formed lower, and were at the two Ends of the Island. By the Violence of one of these Claps, part of the Top of the new Island was carried off into the Sea, and several Stones were thrown to above two Miles distance: And, as if the Mine had been exhausted by this great Clap, three or four days passed without any Noise, and almost without any Fire or Smoak. They thought

then



then that they should have seen an End of it ; but the Fire kindled again, and the Island became more terrible than before. I was then at a Village six Miles distant ; where we heard so distinctly (notwithstanding it lay under a Mountain) the Blast of the Mine, that the Inhabitants were terribly frightened at such an extraordinary Clap. At my Return to the Castle of *Scaro*, I found the People much more alarmed than they were in the Village ; and was informed immediately, that the Castle had suffered so violent a Shake, that the Doors of the Houses, and the Windows that were shut, were opened by the Force and Violence of the Clap.

*February* the 10th, 1708, at half an Hour after Eight of the Clock in the Morning, there was another Earthquake at *Santerini* ; and some Persons assured me, that there was another the Night before, but not so sensible as this. If we may judge by what is past, our *Volcano* is so far from drawing shortly to an End, that it gets new Force by other Veins of Sulphur which take fire at a greater distance. We have Instances of this in the Fire and Flames which rise so frequently into the Air, and fall again over the whole Island, making in the Night-time as fine a Spectacle as was ever seen in artificial Fire-works. Besides this, several great Rocks joining to the Island, which before were even with the Water, have been raised much higher ; and the Noise, Smoak, and boiling of the Sea, increase so much, that tho' the Inhabitants of *Santerini* have been so long accustomed to see all these things, yet they could not help being more afraid than before. And not without Reason ; for the subterraneous Noise was more violent than ever, and continued several Days together without any intermission ; and in the space of a Quarter of an Hour the Mine discharged itself 5 or 6 times ; the Noise of which, with the great Quantity of Stones it threw into the Air, the Shocks it gave the Houses, and the Fire which appeared in open Day (which was never seen before) very much surpasses all that I have before spoken of it.

The 15th of *April* was remarkable above all other Days for the great Number and Violence of the Claps ; by one of which, near 100 great Stones were mounted up all at once into the Air, and fell again at above two Miles distance in the Sea. Tho' I was then about three Miles off from the new Island, I observ'd one of a surprizing Greatness, which did not rise so high as the rest, but was driven farther, in a strait Line, like a Cannon Ball. This happened to be *Easter-Day* (which was upon *April* the 4th, Old Stile, which is used at *Santerini*) and this Circumstance contributed not a little to confirm several ignorant *Greeks* in the ridiculous Opinion they had, that this new Island was one of the Mouths of Hell ; so that they did not scruple to say, that the Devils, not being able to bear that Day, as being jealous of the Glory of the Resurrection of our Lord, had made all the Efforts that Day that was possible : And their Bishop himself was so infatuated with this Opinion, as well as the



the rest, that he spoke to me very seriously about it, and asked me my Thoughts of it: But notwithstanding whatsoever I could say to undeceive him, I found that he persisted in his Opinion, and would not be persuaded otherwise.

From the 15th of *April* to the 23d of *May*, which was a Year from the Birth of this new Island, what I have describ'd above, continued the same; and I did not observe any thing more in particular, unless it were that the Island increased in Height, and not in Length; and that one furious Clap beat down at once all the Top of it; which, by means of the Ashes and Stones of all Sizes that fell upon it Day and Night, was not only repair'd but made much higher than it was before. All Particulars began to abate afterwards: The Smoak decreased; the subterraneous Noise was not so violent, and the Claps, tho' they were very frequent, were not however so loud, by reason that the Funnels, which gave a Passage to the Fire and Smoak, were then much larger than they were before.

Hitherto I had not been to see this Island but at a Distance, for fear the same should happen to me, as to *Pliny*, when he went to see Mount *Vesuvius*; and lest I should be suffocated, as he was, with the Flames, or over-whelm'd with the Stones which this new Island threw out on every Side. But seeing that there was then no Danger, I went in Company with the Reverend *Francis Crispa*, the *Latin* Bishop of *Santerini*. And as our Design was to go ashore upon it, if possible, we went directly to it; to do which, we were obliged to pass over a Place, where the Sea smoak'd very much, but did not bubble. We were no sooner come to this Place, but we perceived a Heat strike upon our Faces; which was nothing else but the Fumes of the Sulphur, in the midst of which we were at that time. One of the Persons that were with us, who was naturally more timorous than the rest, being surpriz'd at this Heat, and not knowing the Cause of it, asked from whence it proceeded. The Seamen bid him and us put our Hands into the Water; which we did, and found it so very hot, that having taken them out again immediately, the Bishop bid them make what Haste they could away. We were then 500 Paces off from the new Island, and I had not time to sound the Depth of this Place. From whence we went directly over to that Part of the Island where it had increased in Length, and where there is more Danger; for seeing that the Smoak was very thick, which showed that there was a great Fire all thereabout, we did not think it safe to go any nearer, and so satisfy'd ourselves with viewing only the Space that was between this new Island and the *Lesser Kammeni*, which I found to be broader than I imagined, and judged that a Galley might pass through the narrowest Place of it. After this we went on shore upon the *Great Kammeni*, that we might from thence view nearer, and without any Danger, the whole burning Island, and especially that Side of it which we could scarce see from the Castle of *Scaro*. From hence it was, that

fter having well examin'd all Particulars, we judged this new Island



Fig. 75.

to be about 200 Foot in Height, 5 Miles in Circumference, and a Mile over at its broadest Part. As to the Form of it, it is oblong, and resembles in some measure the Figure of a Dragon; as may be seen by the Design of it, which I took from this Place.

After having tarried some time upon the *Great Kammeni* (where we often saw, not far off, a great many Stones thrown violently out of the Gulph of Fire, and fall down again with a terrible Noise upon the Island) we took a Resolution to coast it round, and to go to the other End of it, not doubting but that we might get on shore there, because that Part of the Island had not increased for several Months, and there did not appear any Fire or Smoak there. We were within a hundred Paces of it, when putting my Hand into the Water, I perceived that it was warm, and that the further we went the hotter it grew. At this Instant the Mine discharged itself; and the Wind drove upon us the thick Smoak, which broke out with great Violence every time the Mine took fire: And a Shower of Ashes and little Stones, not larger than common Hailstones, falling upon us, we were forced to quit our Design of going on shore upon the Island at this Place. This Shower of Stones and Ashes being over, we retired a little, by reason of the great Heat of the Water; and letting down our Plummet, we had at this Place 95 Fathom of Water, without finding the Bottom, our Line not being long enough. Viewing afterwards the Space that was at this End between the Island and the *Lesser Kammeni*, we found in several Places that it was narrower at this Side than at the other; and that if the new Island should continue to grow bigger, several Rocks, which were already half above Water, and rose up nearer to the *Lesser Kammeni*, would in time shut up the Passage, and join both the Islands together, so as to make a little Port between 'em, which would be very commodious for the Shipping of *Santerini*. In returning afterwards to the Castle of *Scaro*, we passed by the little Port of the *Lesser Kammeni*; and (by reason of its Nearness) could scarce believe what they there told us, *viz.* That they could not hear there any of the Noise that this new Island made: Which we found to be true, and that the Height of this little Island was the Cause of it.

During the rest of the time that I tarried at *Santerini*, to the 15th of August 1708, (at which time I came away) the Smoak, Fire, Noise, &c. continued much the same as I have now described 'em; that is to say, they were always pretty moderate.

This is all that I can say of this *Phænomenon*; all the Circumstances of which I have related so much the more faithfully, because I was the only Person at *Santerini*, who kept a Journal of what happen'd every Day. From my leaving *Santerini*, to this present the 6th of July, 1711, I have received several Letters, and have seen and spoken with several Persons who have come from thence within these few Days; and they all tell me, that the new Island grows still in Length on that Side next *Terasia*: That it is now about six Miles in

Com-



Compass: That as to the Fire and Noise under ground, they were more moderate than before; which makes the Inhabitants of the Island hope, that they shall shortly see an End of it.

When I consider, that the Passages which give Vent to the Fire are very large, and almost in the Middle of the Island; and that there is no appearance that the Fire will ever make a Passage at the Bottom of the Sea, so as to let the Water in to extinguish it; I am of Opinion, that it may yet last longer than they imagine; and that this *Phænomenon* will not have an End till the Mine of Sulphur is entirely consumed.

XXIV. In my Voyage to the *Indies*, I made some Observations concerning those Sparkles of Light which appear in the Night-time on the Surface of the Sea.

When the Ship ran apace, we often observed a great Light in the Wake of the Ship, or the Water that is broken and divided by the Ship in its Passage. Those, that did not view it nearly, often attributed it to the Moon, the Stars, or the Lanthorn at the Stern; as I did myself, when I first perceived it: But having a Window that look'd directly down upon it, I was soon undeceived; especially when I saw it appear more bright when the Moon was under the Horizon, the Stars covered with Clouds, and no Lights in the Lanthorn, or any other Light whatsoever cast upon the Surface of the Water.

*Of Luminous Appearances in the Wakes of Ships in the Sea, by Father Bourzes. Taken from the Letters of the Missionary Jesuits, n. 337. p. 230.*

This Light was not always equal; some Days it was very little, others not at all; sometimes brighter, others fainter; sometimes it was very vivid, and at other times nothing was to be seen.

As to its *Brightness*, I could easily read by it, tho' I was nine or ten Foot above it from the Surface of the Water; as I did particularly on the 12th of *June*, and the 10th of *July*, 1704. But I could read only the Title of my Book, which was in large Letters.

As to the *Extent* of this Light, sometimes all the Wake appeared luminous to thirty or forty Foot distant from the Ship; but the Light was very faint at any considerable distance.

Some days one might easily distinguish in the Wake such Particles as were luminous from those that were not: At other times there was no Difference. The Wake seem'd then like a River of Milk, and was very pleasant to look on; as it appear'd particularly on the 10th of *July*, 1704.

At such times as we could distinguish the bright Parts from the others, we observed that they were not all of the same Figure. Some of 'em appear'd like Points of Light; others almost as large as Stars, as they appear'd to the naked Eye. We saw some that looked like Globules of a Line or two in Diameter; and others like Globes as big as one's Head. Oftentimes these *Phosphori* form'd themselves into Squares of three or four Inches long, and one or two broad. Sometimes we could see all these different Figures at the same time; and

parti-



particularly, on the 12th of June, the Wake of the Vessel was full of large *Vortices* of Light, and these oblong Squares which I have been speaking of. Another day, when our Ship sailed slowly, the *Vortices* appeared and disappeared again immediately like Flashes of Lightning.

Not only the Wake of a Ship produces this Light, but *Fishes* also in swimming leave behind 'em a luminous Track; which is so bright that one may distinguish the Largeness of the Fish, and know of what Species it is. I have sometimes seen a great many Fishes playing in the Sea, which have made a kind of artificial Fire in the Water, that was very pleasant to look on. And often only a Rope placed cross-wise will so break the Water, that it will become luminous.

If one takes some Water out of the Sea, and stirs it never so little with his Hand in the dark, he may see in it an infinite Number of bright Particles.

Or if one dips a piece of Linnen in Sea-Water, and twists or wrings it in a dark place, he shall see the same thing; and if he does so, tho' it be half dry, yet it will produce abundance of bright Sparks.

When one of the Sparkles is once formed, it remains a long time; and if it fix upon any thing that is solid, as for instance on the Side or Edge of a Vessel, it will continue shining for some Hours together.

It is not always that this Light appears, tho' the Sea be in great Motion; nor does it always happen when the Ship sails fastest: Neither is it the simple beating of the Waves against one another that produces this Brightness, as far as I could perceive. But I have observed, that the beating of the Waves against the Shore has sometimes produced it in great plenty; and on the Coast of *Brazil* the Shore was one Night so very bright, that it appeared as if had been all on fire.

The Production of this Light depends very much on the Quality of the Water; and, if I am not deceiv'd, generally speaking, I may assert, other Circumstances being equal, that the Light is largest when the Water is fattest and fullest of Foam; for in the main Sea the Water is not every where equally pure; and sometimes if one dips Linnen into the Sea, it is clammy when it is drawn up again. And I have often observed, that when the Wake of the Ship was brightest, the Water was more fat and glutinous; and Linnen moisten'd with it produced a great deal of Light, if it were stirr'd or mov'd briskly. Besides, in sailing over some Places of the Sea, we find a Matter or Substance of different Colours, sometimes red, sometimes yellow. In looking at it, one would think it was Saw-dust: Our Sailors say it is the Spawn, or Seed of Whales. What it is, is not certain; but when we draw up Water in passing over these Places, it is always viscous and glutinous. Our Mariners also say, that there  
are



are a great many Heaps or Banks of this Spawn in the North ; and that sometimes in the Night they appear all over of a bright Light, without being put in motion by any Vessel or Fish passing by them.

But to confirm farther what I say, *viz.* That the Water, the more glutinous it is, the more it is disposed to become luminous ; I shall add one Particular which I saw my self. One day we took in our Ship a Fish, which some thought was a *Boneta*. The Inside of the Mouth of the Fish appeared in the Night like a burning Coal ; so that without any other Light, I could read by it the same Characters that I read by the Light in the Wake of the Ship. Its Mouth being full of a viscus Humour, we rubbed a Piece of Wood with it, which immediately became all over luminous ; but as soon as the Moisture was dried up, the Light was extinguish'd.

I leave it to be examin'd whether all these Particulars can be explained by the System of such as assert, that the Principle of this Light consists in the Motion of a subtle Matter, or Globules, caused by a violent Agitation of different kinds of Salts.

I shall add one Observation more concerning Marine Rain-bows, —Of Rain-bows, &c. which I observed after a great Tempest off of the Cape of *Good Hope*. The Sea was then very much tossed, and the Wind carrying off the Tops of the Waves made a kind of Rain, in which the Rays of the Sun painted the Colours of a Rain-bow. It is true the common *Iris* has this advantage over ours, that its Colours are more lively, distinct, and of longer Extent. In the Marine *Iris* we could distinguish only two Colours, *viz.* a dark Yellow on that side next the Sun, and a pale Green on the opposite side : the other Colours were too faint to be distinguish'd. But these *Iris's* are in a greater number ; one may see 20 or 30 of 'em together ; they appear at Noon-day, and in a Position opposite to that of the common Rain-bow, that is to say, their Curve is turned as it were towards the Bottom of the Sea.

I shall add only a word or two concerning *Exhalations* in the Night, that form in the Air a long Track of Light. These Exhalations make a Track of Light much larger in the *Indies* than they do in *Europe*. I have seen two or three that I should have taken for real Rockets : They appear'd near the Earth, and cast a Light like that of the Moon some days after her Change. They fall slowly, and in falling make a curve Line ; especially one which I saw on the main Ocean, at a great distance off at Sea, on the Coast of *Malabar*.

XXV. *Accounts of Books Omitted.*

1. *A Voyage to the Islands of Madera, Barbadoes, Nevis, St. Christopher's and Jamaica : With the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, Birds, Insects, Reptiles, &c. of the last of those Islands.* To which is prefix'd an Introduction, wherein is an Account

n. 311.  
p. 2433.

of



of the *Inhabitants, Air, Waters, Diseases, Trade, &c.* of that Place, and some Relations concerning the neighbouring Continent, and Islands of *America*. Illustrated with the *Figures* of the Things describ'd, which have not been heretofore engrav'd, in large *Copper Plates* as big as the Life. By *Hans Sloane*, M. D. Fellow of the *College of Physicians*, and *Secretary* of the *Royal Society*. Vol. I. Folio.

n. 316.  
p. 143.

4. *Itinera Alpina Tria, &c.* Authore *Job. Jac. Scheuchzero*, M. D. Londini, 4to, MDCCVIII.

## CHAP. IV.

### Miscellaneous Papers.

*An Attempt to find the Age of the World by the Saltiness of the Sea, by Dr. E. Halley.*  
n. 344.  
p. 296.

I. **T**HERE have been many Attempts made to ascertain, from the Appearances of Nature, what may have been the Antiquity of this Globe of *Earth*; on which, by the Evidence of Sacred Writ, *Mankind* has dwelt about 6000 Years; or, according to the *Septuagint*, above 7000. But whereas we are there told that the Formation of *Man* was the last Act of the CREATOR, 'tis no where revealed in Scripture how long the Earth had existed before this last Creation, nor how long those five Days that preceded it may be to be accounted; since we are elsewhere told, that in respect of the Almighty a thousand Years is as one Day, being equally no part of *Eternity*: Nor can it well be conceived how those Days should be to be understood of natural Days, since they are mentioned as Measures of Time before the Creation of the Sun, which was not till the fourth Day. And 'tis certain *Adam* found the *Earth*, at his first Production, fully replenished with all sorts of other *Animals*. This Enquiry seeming to me well to deserve Consideration, I shall propose an Expedient for determining the Age of the World by a *Medium*, as I take it, wholly new, and which in my Opinion seems to promise Success, though the Event cannot be judged of till after a long Period of Time. What suggested this *Notion*, was an Observation I had made, that all the *Lakes* in the *World*, properly so called, are found to be *Salt*, some more, some less than the Ocean Sea, which in the present Case may also be esteemed a *Lake*; since by that Term I mean such standing Waters as perpetually receive Rivers running into them, and have no Exit or Evacuation.



The Number of these Lakes in the known Parts of the World is exceeding small: And indeed upon Enquiry I cannot be certain there are in all any more than four or five, viz. first, the *Caspian Sea*; secondly, the *Mare Mortuum*, or *Lacus Asphaltites*; thirdly, the Lake on which stands the City of *Mexico*; and fourthly, the Lake of *Titicaca* in *Peru*, which by a Channel of about fifty Leagues communicates with a fifth and smaller, call'd the Lake of *Paria*, neither of which have any other Exit. Of these the *Caspian*, which is by much the greatest, is reported to be somewhat less salt than the Ocean. The *Lacus Asphaltites* is so exceedingly salt, that its Waters seem fully fated, or scarce capable to dissolve any more; whence in Summer-time its Banks are incrustated with great Quantities of dry *Salt*, of somewhat a more pungent Nature than the *Marine*, as having a Relish of *Sal-Armoniac*, as I was inform'd by a curious Gentleman that was upon the Place.

The Lake of *Mexico* properly speaking, is two Lakes, divided by the *Causeways* that lead to the City, which is built in Islands in the midst of the Lake undoubtedly for its Security; after the Idea, 'tis probable, its first Founders borrowed from their *Beavers*, who build their Houses on Damms they make in the Rivers after that manner. Now that Part of the Lake, which is to the Northwards of the Town and *Causeways*, receives a River of a considerable Magnitude, which being somewhat higher than the other, does with a small Fall exonerate itself in the Southern Part, which is lower. Of these the lower is found to be salt, but to what degree I cannot yet learn, though the upper be almost fresh.

And the Lake of *Titicaca*, being near eighty Leagues in Circumference, and receiving several considerable fresh Rivers, has its Waters, by the Testimony of *Herrera* and *Acosta*, so brackish as not be potable, though not fully so salt as that of the Ocean; and the like they affirm of that of *Paria*, into which the Lake of *Titicaca* does in part exonerate itself, and which I doubt not will be found much saltier than it, if it were enquired into.

Now I conceive that as all these receive Rivers, and have no *Exit* or *Discharge*, so it will be necessary that their Waters rise and cover the Land, until such time as their Surfaces are sufficiently extended, so as to exhale in Vapour that Water that is poured in by the Rivers; and consequently that Lakes must be bigger or lesser according to the Quantity of the Fresh they receive. But the Vapours thus exhaled are perfectly fresh, so that the saline Particles that are brought in by the Rivers remain behind, whilst the fresh evaporates; and hence 'tis evident that the Salt in the Lakes will be continually augmented, and the Water grow saltier and saltier. But in Lakes that have an *Exit*, as the Lake of *Genesaret*, otherwise call'd that of *Tiberias*, and the upper Lake of *Mexico*, and indeed in most others, the Water being continually



running off, is supply'd by new fresh River Water, in which the saline Particles are so few as by no means to be perceived.

Now if this be the true Reason of the Saltness of these Lakes, 'tis not improbable but that the Ocean itself is become salt from the same Cause, and we are thereby furnish'd with an Argument for estimating the Duration of all Things, from an Observation of the Increment of Saltness in their Waters. For if it be observ'd what Quantity of Salt is at present contain'd in a certain Weight of the Water of the *Caspian Sea*, for example, taken at a certain Place, in the driest Weather; and after some Centuries of Years the same Weight of Water, taken in the same Place and under the same Circumstances, be found to contain a sensibly greater Quantity of Salt than at the time of the first Experiment, we may, by the Rule of Proportion, make an Estimate of the whole Time wherein the Water would acquire the Degree of Saltness we at present find in it.

And this Argument would be the more conclusive, if by a like Experiment a smaller Increase in the Saltness of the *Ocean* should be observed; for that, after the same manner, receives innumerable Rivers, all which deposite their saline Particles therein; and are again supplied, as I have elsewhere shewn, by the *Vapours* of the *Ocean*, which rise therefrom in Atoms of pure Water, without the least Admixture of Salt. But the Rivers in their long Passage over the Earth do imbibe some of the saline Particles thereof, though in so small a Quantity as not to be perceived, unless in these their Depositories, after a long Tract of Time. And if upon repeating the Experiment, after another equal Number of Ages, it shall be found that the Saltness is further increased with the same Increment as before, then what is now proposed as *Hypothetical*, would appear little less than demonstrative. But since this Argument can be of no use to ourselves, it requiring very great Intervals of time to come to our Conclusion, it were to be wished that the ancient *Greek* and *Latin* Authors had delivered down to us the Degree of the Saltness of the Sea, as it was about 2000 Years ago; for then it cannot be doubted but that the Difference between what is now found, and what then was, would become very sensible. I recommend it therefore to the *Society*, as Opportunity shall offer, to procure the Experiments to be made of the present Degree of Saltness of the *Ocean*, and of as many of these Lakes as can be come at, that they may stand upon Record for the Benefit of future Ages.

If it be objected that the Water of the *Ocean*, and perhaps of some of these *Lakes*, might, at the first beginning of Things, in some measure contain Salt, so as to disturb the Proportionality of the Increase of Saltness in them, I will not dispute it: But shall observe, that such a Supposition would by so much contract the Age of the World, within the Date to be derived from the foregoing Argument, which is chiefly intended to refute the ancient Notion some have of late en-



certained, of the Eternity of all Things ; though perhaps by it the World may be found much older than many have hitherto imagin'd.

II. A Man and his Sister are now alive, each about 50 Years old, neither of which have the least Sense of Hearing ; they both live by their daily Labour ; yet both these Persons know, by the Motion of the Lips only, whatever is said to them, and will answer pertinently to the Question propos'd to them of any thing within their Capacity, and are both very intelligent, as far as can be expected from their Education. I remember several Years since, when this Man was then working in the Garden, Mr. Colson and I standing together, I took an Opportunity when the Fellow look'd on me, to ask him some Question or other, which he readily understood, and answer'd according to it ; tho' Mr. Colson that stood by me heard me say nothing ; the Fellow understanding it only by the Motion of the Mouth, so that you need only whisper, provided the Lips and Mouth be but moved as they ought, and you do not speak too fast. I many Years since enquired of his Mother, who has been long since dead, as to their Deafness ; and she told me, they could hear very well and speak when they were Children, but both lost that Sense afterwards, which makes them retain their Speech : Tho' that to Persons not used to them, is a little uncouth and odd, but intelligible enough, especially the Man's. They were not Twins ; and I knew two Brothers of the same Parents that had their Hearing as well as any Persons whatever.

*Two Deaf Persons who Understand what is said to them by the Motion of the Lips ; by Mr. R. Waller, n. 312. p. 1468.*

III. I had yesterday at Rotterdam (March 25, 1701.) a young Lad of 17 Years old, that can neither read nor write, that out of his Head will reckon any the most difficult Sums you can give him, even to the utmost Fractions, I gave him an Average to make of a Ship run ashore, to save Ship and Goods were worth 13679,14 ; the Charges on the Salvage were 2931,16. I ask'd him how much that was *per Cent.* he told me, after a little talking to himself, that it was 21 Gild. 9 St. and a small Fraction ; and so it is. I ask'd him what 4943,3 2848,4, 2244,7, 2194,7, 544,19, 351,18, and 52,16 must pay respectively ; he told me exactly to so many Stivers and  $\frac{27}{100}$ . I ask'd him how he came by that Knowledge ; he said by felling Sea-Snails (*Alykreucken*) and Mussels, for which he receiv'd nothing but Doits, and so he brought his Father home so many Doits ; but could never tell how much Money they amounted to, till he ask'd his Father how many Doits made a Gilder, and being 160, then he reckon'd how many in 10 and 100, and so from one thing to another ; he has a Table of Multiplication in his Head of half a Yard long, or more. I tried him by a Table I have, and he answered me as readily as you can upon the ordinary Table of Multiplication. He wanders from Town to Town to see who has any thing to cypher, and so gets some Money ; but would fain learn to read and write. This I mention, because it is so prodigious ; and he divides almost with as much ease as he multiplies, and reduces Things to the least Denomination in Fractions.

*A Person that could neither Write nor Read, yet could cast up Sums with great Exactness ; by Mr. J. Locke. n. 278. p. 893.*



A remarkable  
Skin of a  
Fish's Sto-  
mach, by Mr.  
R. Thoresby.  
n. 277. p.  
1070.  
Fig. 76.

IV. I have in my *Musæum* the outward Skin of the Maw of a Fish that was taken at *Macassar*, Feb. 1680-1. It was given me by Mr. *R. Midgley*, who had it from a *Dutchman* at *Batavia*, who took it out of the Fish.

The *Fibres* and *Vessels* do curiously and naturally resemble a Tree with its *Stem*, *Branches*, *Leaves*, &c. as appears by *Figure 76*. which, tho' but slenderly perform'd, exactly expresses the *Shape* and *Bigness* of it. The *Skin* is very thin, whitish, and transparent; and the *Veins* that compose the *Stem*, and greater *Branches*, are now rather black than dark Red, as I presume they were at first; the *Leaves* are of a sort of a dark and faded Green, variegated.

Microscopical  
Observations  
on Green  
Weeds in  
Water, and  
the Animal-  
cula found  
with them, by  
Mr. Leeuwen-  
hoeck. n. 283.  
p. 1305.

V. I have often heard it said, that that green Stuff or Weeds, which are observ'd to drive upon the Water, spring out of the Ground from under the Water; which Assertion I can by no means admit of: For as often as I have observ'd the said green Weeds, I have always found that they are produced from the Seeds of the same kind, as all other Trees and Plants. I have always observ'd too, that this green Matter does not grow in deep Waters, tho' they are small and still; and that wide and shallow Waters abound therewith, and especially *Moats* and *Ditches*; and that the *Wind* does it no harm. And I have likewise found that the green Weeds in those *Ditches*, which have but little Water in them, are very small in comparison of those which are in larger Waters; and near the *Sides* of the *Banks* where they are shallow, and very little Motion in them. *Delfs-haven* belongs to the Town of *Delft*, and lies about two Hours distant from it: From that Town by means of a *Sluice*, the Water of the River *Maes* with the Flood in Summer-time is brought into the Town; and it is as clear as if the River itself run through the Town. With this Water also comes in a little green Stuff, but so little that we were half an Hour fishing up thirty of those Weeds, and putting them into an *Earthen Pot*, together with a large Quantity of their own Water; for we took them up as deep as we could, that we might not hurt the *Roots*. I took out several of these Weeds from the Pot, one by one, with a *Needle* very nicely, and put them into a *Glass Tube* of a *Finger's Breadth*, fill'd with Water; and also in a lesser Tube, and caused the *Roots* of the Weeds to subside leisurely: And looking upon the same with my *Microscope*, I was surpriz'd with the Sight of a great many and different kinds of *Animalcula*; of which, two sorts had long *Tails*, whereby they seem'd fast link'd to the *Roots* of those green Weeds. These *Animalcula* were in shape like a *Bell*, and they so stirr'd the round *Cavity* of their *Bodies*, that they put the small *Parts* of the Water into such a Motion, that I could not see those *Instruments* they used to produce the said Motion. I saw 20 of these *Animalcula* together gently moving their long  
Tails



Tails and out-stretch'd Bodies; they contracted their Bodies and Tails in an Instant, and then softly extended them again; and this kind of Motion they continued a great while, that it was very diverting to observe them. I caused one of these *Animalcula* to be drawn just as it appear'd fasten'd to the Roots of the aforesaid green Stuff.

Fig. 77. A, B, C, represents one of these green Weeds of a common Size, as it lay upon the Water, and appeared to the naked Eye of the Limner. Fig. 77.

Fig. 78. D, E, F, G, shows the very same Weed as it appear'd in Fig. 78. the glass Tube filled with Water, with the Roots thereof extended.

Fig. 79. H, I, K, L, M, N, O, P, Q, R, represents a small Part of the said Root, as it appear'd to the Painter in the Microscope, in which Roots were to be seen the Vessels, with their Divisions, thro' the Length of the whole Root; and these Roots, I imagine, were of no longer Use, and in a manner wither'd: They were also overgrown with a great many particular long Particles, and mostly with little Figures like Flowers, as they are here represented in the 79 Fig. between K and L. Fig. 79.

The *Animalcula* which I mentioned above, and liken'd to little Bells, are to be seen in the same Figure in I, S, T, and N, V, W. And I saw above 100 of these *Animalcula* with their Tails fasten'd to the Root, and living between H, I, K, L, M; but other Roots had none of these.

In several of these Roots I observed one, and sometimes, but seldom, two Sheaths or Cases fastned in them of several Sizes; the biggest is represented by R, X, Y. Out of the same Sheath appear'd a little Creature, the fore-part of whose Body was roundish, as in X, Z, Y; and presently from the same Rotundity proceeded two little Wheels that had a swift Gyration, as in Fig. 79, A, B, C. These small Wheels were thick beset with Teeth, like the Wheel of a Watch; and when these *Animalcula* had for some time exerted their circular Motion, they drew their Wheels into their Body, and their Body wholly into their Sheaths, and then soon after thrust them out again with the aforesaid Motion; another while they remain'd as it were shut up in their Shells: And tho' I observed the same Wheels in other *Animalcula* also, yet their Bodies differed from each other, and the Sheaths were of a darkish Colour, so that I could not easily perceive the *Animalcula*; and moreover, they seem'd to be compos'd of Globules.

I also observed other Sheaths that were several degrees smaller than those before mentioned, and they were as transparent as Glass, so that one might plainly see the *Animalcula* lying within them.

Fig. 79. P, D, E, F, represents the Sheath with the little Worm, P, Fig. 79.  
D, F, in it. The same Figure O, G, H, shows a Sheath with half the Body of the same *Animalcula* G, H, protruded out of it; and in which, by reason of its exceeding Smallness, one could see the Wheels  
but



but now and then, and that only when the said Body was extended, which would soon be compressed or shrunk up.

Moreover, I observed one of these *Animalcula*, whose Body was sometimes long, and sometimes contracted; and about the Middle of its Body, which I conceiv'd to be the lower Part of its Belly, there was another of the same kind, but smaller, the Tail of which seem'd to be fastned to the other. I caused one of these *Animalcula* (for the sake of its wonderful Figure and Generation) to be drawn by my Limner about twice as big as it appeared to the naked Eye, whilst it was in the Water, and fast link'd to the Root of the aforesaid green Weeds.

Fig. 80.

Fig. 80. A, B, C, D, E, F, G, show you the *Animalculum* of which A is the Tail wherewith it fastens itself; C, D, E, represents 8 Horns, whereas others that were smaller had but 6. 'Tis drawn as stretch'd out in its whole Length, whereas, when it contracted it self, it was not the fourth Part so long. The Horns appeared of so wonderful a Make to our Eyes, that it almost puzzled the Limner to draw them; however, he drew a small Part of one Horn, as in Fig. 81. K, L, M.

Fig. 81.

Fig. 80.

In Fig. 80, you may see an *Animalculum*, B, H, coming out of the Body of the bigger, which *Phænomenon* when I first perceived, I thought it might be a young *Animalculum* fastned by chance to an old one; but observing it more narrowly, I saw it was a *Partus*; for I could now see, that whereas this *Animalculum* (when I first discovered it to be) had but four very small Horns, after the Space of sixteen Hours was grown much bigger both in Horns and Body, and 4 Hours after that it forsook its Mother's Belly.

In the Discovery of the said young *Animalculum*, I had observed on the other side of the Body of the biggest *Animalculum* a round little Knob of Seed, that from time to time, and in few Hours grew still bigger, as in Fig. 80, between G and I, and at last grew to be pointed, and in 13 or 14 Hours was grown so large, that you might see two Horns upon it. In the Space of 24 Hours, the last mentioned *Animalculum* had acquired four Horns, one of which was small, the second bigger, and the two others very large, and these two last were more strongly protruded and contracted than the others. Three Hours after the little *Animalculum* was got clear of his Mother. I endeavour'd to pursue my Discovery of the Generation of these Creatures, and in order thereto wiped off the green Weeds from the Body, that I might make my Observations the better; but the *Animalculum* was not only dead, but his Horns and part of the Body was quite wasted.

Another *Animalculum*, that had brought forth two young ones, had her Body laden with another sort of little Creatures, whose Shape was flat beneath and round above, and which I have observed in most Waters; and this last sort were above a thousand times less than the

the



the others whom they crawl'd upon, and hinder'd to go; but a much bigger *Animalculum*, whose Body was almost round, tormented one of the aforesaid Creatures, not only by running upon its Body, but by clinging so fast to one of its Horns, that whatever Effort t'other made to be rid of it, she could not shake it off her Body; and at last I found she had lost one of her Horns in the Scuffle.

That which seem'd very remarkable, and even wonderful to me, was, that the said *Animalcula* would sometimes extend their Horns to so great a length, that looking on them through the Microscope, you would think they were several Fathoms long. I caus'd the Limner to view the manner of the Extension and Contraction of the Horns, who was amaz'd as well as I to see the same.

I made him design a small Part of the Horn so extended, as well as he was able, as you may see in *Fig. 82. N, O, P*, wherein also are to be observed the knotty Protuberances, as in *Fig. 81. K, L, M*. These Protuberances seem to be compos'd of seven round Globules placed together, *viz.* one in the middle, which was more prominent than the rest, and the others like a Rose round about it.

Now what a Number of Vessels and Instruments are to be found in such a small Part of a Horn, as is represented in *Fig. 82.* and fill'd with Bows and Knots like a Rope that is twisted; and perhaps every single knotty Particle is provided with as many Instruments, wherewith to put it in motion.

I observed in this Water, or rather in the green Weeds, abundance of strange *Animalcula*, some of which feed upon the same green Stuff; and to others it serves instead of skulking Holes to hide themselves from the Fish, which would otherwise devour them.

To return to the Generation of the above-mentioned green Weeds: I have several times observed, that most of the Roots are thickest at the End, and provided with a great many Parts that look like Flowers to the Eye, with long Pipes in them, which I take to be a gummy excrementitious Matter, which, by overspreading the whole Root, causes it to die or wither. Now whether this is occasioned by want of Nourishment (the Weed being quite spent) or whether the same is brought by the Wind or Stream in deep Waters, remains to be consider'd, as also how shallow those Waters must be where this green Weed can best grow.

I have often dissected some of these small Weeds, which had never yet produced any others, and have taken young Weeds out of them, which were so very small that they escaped my naked Eye.

Let us suppose that *Fig. 77. A, B, C*, which we call a green Weed, is compos'd of three entire Weeds, of which that Part markt *A*, we'll call the Mother Plant, from whence proceed several Roots: First, the Plant *B* is immediately produced by the said Mother-Plant, and join'd to it by a String, that, as it grows, conveys its Nourishment to it, till it be provided with Roots of its own; before the  
Weed



Weed B is arriv'd to its full Growth, A has brought forth another mark'd C, and that has no Root. Now if we should dissect one of those Weeds, even tho' they were never so small, we shall find young unborn Weeds within them.

I open'd one of these immature Weeds in the presence of my Limner, and took out such an Embrio as is before describ'd, and placing it before my Microscope, I made him draw it immediately, before that the Moisture of it should exhale; for if that should happen, the Vessel through which it receives its Increase in Nourishment, could not easily be described.

Fig. 83.

Fig. 83. represents a Weed which I had taken out of another of the Bigness of C, in Fig. 77. This Weed received its Nourishment by that Part mark'd S, T. Between S, T, inwards, you may observe five small Particles, which I imagine to be also young Weeds; and that Part too that lies between S, T, outward, is a young Weed as well as the rest, tho' one would hardly think so, as it is here represented: but that Change of its Figure happen'd by the Exhalation of the Moisture; for when I put it into the Limner's hands, it had as round and as entire a Shape as this same Fig. 83, Q, R, S, T.

This is an Answer to those who assert that these green Weeds spring from under the Earth, seeing they proceed from a seminal Matter as well as other Plants.

That I might yet more fully satisfy my self, I caus'd some of these Weeds to be taken out of a Ditch belonging to a Linnen-Bleacher that was in difuse, because no fresh Water could be brought into it. The Ditch was full of these Weeds; but the biggest of them were much smaller than the before-mention'd, but their Leaves much thicker.

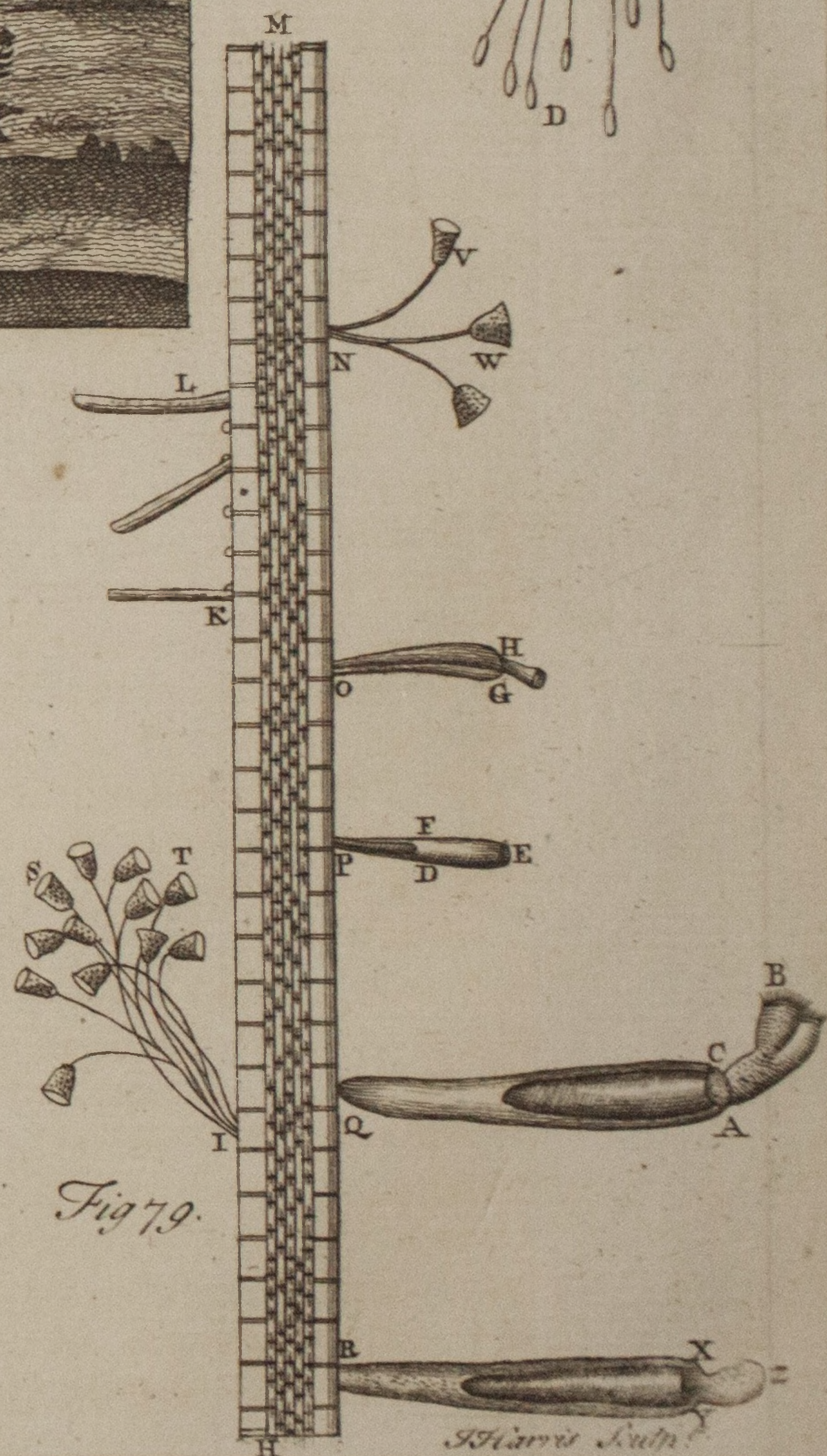
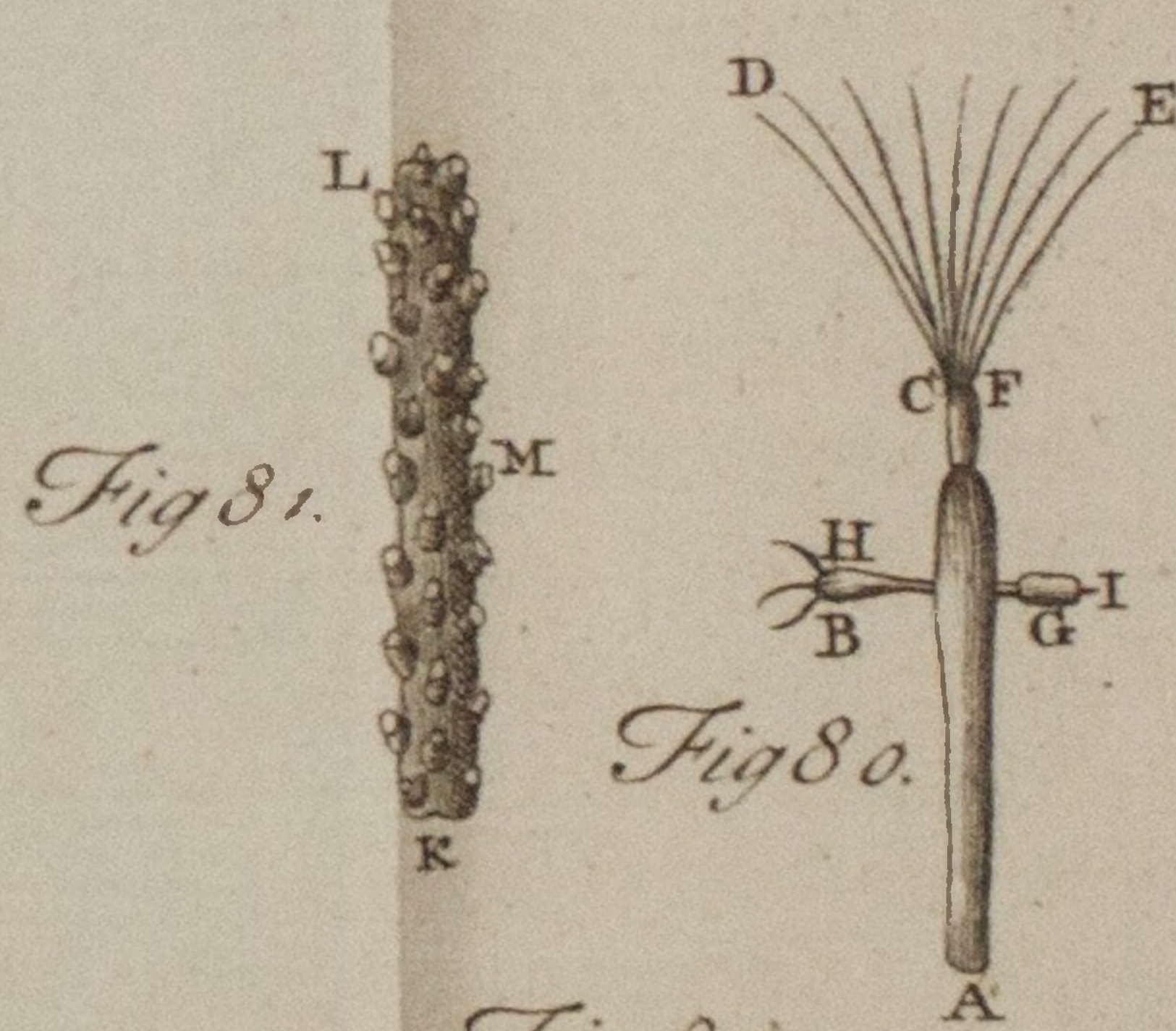
Having examin'd the Weeds, I found that, altho' they were arriv'd to their full Growth, they had but two Roots, which were longer than the Roots of the first Weed; and when I view'd the smaller Weeds, I could perceive they had a great many, but very short Roots.

Whilst I was observing the last Weed, I saw with wonder a great Number of *Animalcula* swimming in Circles through the Water; and so thick together, that even to the naked Eye they seem'd like a Cloud: I never saw any of these little Creatures in other Waters, and the next day they were all gone. There were a great many sorts of these *Animalcula*, and each had their different Motion, and all so small as to escape our naked Eye.

Among these I observ'd some were much bigger than the rest, and were coupled together; in which Action they lay very still on the Sides of the Glas; but a bigger sort interrupted them. Whilst they were quiet, I could easily see those Parts which they use in Motion, and also the Motion of several Parts of their Body, which some would take for the Circulation of the Blood; but I rather esteem it

the











the Chyle in the Guts. These *Animalcula* were so big, that one might see them in clear Water, and in a Glass Tube; among several of these Sorts, I could perceive some as big as little Sands, and as compleatly form'd as our Garden Spiders.

2.] I have observ'd myself the same Mr. *Leuwenhoek* speaks of; and his Picture being so small, I thought my Sketches would not be unacceptable, because they not only confirm his Account, but may contribute to give a more perfect Idea of so odd an Animal: I found it the beginning of this Month in some clear Water, which I took up in a Ditch at *W.* in which, with my utmost Attention, I could discover no more than this one of the same kind. *Fig. 84.* represents it in one of the Postures it appear'd the first Day (for it varies every Moment) and the Knob at *a*, which look'd like the Gut *Cæcum*, was sometimes a little more lengthened: Two Days after I could perceive two or three white Fibres at the End of it; and on the fourth Day, the Animal lying stretch'd at its full Length, appear'd as in *Fig. 85*; and I plainly saw, that what I thought an Excrecence was a young one, with six Horns, coming out of the Side of the old one; and the next Day I found it in the Water entirely separated from the Body, and was about one third of the Length of the Parent. The Formation of the Horns are well figur'd by Mr. *L.* and they issue (like *Radii*) not from the Extremity, but quite round a small Knob, which I take to be the Head. The Horns have a vermicular Motion, and are extended or shortened both all together and severally. The other End is flat at the Extremity, and he often fix'd it (like a *Leech*) to the Bottom or Side of the Glass in which I kept him. He also contracts and dilates his Body at pleasure, and especially, when touch'd or disturb'd, will bring both Body and Horns into a small Compass, and has then the Appearance of *Fig. 86*, and *87*. The Horns are perfectly white, and the Body yellowish, and to a naked Eye not easily discernible in the Water, it being, when extended, no thicker than a good Horse-Hair.

The small Plant mention'd in the same Paper, is the *Lens Palustris* or *Duck-meat*, which floats plentifully on our Ponds or Ditches. But I must dissent from Mr. *L.* where he says it does not come originally from the Bottom; for I very well remember that, many Years since, the late *W. Ch. Esq;* shew'd me the manner of its springing out of the Mud; and we often observed, that when the Leaves were grown to a competent Size, the Force of the Water easily drew the minute single-fibred Root, and raised the Plant to the Surface. I own that the Leaves when floating do continue to grow, and may be increased after the manner he mentions, and I have often taken the young Plant which he pictures, out of them, so that they may be call'd Seeds more properly than Leaves; and my Opinion is, that towards the End of the Year, upon their Corruption,

—Remarks  
on the foregoing  
Observations of Mr.  
*Leuwenhoek's*, com-  
municated by  
Mr. C. n. 288.  
p. 1494.  
*Fig. 84.*

*Fig. 85.*

*Fig. 86, 87.*



they sink to the Bottom, and there take Root, so as to continue the Succession.

The *Animalcula*, which Mr. L. describes, sticking to the Root of the Plant, I have often observed, not only in Water-Plants, but adhering to the Bodies of many sorts of Water-Insects, which I have seen cover'd almost all over with Tufts of them; each Tuft being made up of many *Animalcula*, which appear not much unlike to the Flowers of a Lilly or Fox-Glove. This Congeries of *Animalcula* will lengthen and contract themselves both all together, and severally; and I have observed them, when they lie at length, to put out some wonderfully minute Organs, like small Feet (not easily discern'd even with my best Glasses) which by their quick Agitation bring a Current of Water from all sides towards them. But I was never so fortunate as to see that Motion in them, which he says is like that of a Mill-Wheel; nor indeed can I perceive the Possibility of such a Rotation of any Member in an Animal Mechanism. But I think I can easily account for this Mistake of Mr. L. or rather of his Painter; for in the same Water wherein I have seen these Plants and *Animalcula*, I have observ'd a small round Creature, whose many Legs stand like *Radii* all about its Body. This has a swift progressive Motion, but will very often lie still (when only you can perceive those *Radii*) and then turn very swiftly round like a Wheel, sometimes one way, and then stop and turn the other way, without stirring an Hair's Breadth forward. Now 'tis very probable that one of these might shew its Tricks so very near to, or among a Tuft of the other fix'd *Animalcula*, that it might be very well taken for part of the same, and I am very confident this is Matter of Fact.

These *Animalcula* are sometimes seen loose; but generally they are fix'd in Clusters by their Tails to other Bodies, and perhaps cannot separate themselves; and I think it no mean Instance of Providence, that many kinds of Water-Insects which are so fix'd, and even some of which have but slow and irregular Motions, are furnish'd with such Organs about their Head, the Vibration of which brings a constant Current towards their Mouths, and, with that, Food for their Support; otherwise they would be starved for want of Nourishment.

The Insects on whose Bodies I have seen these *Animalcula*, are of divers sorts; and I have observed no small Variety in the Water of our Ditches, not only of *Reptiles*, and the *Caterpillar* kind, but of *Eels* and perfect *Shell-Fish*, both *Crustaceous* and *Testaceous*, and have been so pleas'd with the Beauty of some of them, that I have kept them many Weeks by me, as an agreeable Entertainment for such as are curious; and farther design'd, if I could have met with a good Hand in the Country, to have got some Figures of them, which I had attempted myself, but with no Satisfaction. However, I have preserv'd two tolerable Sketches of two sorts of the *Crustaceous* kind.

Fig. 88, 89. Fig. 88, and 89, shew them as they lie with their Back towards you