Musæum Regalis Societatis. Or a catalogue & description of the natural and artificial rarities belonging to the Royal Society and preserved at Gresham Colledge / Made by Nehemjah Grew ... Whereunto is subjoyned the comparative anatomy of stomachs and guts. By the same author.

Contributors

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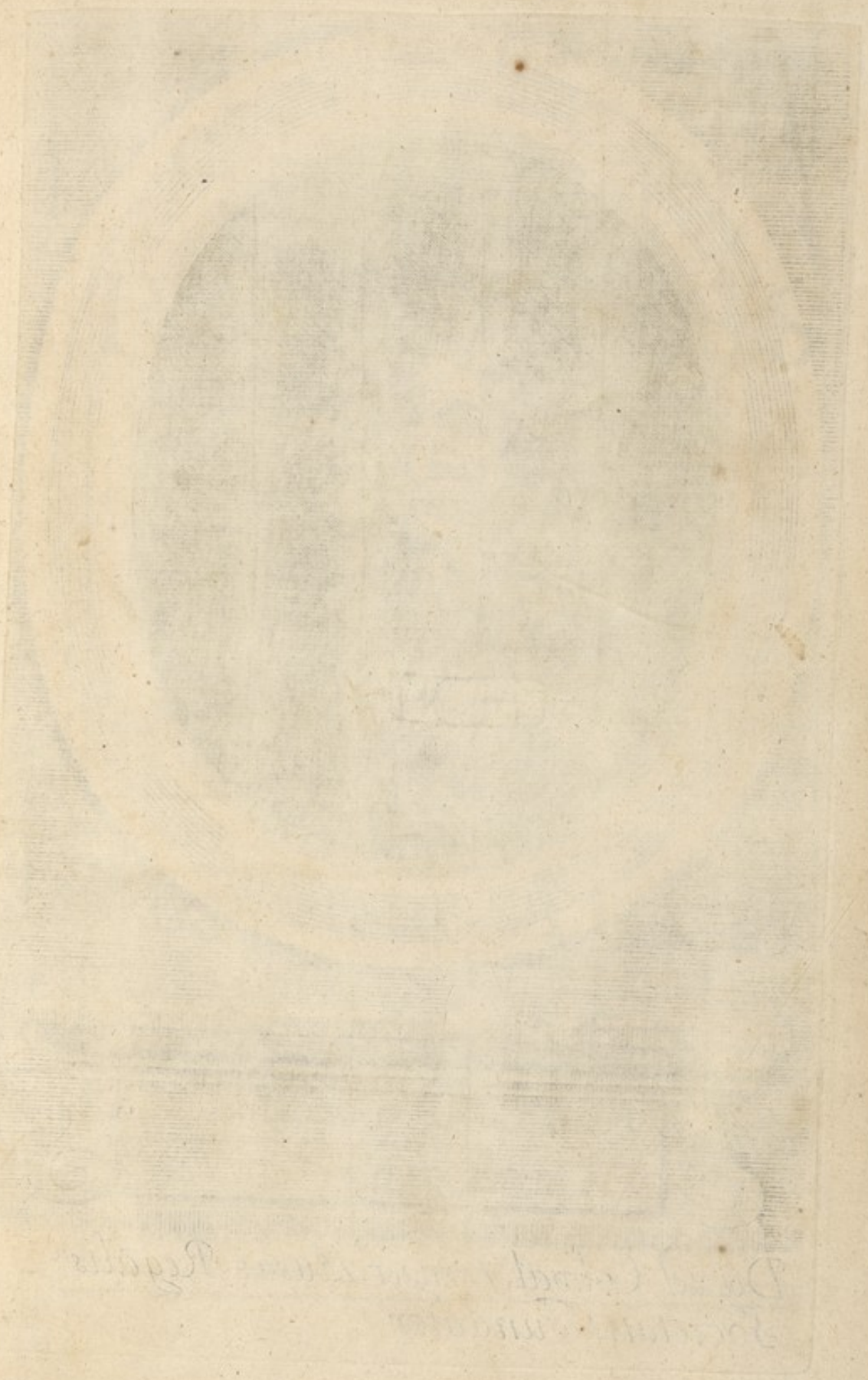

Daniel Colwal Armiger Musai Regalis
Societatis Fundator

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MUSÆUM REGALIS SOCIETATIS.

OR A

Catalogue & Description

Of the Natural and Artificial

RARITIES

Belonging to the

ROYAL SOCIETY

And preserved at

Gresham Colledge.

MADE

By *Nehemjah Grew* M. D. Fellow of the *Royal Society*, and of the *Colledge* of *Physitians*.

Whereunto is Subjoyned the

Comparative Anatomy

OF

Stomachs and Guts.

By the same AUTHOR.

LONDON,

Printed by *W. Rawlins*, for the Author, 1681.

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

TO THE

Most Illustrious

THE

ROYAL SOCIETY,

The following

CATALOGUE

IS

Most Humbly

PRESENTED

By the Author

NEHEMIAH GREW.

TO THE

Moſt Illuſtrious

THE

ROYAL SOCIETY.

The following

CATALOGUE

IS

Moſt Humbly

PRESENTED

By the Author

BENJAMIN GREW.

To his Honoured Friend

Daniel Colwall Esq;

Fellow of the ROYAL SOCIETY.

SIR,

NOthing can be more fit, than to dedicate a Catalogue of that *Musæum* to your Self, of which you are the Founder. You having, in your Devotion to the *Royal Society*, offered up to them That so noble an *Hecatombe*.

The truth is, I have herein prosecuted, what the *Royal Society*, by their Order for the making and publishing of this Catalogue, had begun: they having done the same, as with regard to Common Use; so to return that which is but Right to your Self, and that they might always wear this Catalogue, as the Miniature of your abundant Respects, near their Hearts.

Neither must your Voluntary Undertaking for the Engraving of the Plates for this Work, be unknown. You having done this, not only out of respect to my Self; but likewise in order to a Publique Good; whereby you are a Benefactor to all Ingenious Men.

Besides the particular regard you had to the *Royal Society* it Self; which seeming (in the opinion of some) to look a little pale, you intended hereby,

to put ſome freſh Blood into their Cheeks; pouring out your Box of Oyntment, not in order to their Burial, but their Reſurrection.

To conclude, I have made this Addreſs, not only to do You Right, but to do Right unto Virtue it ſelf; and that having propoſed your exemplary prudence unto others; they may from you, learn, To uſe the redundant part of their Eſtates, either to a Charitable end, as this City will witneſs for your Self; or the Promotion of Maſculine Studies, as in the preſent Caſe: or other laudable ways, ſo as with you, to merit a laſting eſteem amongſt the wiſer and better part of Mankind.

I am,

Sir,

Your very humble

obliged Servant

N. Grew.

THE

THE PREFACE.

AS to the following Catalogue, I have some things to say, of the Order, Names, Descriptions, Figures, and Uses of Particulars, and the Quotations I have made therein.

As to the first, I like not the reason which Aldrovandus gives for his beginning the History of Quadrupeds with the Horse; Quòd præcipuam nobis utilitatem præbeat. Being better placed according to the degrees of their Approximation, to Humane Shape, and one to another: and so other Things, according to their Nature. Much less should I choose, with Gesner, to go by the Alphabet. The very Scale of the Creatures, is a matter of high speculation.

As to the Names, where they were wanting, (which in our own Language were many) I have taken leave to give them. But have generally reteind them, where I have found them all-ready given. Although, from some distinguishing Note less convenient; as the Colour is, than the Figure. And sometimes very Improper, as Concha Persica, and the like, from the Place. For it often falls out, that the same Thing breeds in many Places. But there is no Natural Reason, why it should be called by one, rather than another. So that the Names of Things should be always taken from something more observably declarative of their Form, or Nature. The doing of which, would much facilitate and Improve the Knowledge of them many ways. For so, every Name were a short Definition. Where as if Words are confus'd, little else can be distinctly learn'd. Yet I took it not to be my part, actually to reform this matter; unless I had been writing an Universal History of Nature.

In the Descriptions, I have taken care; First, to rectifie the mistakes of such as are given us by other Hands. Secondly, not to Transcribe any; as is too commonly done: but having noted something more especial therein, to refer to the Author. Thirdly, where there is no Description at all, or that is too short, or the faults therein many, to give one at large. For the doing of all which, what the trouble of comparing Books together hath been, I say with Sleydan in another Case, Post Deum Immortalem Ipse novi.

In the Descriptions given, I have observed, with the Figures of Things, also their Colours; so far as I could, unless I had view'd them Living, and Fresh. And have added their just Measures. Much neglected by Writers of Natural History.

If any object against their length: perhaps they have not so well considered the necessity hereof, for the cleer and evident distinction of the several Kinds and Species, in so great a variety of Things known in the World. And wherein also regard is to be had, to all that after Ages may discover, or have occasion to enquire after. The Curiosity and Diligence of Pliny, is highly to be commended. Yet he is so brief, that his Works are rather a Nomenclature, than a History: which perhaps might be more intelligible to the Age he lived

in;

in, than the ſucceeding ones. But had He, and Others, been more particular in the Matters they treat of: their Commentators had engaged their own and their Readers Time much better, than in ſo many fruitleſs and endleſs Diſquiſitions and Conteſts. It were certainly a Thing both in it ſelf Deſirable, and of much Conſequence; To have ſuch an Inventory of Nature, wherein, as on the one hand, nothing ſhould be Wanting; ſo nothing Repeated or Confounded, on the other. For which, there is no way without a cleer and full Deſcription of Things.

Beſides, that in ſuch Deſcriptions, many Particulars relating to the Nature and Uſe of Things, will occur to the Authors mind, which otherwiſe he would never have thought of. And may give occaſion to his Readers, for the conſideration of many more. And therefore it were alſo very proper, That not only Things ſtrange and rare, but the moſt known and common amongſt us, were thus deſcrib'd. Not meerly, for that what is common in one Countrey, is rare in another: but becauſe, likewiſe, it would yield a great abundance of matter for any Man's Reaſon to work upon. He that notes, That a Grey hound hath pricked Ears, but that thoſe of a Hound hang down; may alſo the Reaſon of both: for that the former hunts with his Ears; the the latter, only with his Noſe: So that as a blind Man, minds nothing but what he Hears: ſo a Hound, having his Ears half Stop'd with the Flaps, minds nothing but what he Smells. He that ſhall obſerve, That a Horſe, which ought to have many and ſtrong Teeth, and large and thick Hoofes, hath no Horns: and that an Ox, with Horns, hath fewer Teeth, and weaker Hoofs: cannot but at the ſame time ſee the Providence of Nature, In diſpoſing of the ſame Excrementitious parts of the Blood, either way, as is moſt ſuitable to the Animal. One that conſiders the Teeth of a Horſe, ſees the reaſon, why he hath ſo long an upper Lip; which is his Hand, and in ſome ſort anſwers to the Proboſcis of an Elephant; whereby he nimbly winds the Graſs in great quantities at once into his Mouth. So that for Nature to have made him a ſhort Lip, had been to make a little Hopper, to a great Mill. The ſame Animal having need of great Lungs, how neceſſary is it alſo for him to have a broad Breaſt, well bowed Ribs, and wide Noſtrils to give them play? That being much peſter'd with Flys, he ſhould have a long bruſh Tail to whisk them off. Whereas the Aſs, which either for the hardneſs and dryneſs of his Skin, or other Cauſe, is leſs anoy'd with them, hath no need of ſuch an one. That being heavy, he ſhould not Tread or Leap ſtiff, as a Man; but have a Paſtern made him, gradually and ſafely to break the force of his weight. By This, his Body hangs on the Hoof, as a Coach doth by the Leathers. Without this, the moſt thorow pac'd Horſe, would tread ſo hard, that as it were impoſſible for any man to endure long upon his Back: ſo his Joynts would be much chafed, and he muſt needs preſently tyre. Yet if it be too long, by yielding over much, it makes every ſtep ſomewhat more laborious, and to looſe ſome ground. He that would have one for Carriage, will chooſe him ſhort, and high Back'd. For Runing, long, and clean or ſlender Limb'd: another, were like a Man that ſhould run a Race in his Boots. And a due length is as neceſſary: which is, when the Meaſure between the Main and the Tail anſwers to the hight, or thereabout. If much under, his hinder Feet will want their full ſcope: if much over, there will be more weight to be moved with the ſame force, as if the weight were leſs. But he that would have one for Draught, looks not that the Limbs be ſlender, if they are ſtrong; eſpecially thoſe behind. For though the fore Legs

pull

pull ſometimes, moſt when they make an acute angle with the Belly; yet the greateſt ſtreſs uſually lies upon the hinder; theſe being as the Centre of Gravity, and the Load, and Body of the Horſe, the two Counter Weights. And when he Goes without Drawing, his fore Feet only ſupport him; but his hinder, ſerve alſo as Leavers to carry him on. And therefore when he walks, he always moves his hinder Foot firſt.

Together with ſuch Notes as theſe, ariſing from the Deſcription of the outward Parts; *how largely and uſefully might that of the* Inner; *his Generation, Breeding and the like, be alſo inſiſted on. And ſo the like of other Animals. Whereby a better Hiſtory of them might be written in five years, than hath hitherto been done in two Thouſand.*

As for the Figures, I have given only thoſe of ſuch particulars, as are omitted by others. Saving one or two, found in ſome Authors leſs known, or common. Nor any, but what is alſo deſcrib'd: which makes any further Explication of theſe needleſs, beſides what the Reader will find next before them.

After the Deſcriptions; inſtead of medling with Myſtick, Mythologick, or Hieroglyphick matters; or relating Stories of Men who were great Riders, or Women that were bold and feared not Horſes; as ſome others have done: I thought it much more proper, To remarque ſome of the Uſes and Reaſons of Things. Where alſo for the ſake of the Engliſh Reader, I have undergone the tranſcribing ſome particulars. More I could have done, with leſs trouble. Theſe I hope will compenſate the room, they take up. Amongſt Medicines, I have thought fit to mention the Virtues of divers Exoticks. Becauſe the greateſt Rarity, if once experienced to be of good uſe, will ſoon become common. The Jeſuites Banque, of which, no Man yet hath well deſcrib'd the Tree, and very few know preciſely where it grows; yet what great quantity, doth the much uſe of it bring over to us? Unicorns Horns, upon the like motive of Trade, would be as plentiful as Elephants Teeth.

*I have made the Quotations, not to prove things well known, to be true; as one * (and he too deſervedly eſteemed for his great Diligence and Curioſity) who very formally quotes* Ariſtotle, *to prove a Sheep to be amongſt the* Biſulca: Ovem, (inquit) ex genere eſſe Biſulcorum, non ſolùm ipſa loquitur, ſed Ariſtoteles etiam ſcripto publicavit, inquiens; *as if* Ariſtotle, *muſt be brought to prove a Man hath ten Toes. But partly, To be my Warrant, in matters leſs credible. Partly, to give the Authors, that which is their due: not at all liking the Malignant-way of ſome, who never mention any, but to confute him. Yet withall, To rectifie his Miſtakes where I found them. And to mind the Reader, Not to peruſe the moſt Honeſt, or Learned Author, without ſome caution.*

* Aldrovandus.

A Prospect of the whole WORK.

Of the *MUSÆUM.*

PART. I.

Of Animals.

Sect. 1.

Of Humane Rarities.

Sect. 2.

Of Quadrupeds.

Chap. 1. *Of Viviparous; and particularly of Multifidous Quadrupeds.*

Chap. 2. *Of Bifidous, and Solidipedous Quadrupeds.*

Appendix. *Of certain Balls found in the Stomachs of divers Quadrupeds.*

Chap. 3. *Of Oviparous Quadrupeds.*

Sect. 3.

Of Serpents.

Sect. 4.

Of Birds.

Chap. 1. *Of Land-Fowles.*

Chap. 2. *Of Water-Fowles; particularly of the Cloven Footed.*

Chap. 3. *Of Palmipeds or Web-Footed.*

Chap. 4. *Of their Eggs and Nests.*

Sect. 5.

Of Fishes.

Chap. 1. *Of Viviparous Fishes.*

Chap. 2. *Of Oviparous Fishes; particularly such as are Not-Scal'd.*

Chap. 3. *Of Scaled Fishes.*

Chap. 4. *Of Exanguious Fishes.*

Sect. 6.

Of Shells.

Chap. 1. *Of Shells Whirled and single.*

Chap. 2. *Of Shells Double and Multiple. To which are subjoyned 7. Schemes comprehending them all.*

Sect. 7.

Of Insects.

Chap. 1. *Of Insects with Naked Wings.*

Chap. 2. *Of Insects with Sheathed Wings.*

Chap. 3. *Of Creeping Insects.*

PART. II.

Of Plants.

Sect. 1.

Of Trees.

Chap. 1. *Of Woods, Branches and Leaves.*

Chap. 2. *Of Fruits; particulary such as are of the Apple, Pear, and Plum Kinds.*

Chap. 3. *Of Calibashes; and some other like Fruits.*

Chap. 4. *Of Nuts, and divers other like Fruits.*

Chap. 5. *Of Berries, Cones, Lobes, and some other Parts of Trees.*

Sect. 2.

Of Shrubs and Arborescent Plants.

Chap. 1. *Of Shrubs, chiefly.*

Chap. 2. *Of Arborescent Plants.*

Sect. 3.

Of Herbs.

Chap. 1. *Of Stalks and Roots.*

Chap. 2. *Of Fruits.*

Chap. 3. *Of Seeds.*

Sect. 4.

Sect. 4.

Of Mosses, Mushrooms, &c. Together with some Appendents to Plants.

Sect. 5.

Of Sea Plants.

Chap. 1. *Of Sea Shrubs.*

Chap. 2. *Of other Sea Plants; and of Sponges.*

PART. III.

Of Minerals.

Sect. 1.

Of Stones.

Chap. 1. *Of Animal Bodies petrified; and such like.*

Chap. 2. *Of Vegetable Bodies petrified; and Stones like them.*

Chap. 3. *Of Corals, and other like Marine Productions.*

Chap. 4. *Of Gems.*

Chap. 5. *Of other Stones Regular.*

Chap. 6. *Of Stones Irregular.*

Sect. 2.

Of Metalls.

Chap. 1. *Of Gold, Silver, and Copper.*

Chap. 2. *Of Tin, Lead, and Iron.*

Chap. 3. *Of Antimony, Mercury, and other Metallick Bodies.*

Sect. 3.

Of Mineral Principles.

Chap. 1. *Of Salts.*

Chap. 2. *Of Ambar and other Sulphurs.*

Chap. 3. *Of Earths.*

PART. IV.

Of Artificial Matters.

Sect. 1.

Of things relating to Chymistry, and to other Parts of Natural Philosophy.

Sect. 2.

Of things relating to Mathematicks; and some Mechanicks.

Sect. 3.

Chiefly, of Mechanicks.

Sect. 4.

Of Coyns, and other matters relating to Antiquity.

Appendix.

Of some Plants, and other Particulars.

Index.

Of some Medicines.

List.

Of those who have contributed to this Musæum.

Of the Anatomical Part.

Chap. 1. *Of the Stomachs and Guts of six Carnivorous Quadrupeds, &c. a Weesle, Fitchet, Polecat, Cat, Dog, and Fox.*

Chap. 2. *Of the Mole, which seems to feed on Insects, as also of the Urchan, Squiril, and Rat; chiefly frugivorous.*

Chap. 3. *Of a Rabbit, Horse, and Pig; both frugivorous and graminivorous.*

Chap. 4. *Of a Sheep, and Calf; chiefly graminivorous.*

Chap. 5. *Of the Uses of the Gulets of Quadrupeds.*

Chap. 6. *Of the Uses of the Stomachs of Quadrupeds.*

Chap. 7. *Of the Uses of the Guts of Quadrupeds.*

Chap. 8. *Of the Stomachs and Guts of Birds.*

Chap. 9. *Of their Uses.*

Chap. 10. *Of the Stomachs and Guts of Fishes.*

With a Short Explication of some of the Figures, next before them.

At a Meeting of the Council of the Royal Society,
July 18th 1678.

Ordered,

THat Dr. *Grew* be desired, at his leasure, to Make a Catalogue and Description of the Rarities belonging to this Society.

Thom. Henshaw Vice-Præses R. S.

At a Meeting of the Council of the Royal Society,
July 5th 1679.

Ordered,

THat a Book entitled, *Musæum Regalis Societatis*, &c. By Dr. *Nehemjah Grew*, be Printed.

Thom. Henshaw Vice-Præses R. S.

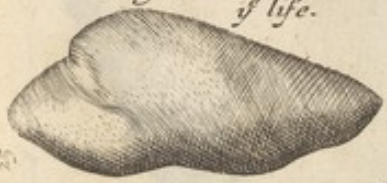
The Reader is desired to amend the following

ERRATA.

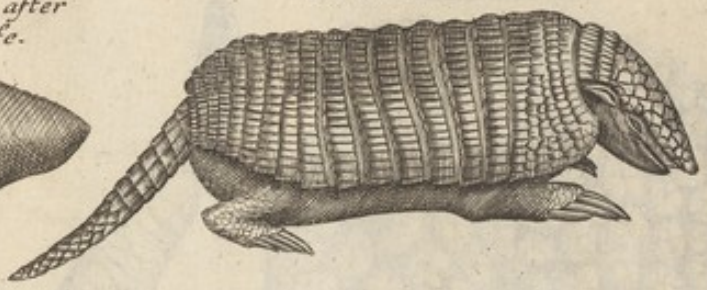
PAge, 5. line, 3; *for*, only; *read*, chiefly. p. 7. l. 24. *r.* Biliaria. p. 16. l. 12. *r.* Conical. p. 41. l. 20. *r.* Humorous. p. 49. in the margin, *r.* Schroderi Pharmac. p. 65. l. 15. f. European, *r.* Common. l. 22. again, *r.* Common. p. 70. l. 1. f. Poop, *r.* Prore. p. 72. l. 16. f. Mona, *r.* Man, and. p. 73. l. 1. f. Mona, *r.* Man. p. 103. *r.* Oviparous. p. 126. l. 34. *dele*, other. p. 136. l. 12. *r.* Fore-Whirled. p. 182. l. 18. *add*, Or rather, *Prunus Sylv.* Americana; the AMER: BLACK THORN. p. 202. l. 14. *r. Ciliare.* p. 220. l. 26. *r.* Taxocoquamoclit. p. 252. l. 10. *dele*, a Cap.

Tab: 1.

A Stone voyded by ye Urethra of a Man: after ye life.



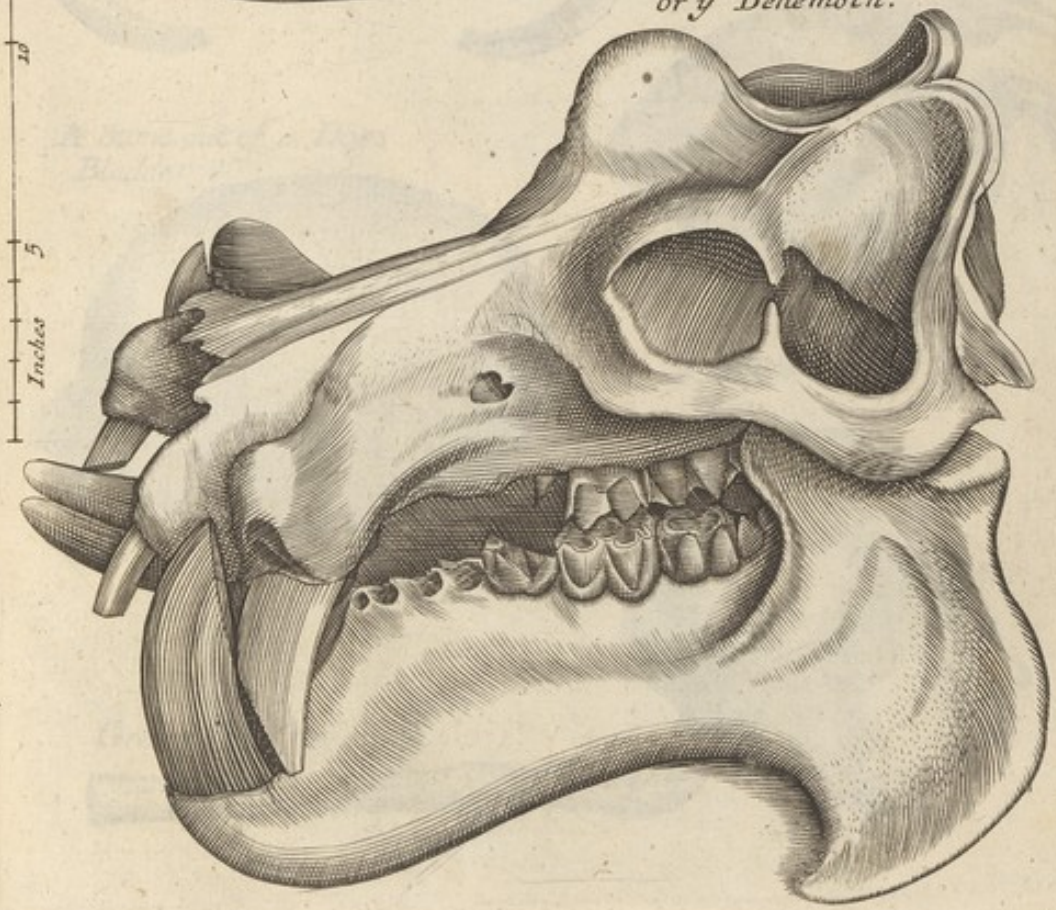
Weesle Headed Armadillo.

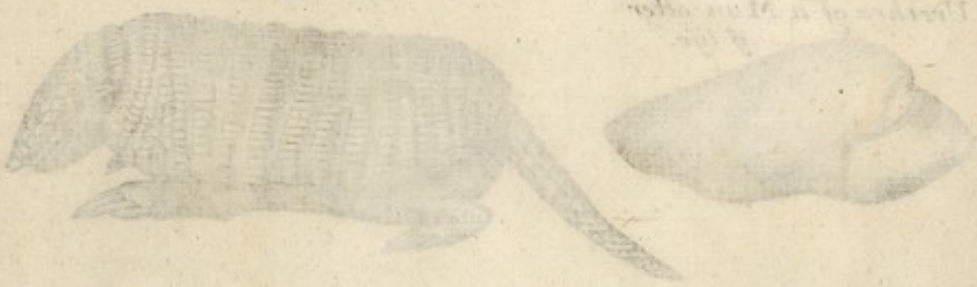


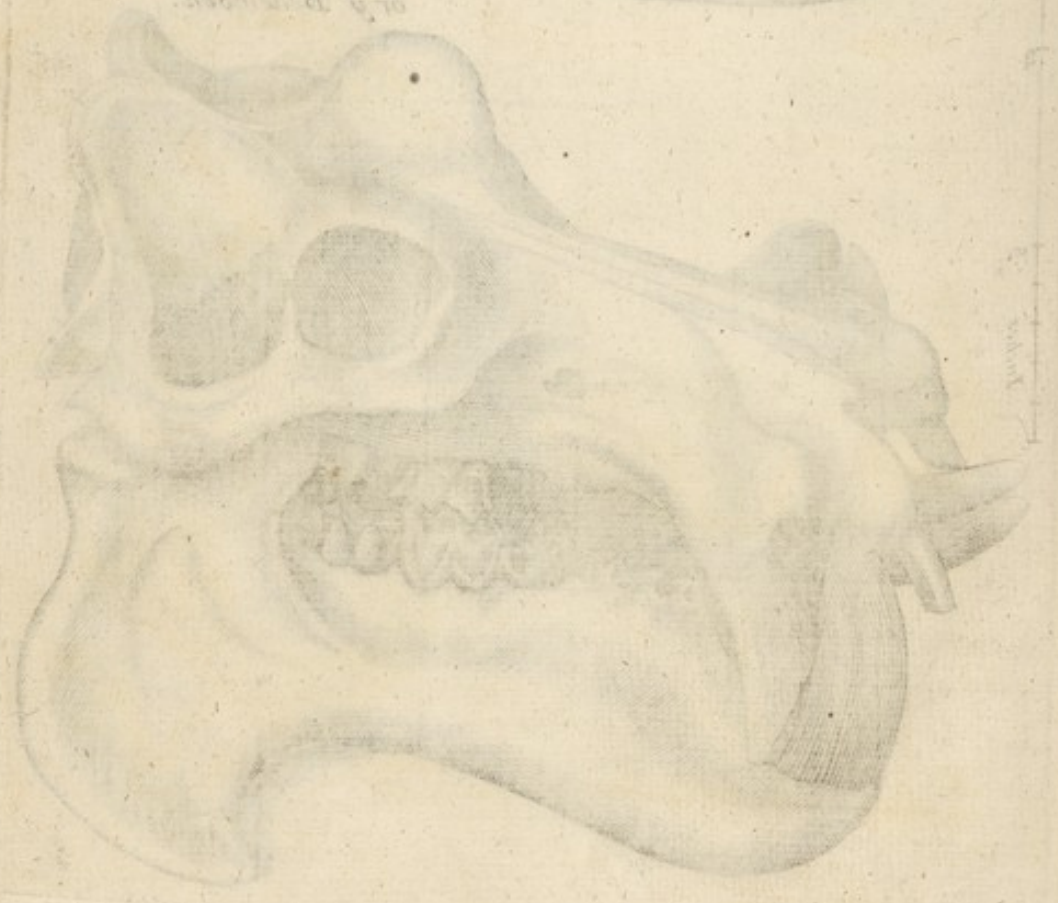
Head of ye Baby-Rousa.

Tusk of a Wild Boar.

Head of ye Hippopotamus or ye Behemoth.

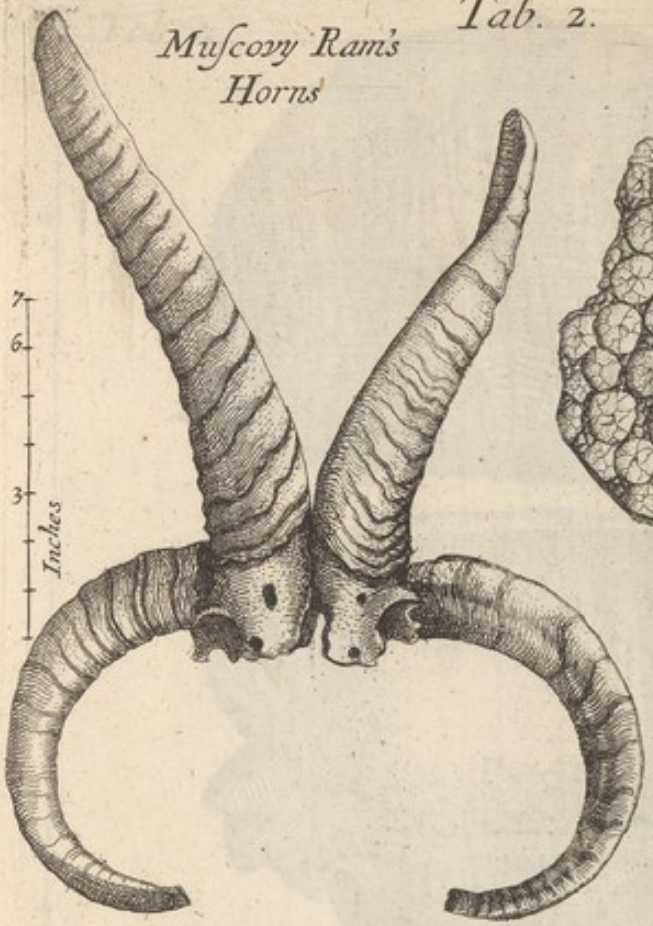




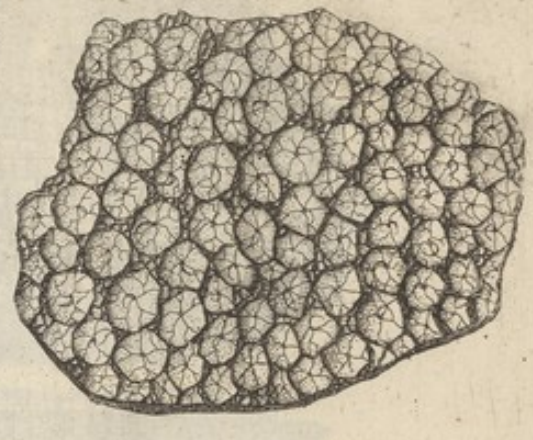


Tab. 2.

Muscovy Ram's Horns



Skin on ye Buttock of a Rhinoceros

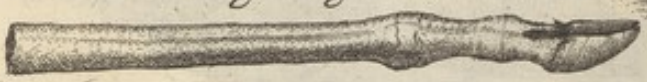


A Greenland Deer's Horns

A Stone out of a Dogs Bladder

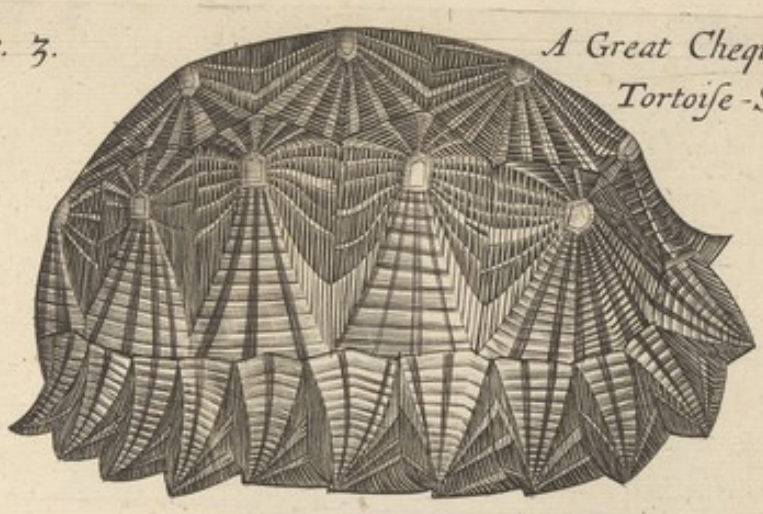
Throttle Bone of a Monkey

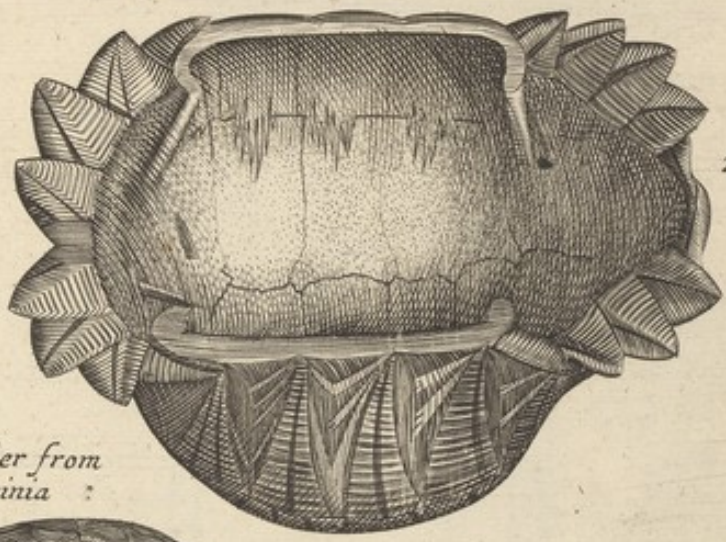
Greenland Stag's Leg.



Tab. 3.

A Great Chequerd Tortoise-Shell





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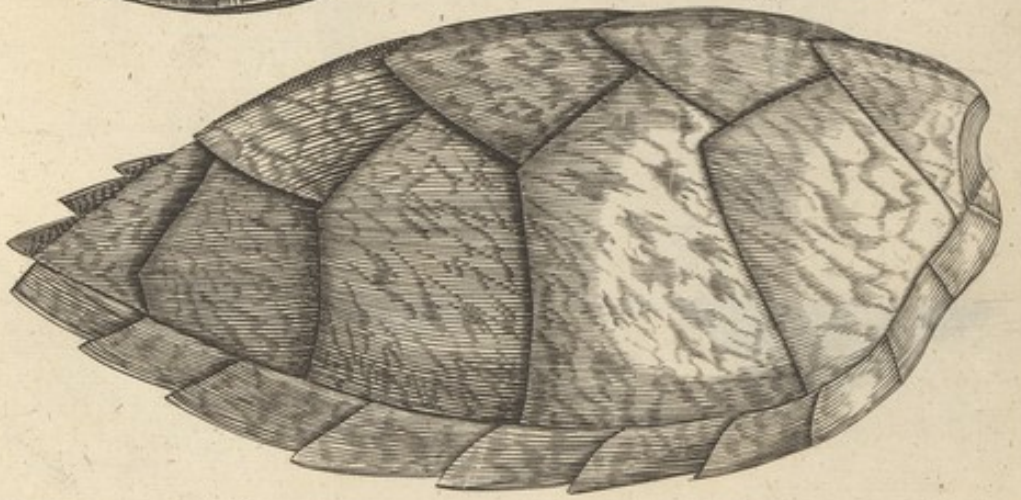
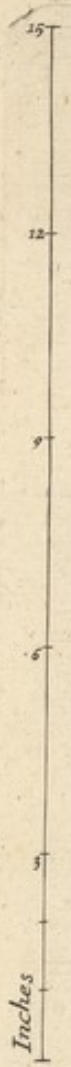
A Lesser from Virginia :

A Scaled Tortoise Shell





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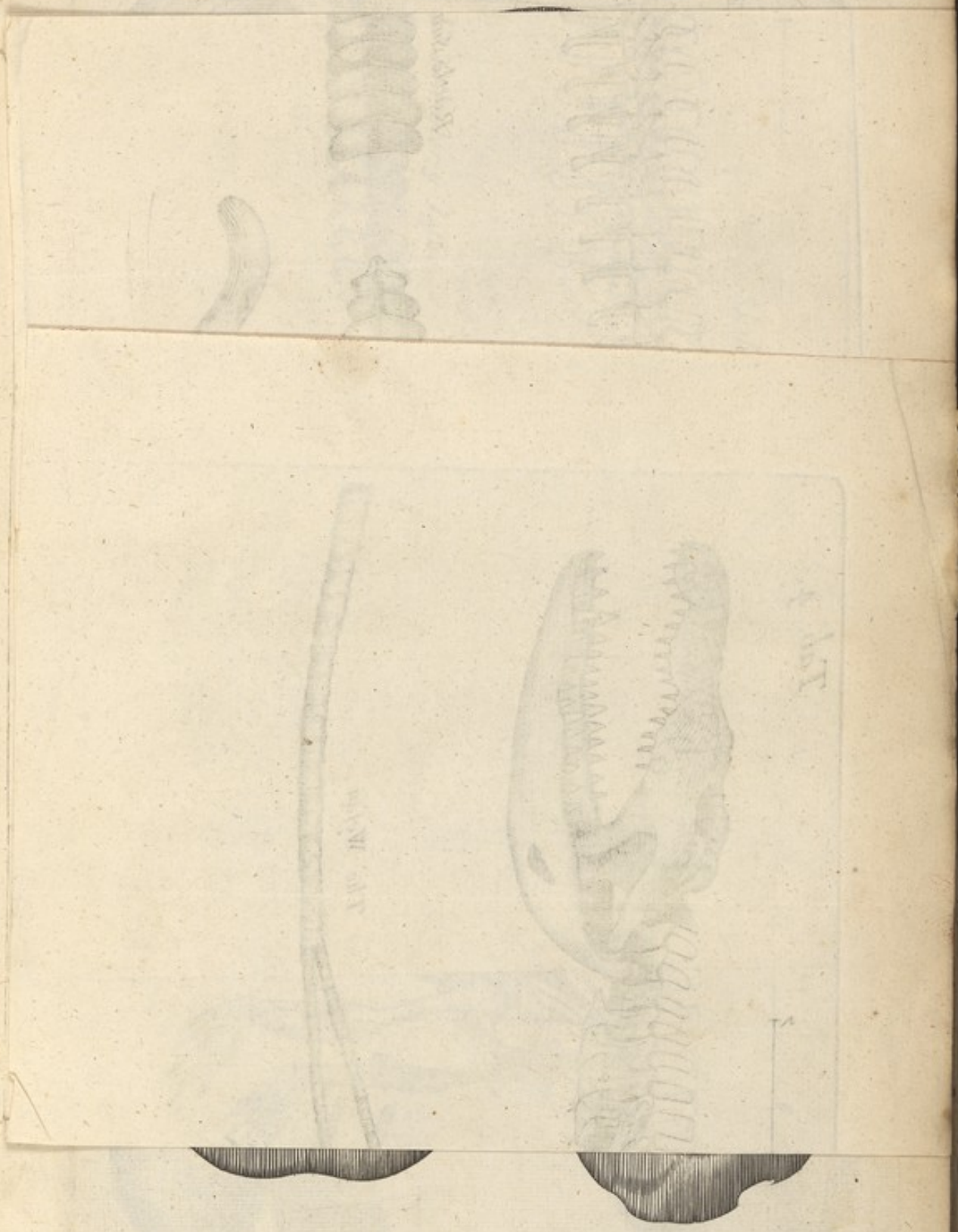

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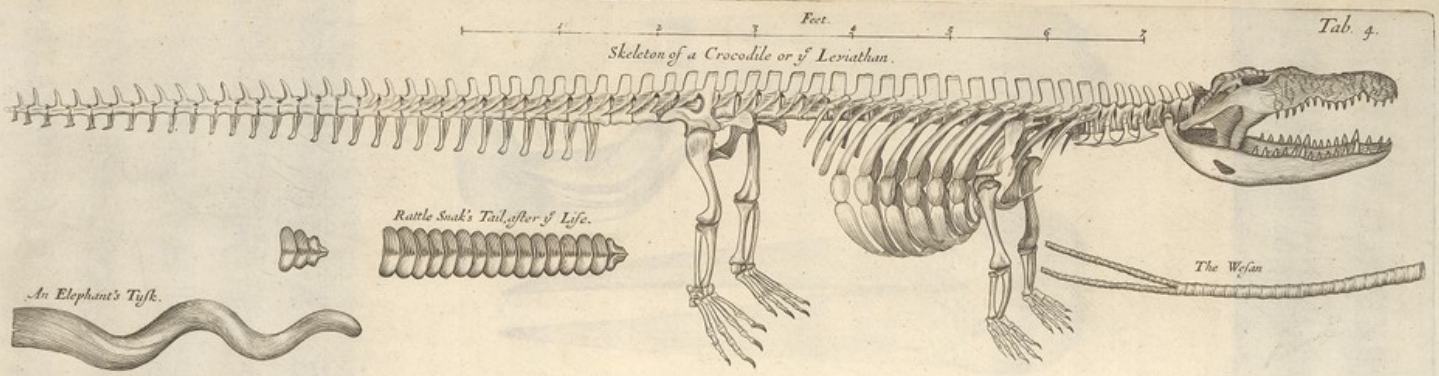
Feet.
1
2
3
4
5
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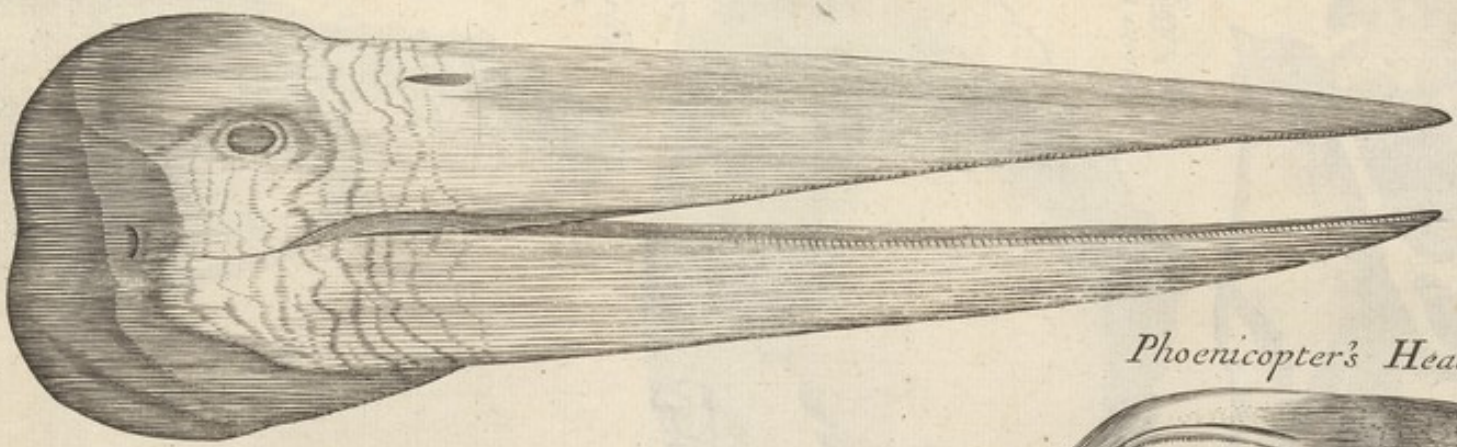
7
Skeleton of a Crocodile or ℔ Leviathan.
Rattle Snak's Tail after ℔ Life.
The Wesan
An Elephant's Tusk.

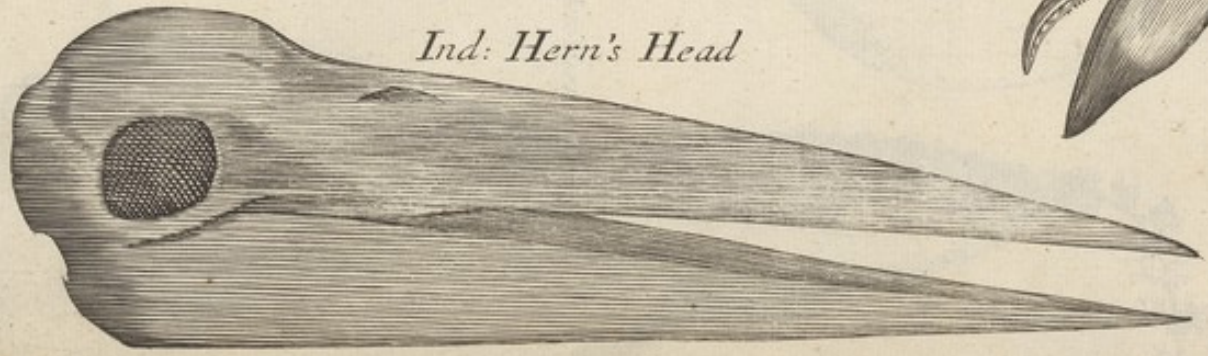
Tab. 5.

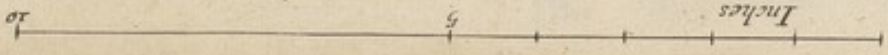
Ind: Stork's Head



Phoenicopter's Head

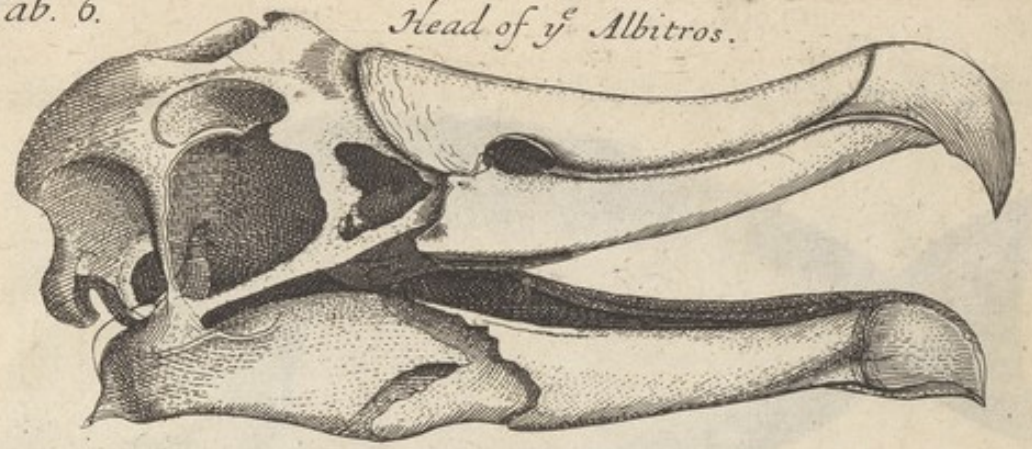
Ind: Hern's Head



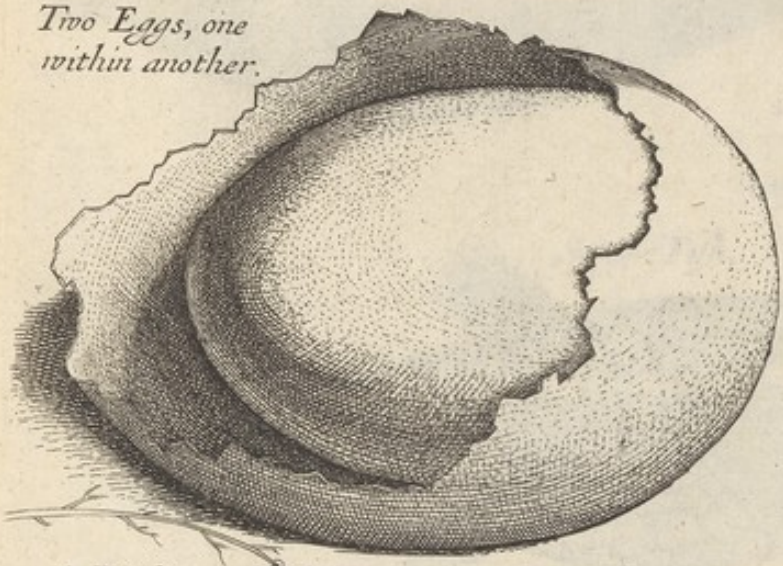


Tab. 6.

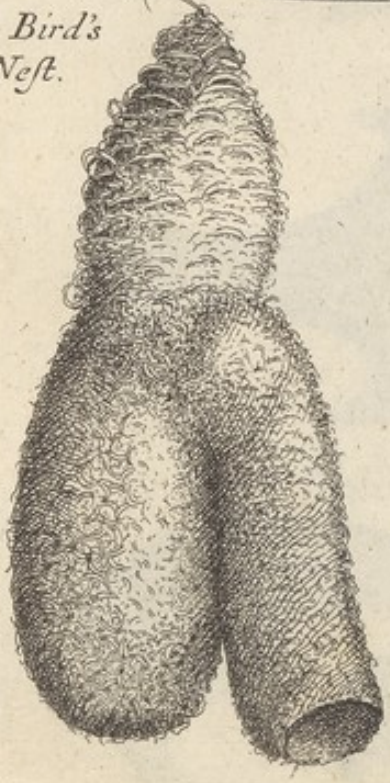
Head of ye Albitros.



Two Eggs, one within another.



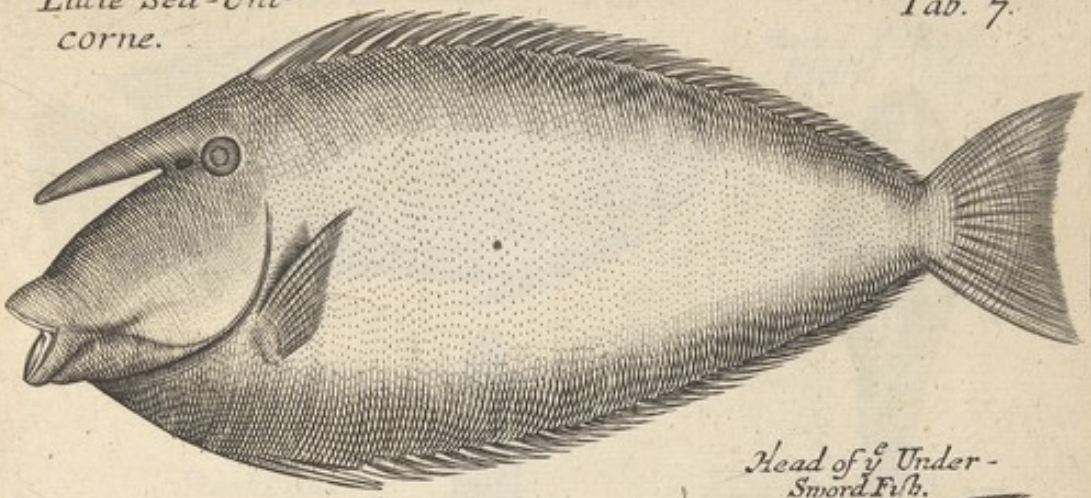
A Bird's Neſt.



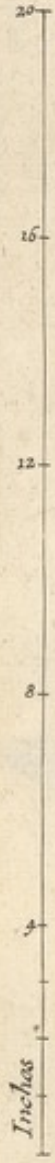
Another.

Little Sea-Unicorne.

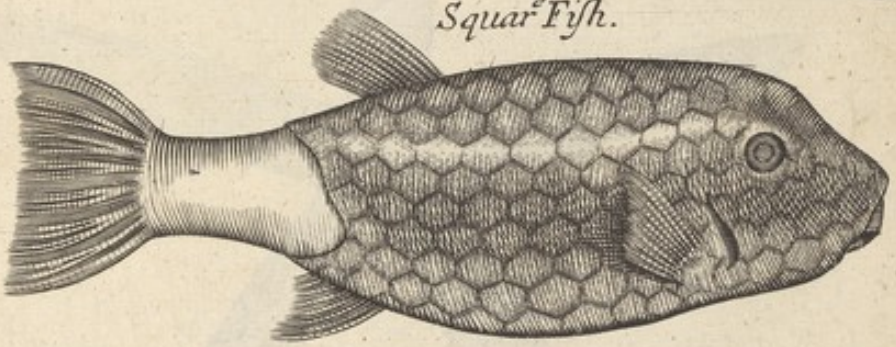
Tab. 7.



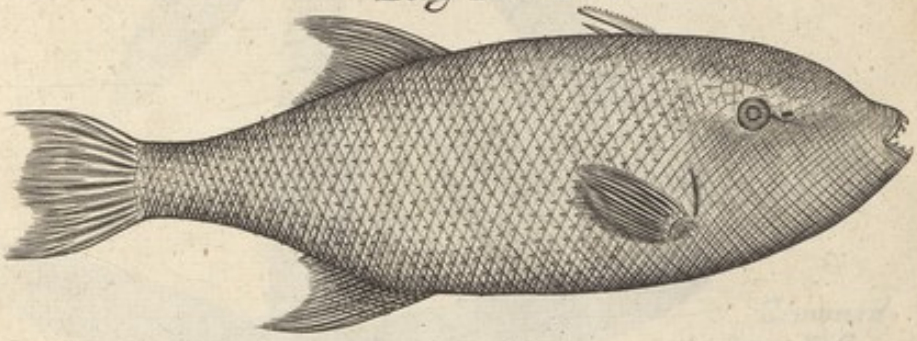
Head of ye Under-Sword Fish.



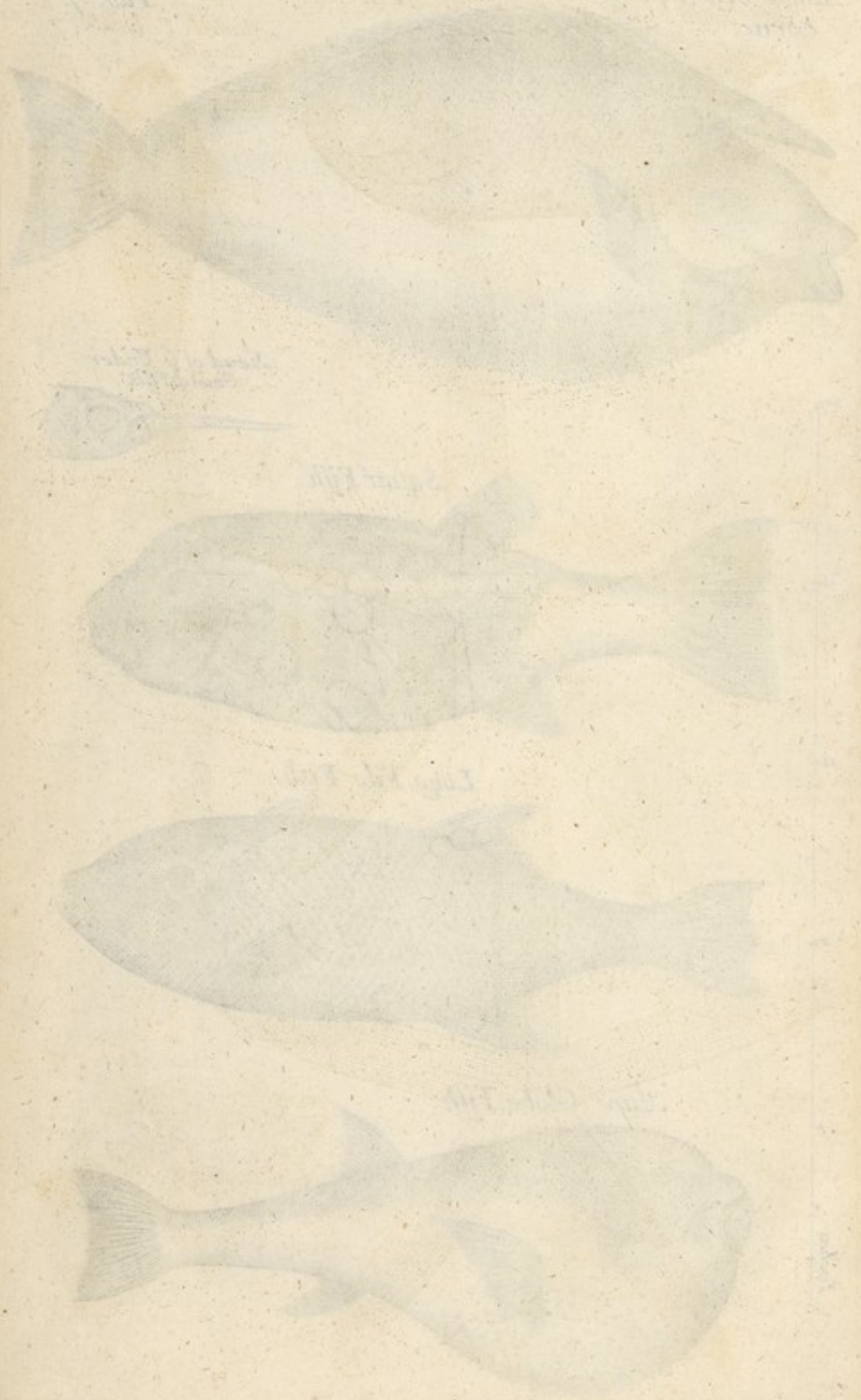
Square Fish.



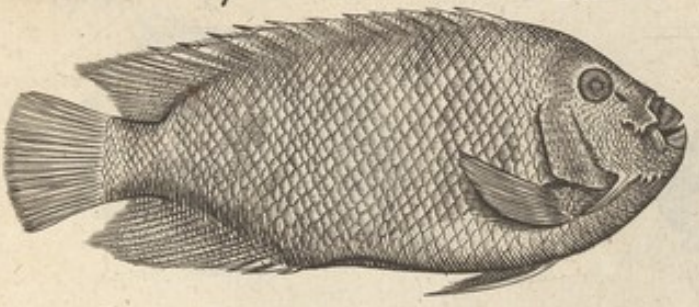
Long File Fish.



Hare Globe Fish.



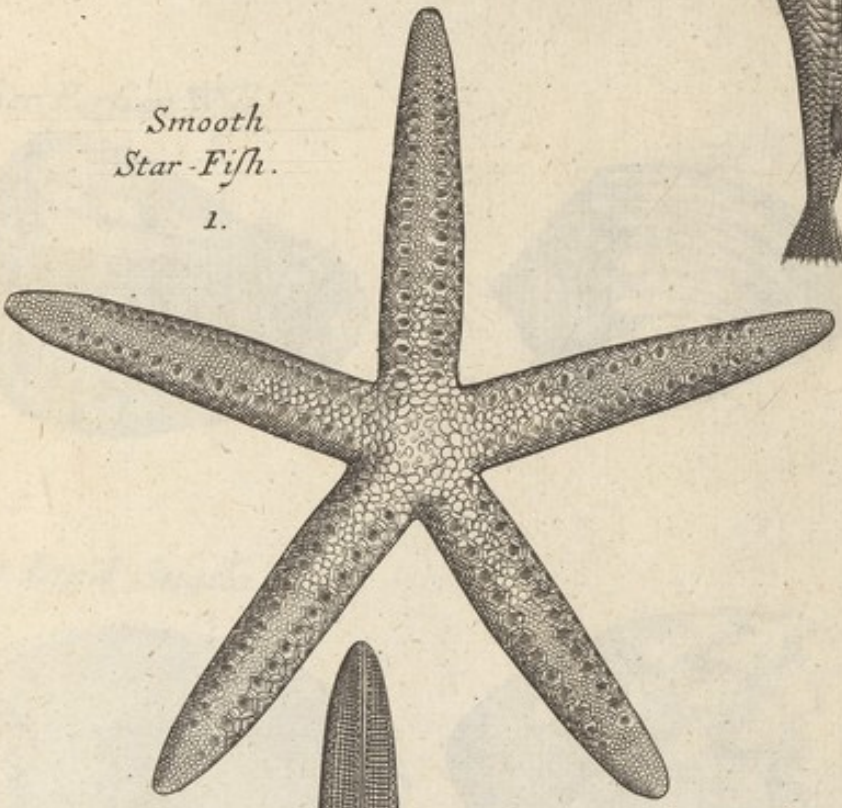
Square Acarauna. Tab. 8.

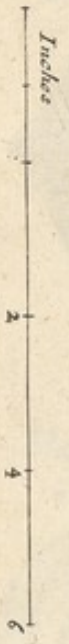


Mailed Fiſh of Braſile

Smooth Star-Fiſh.

1.





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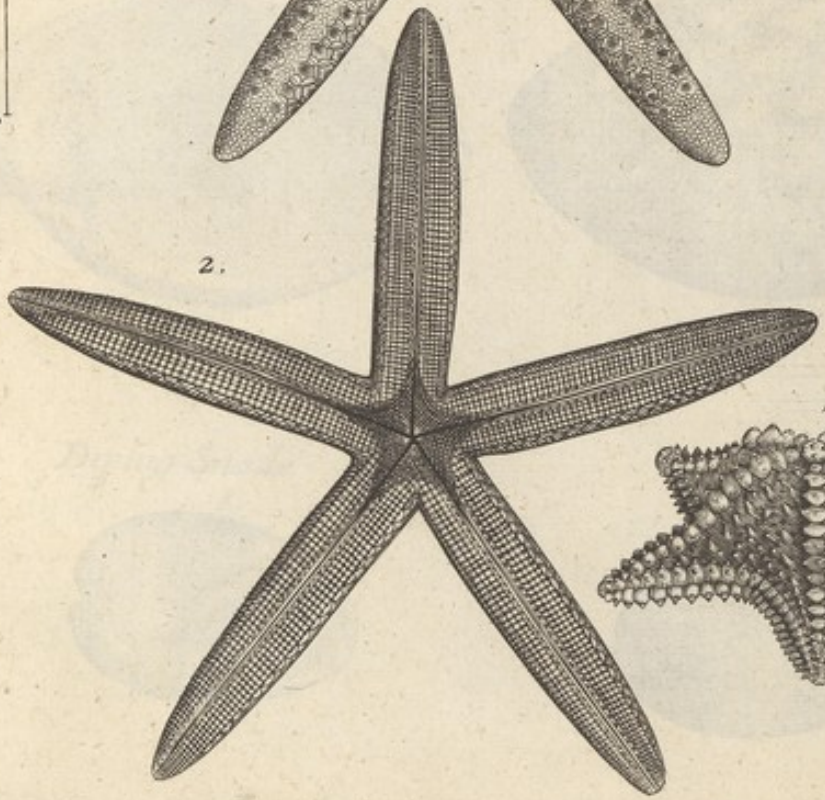
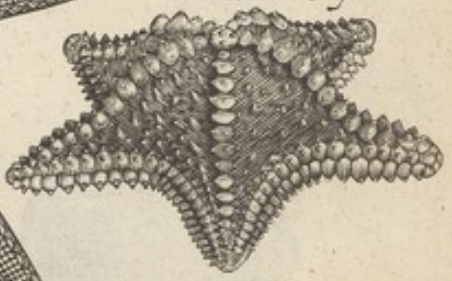
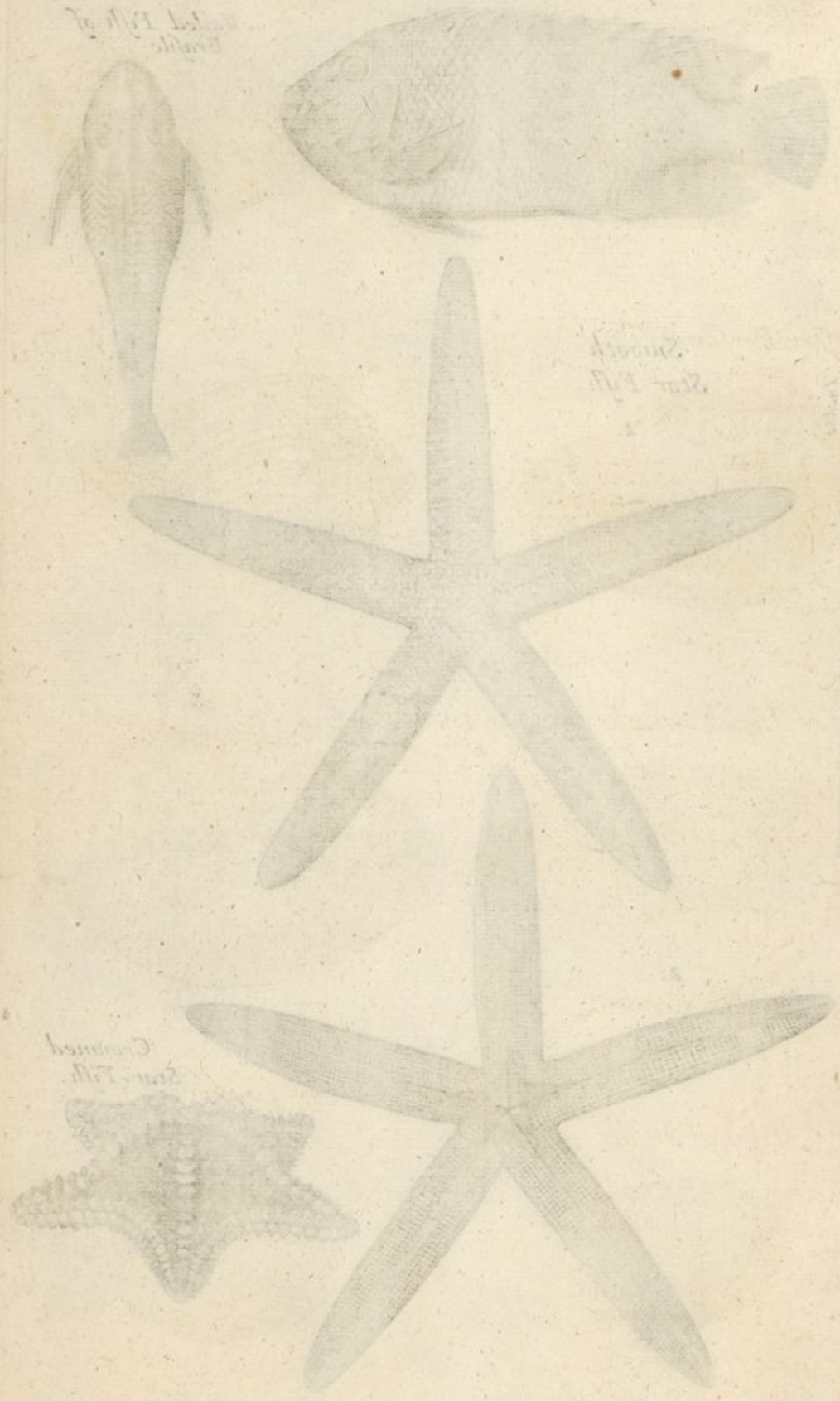


Crowned Star-Fiſh.





Wilk with plaited Spikes 1

Tab. 9.

2

Leſser Perſian Wilk

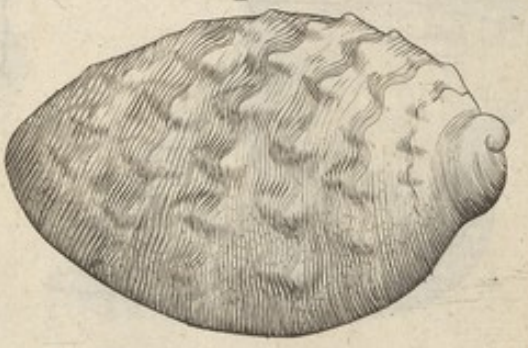
1

2

Flat Lip'd Snaile

1

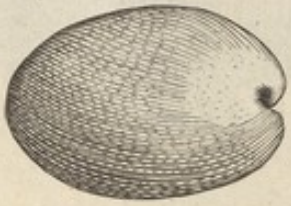
2



Diping Snaile

1.

2



Tab. 10.

Square Wilk 1

2

Long Square Wilk 1

2

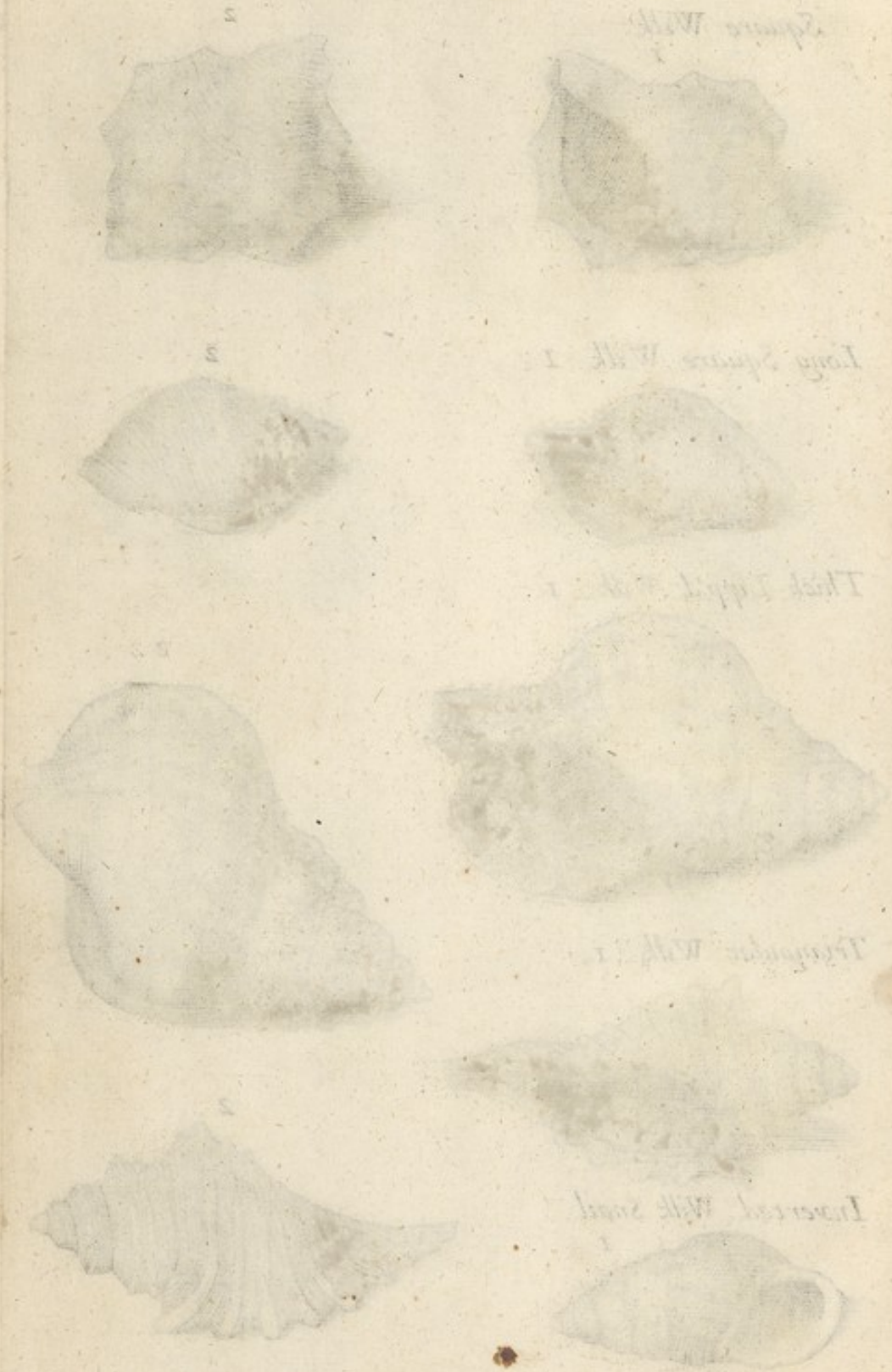
Thick Lipp'd Wilk 1

2

Triangular Wilk 1

2

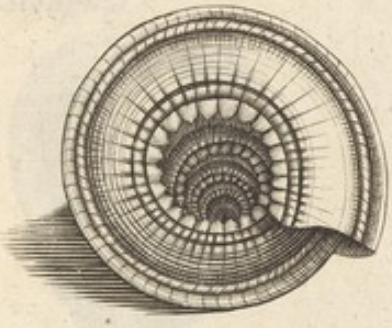
Inverted Wilk Snail 1



Spiked short Whirle 1

2

Concave short Whirle 1.



2

Finger'd Snail 1.

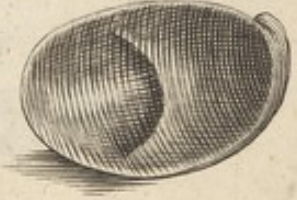
2

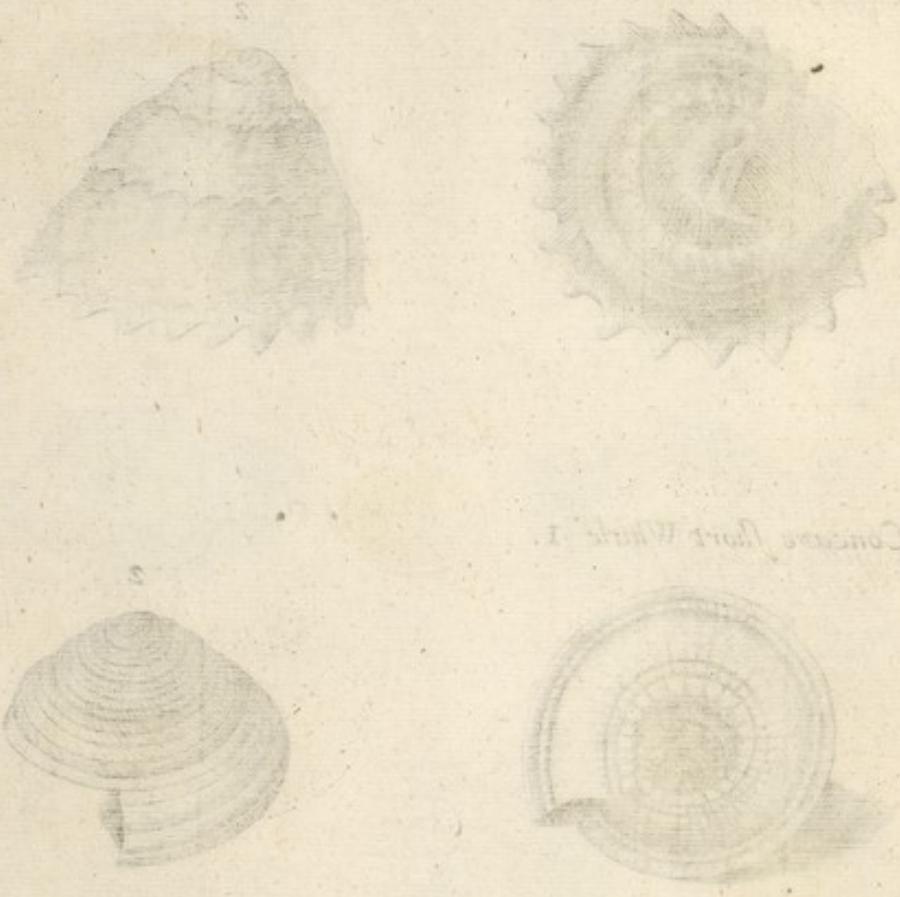
Blober Lip

Fore Whirle

Mailed Sailer

Vaulted Limpet





Tab. 12.

Cheſt nut Oyſter

1

2

Neted Shell

Conick Limpet,
Sloaping

Multarticulate Oyſter

Scaled Centre-Shell

Rugged Oyſter

2

Blob Lip'd Muſcle

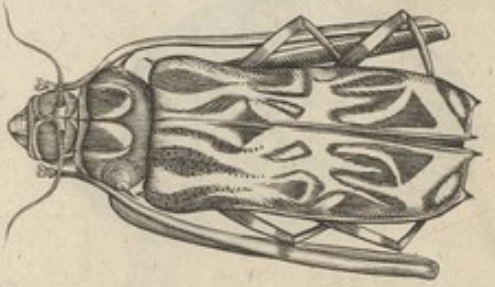
1

Tab. 13. Fly Neſt 1

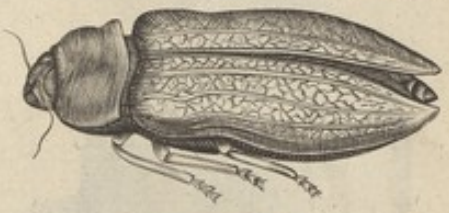
Wild Bee 1

Lanthorne Flie 1

Nocoonaca.



Great Gogle Ey'd Beetle



Leſser Bull Chafer

Long Gogle Ey'd Beetle

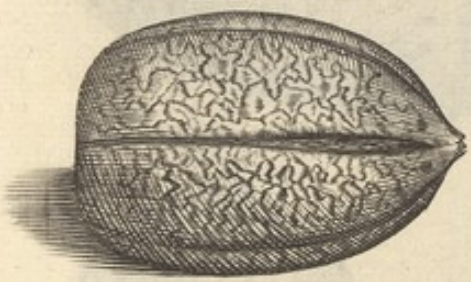
Thick Gogle Ey'd Beetle 1

Tab. 14.

Trivalvous.

Indian Plum-stones.
Great, Poynted.

Quinquevalvous,
Oval.

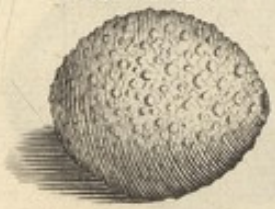


Woody Oval.

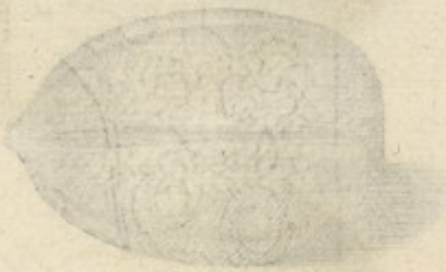
Round Mammee.

Woody, Orbicular.

Orbicular,
Tuberous.

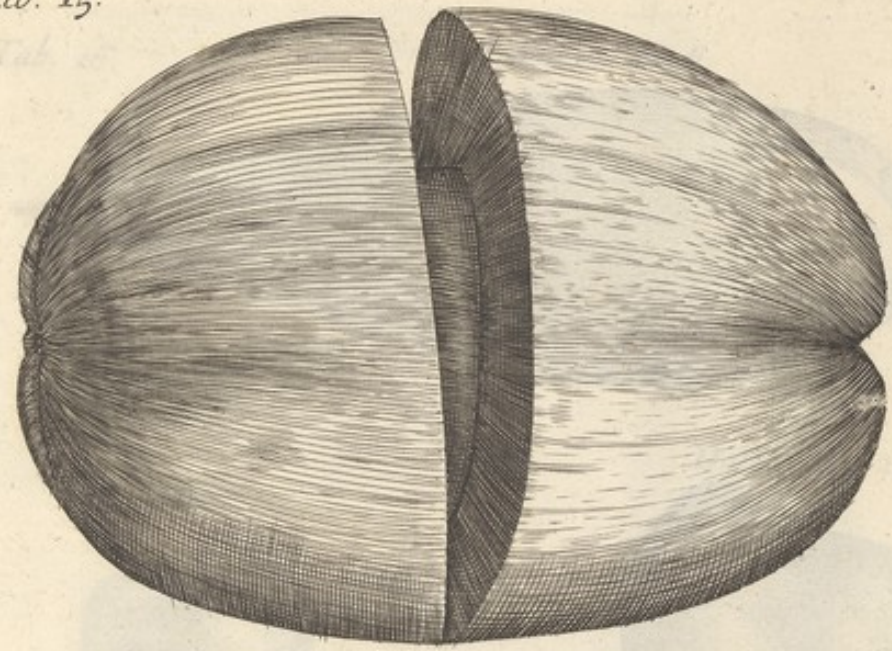


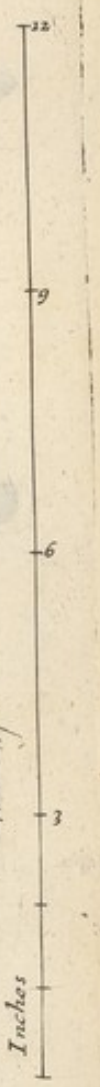
Quinquevalvous,
Orbicular.



Tab. 15.

Coco Nut



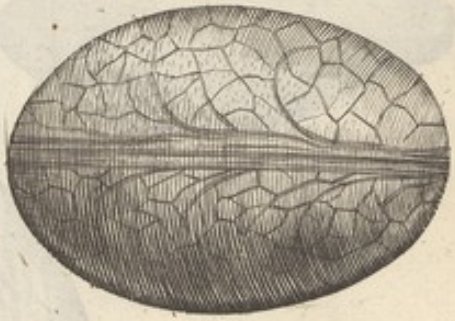


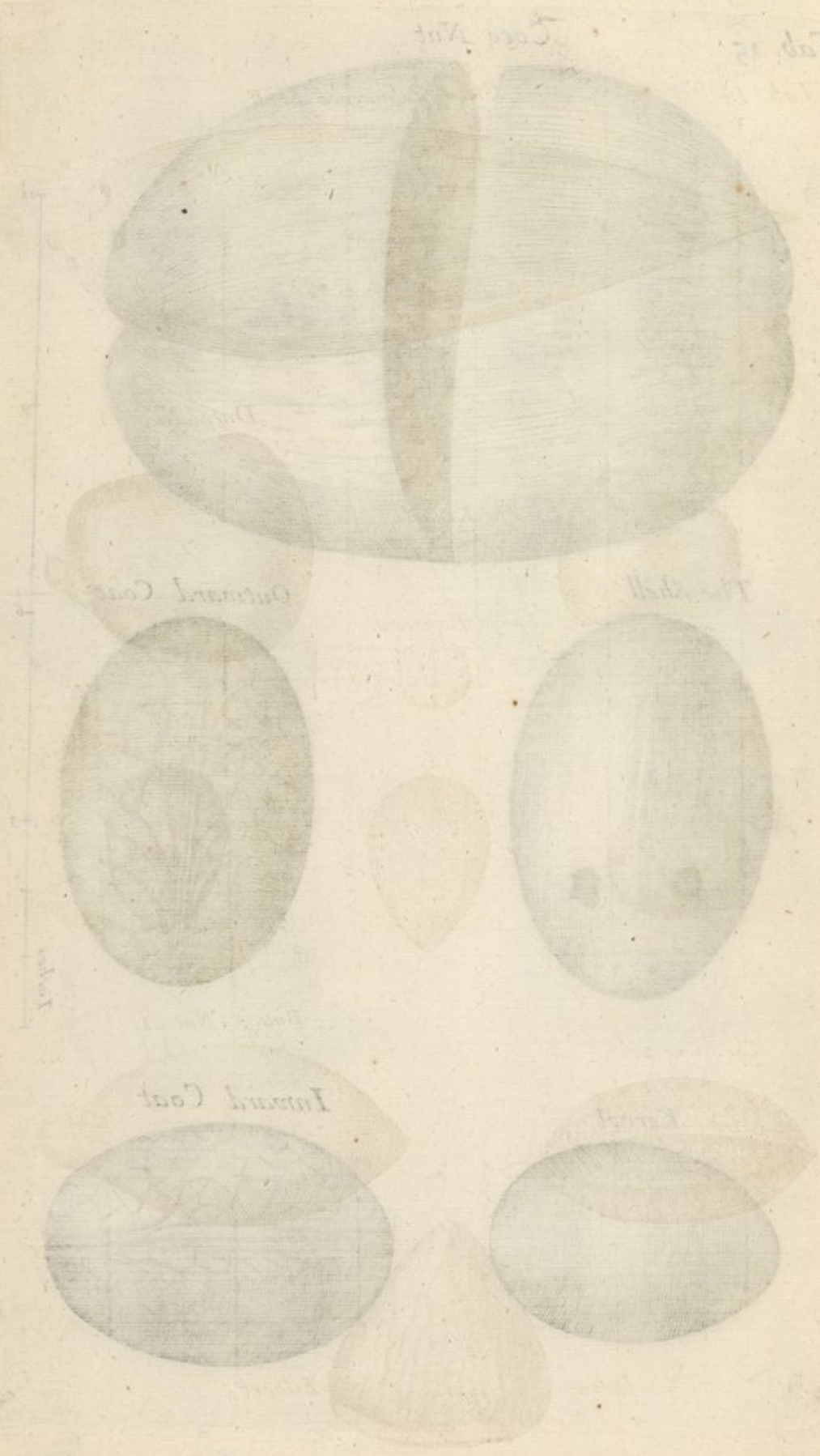
The Shell

Outward Coat

Kernel

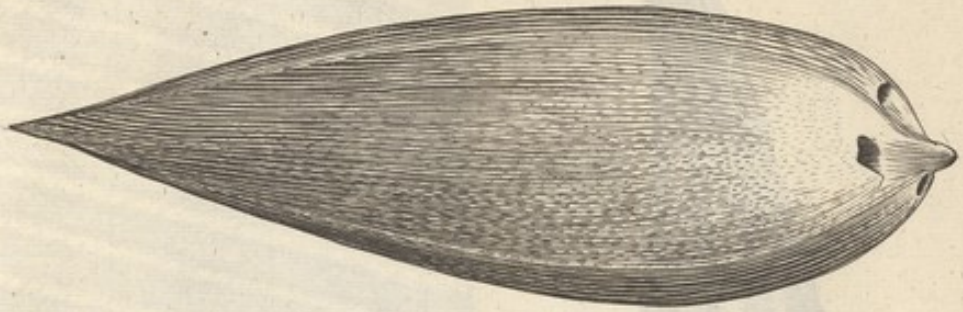
Inward Coat





Tab. 16.

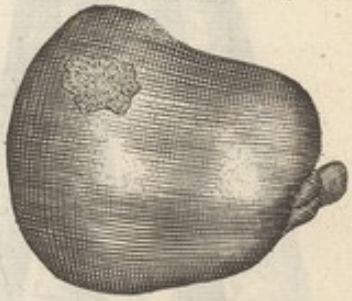
Great Palmacoco-Shell.



Date-Nut 1.

The Stone 2.

The Kernel.
3



Round Palmacoco.

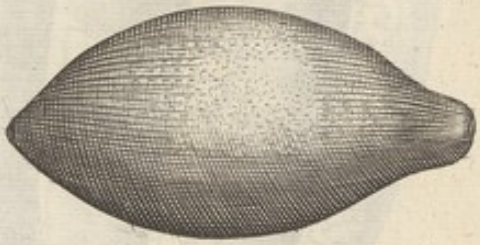
Dog-Palmacoco 1.

Broad Palmacoco 4

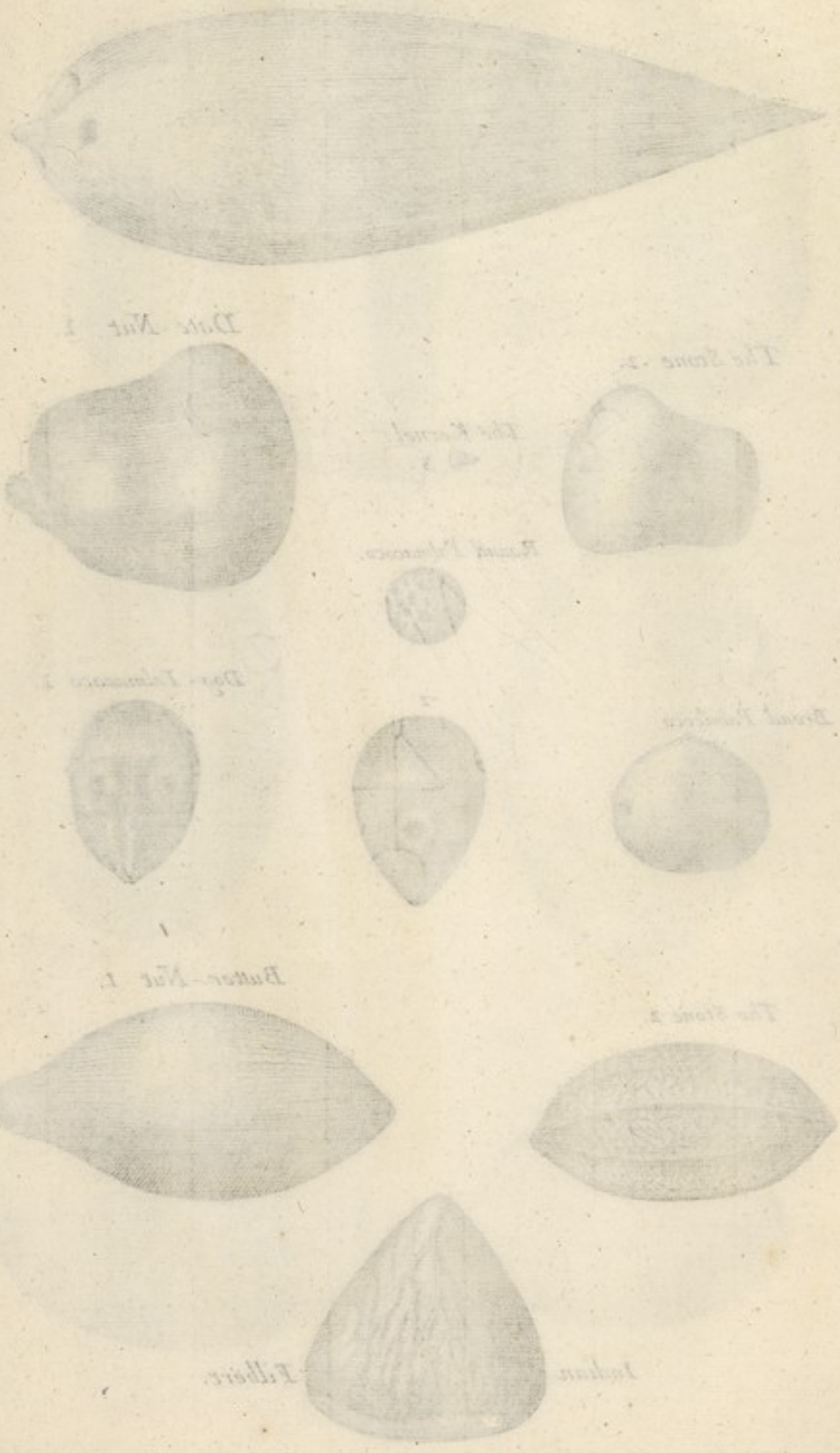
2

Butter-Nut 1.

The Stone 2.



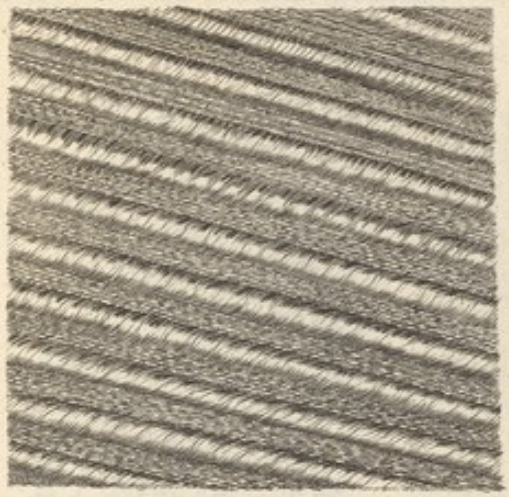
Indian Filbert.



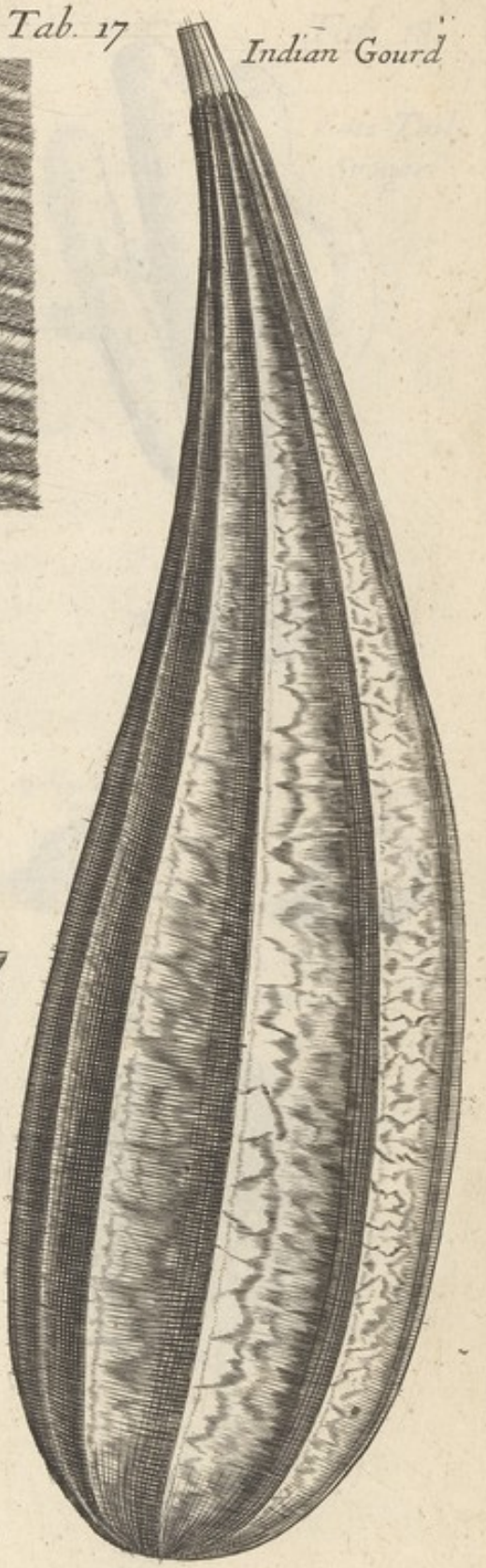
Part of a Palm-Bag

Tab. 17

Indian Gourd

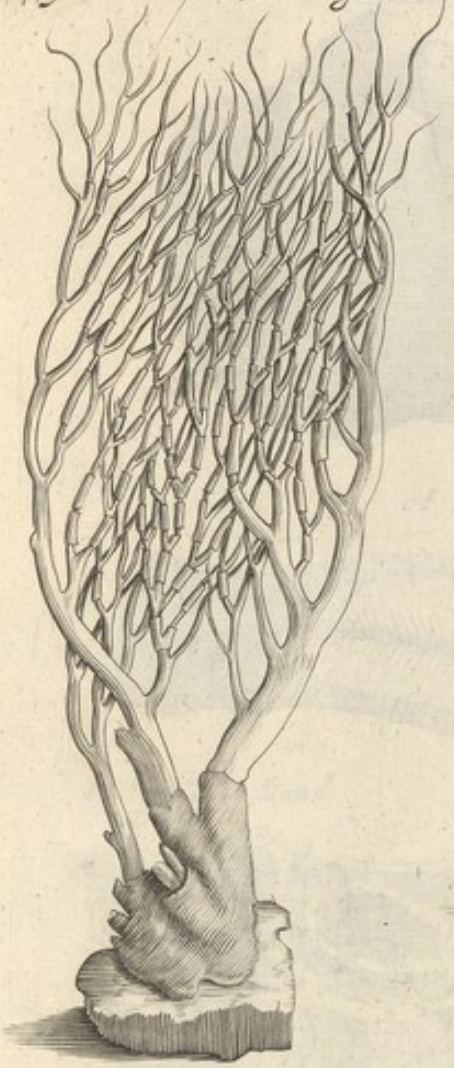


Dwarf Oak Leaf
& Akorne



Tab. 18.

Horny Sea Shrub, Incruſtated.



Cats-Tail Sponge.

After the Life

Orbicular Indian Peat.

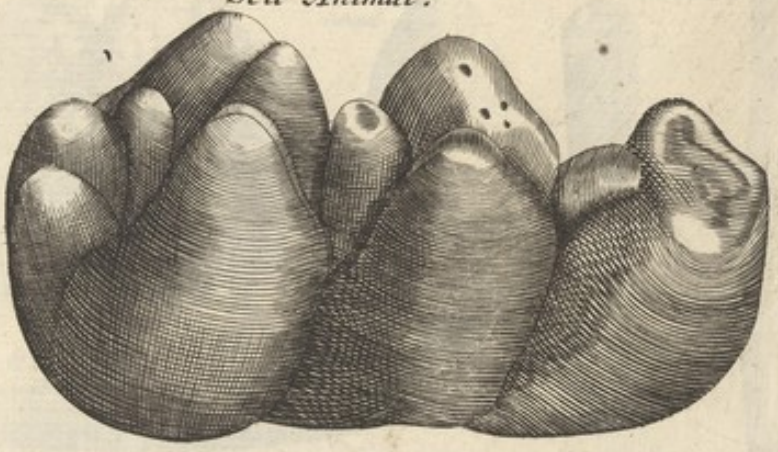
Another ſome-what Flat.

Sea Shrub with united Branches.

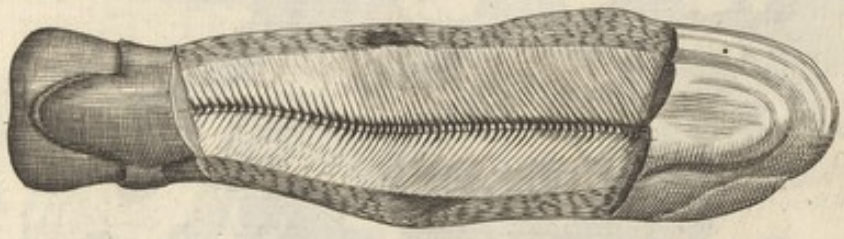
Flat Sea Shrub, with numerous Branches.

Tab. 19.

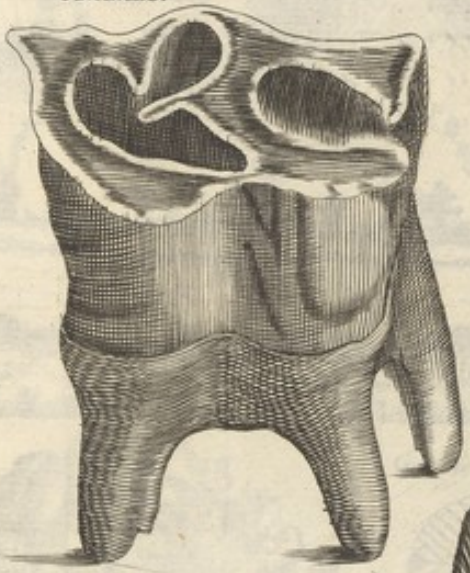
Petrify'd Tooth of a Sea Animal.



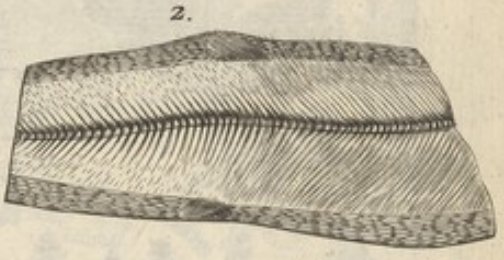
A Fish Mold 1.



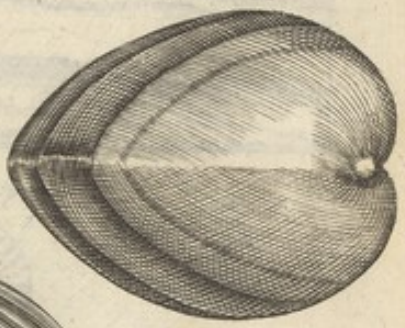
P. Toot[h] of a Land Animal.



2.

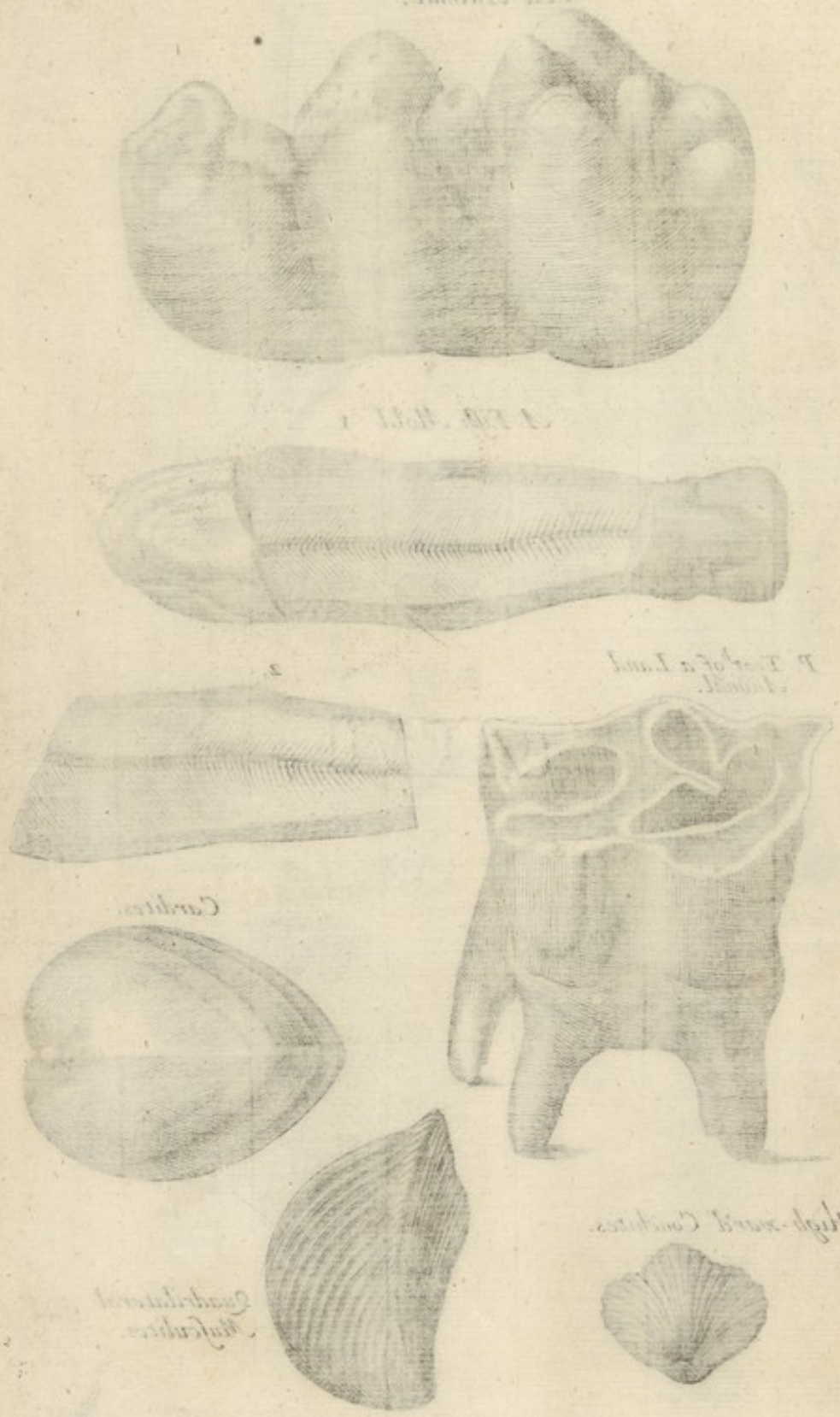


Cardites.



High-war'd Conchites.

Quadrilateral Muſculites.



Tab. 20.

Florid Coral.

Flat Bolt-head

Stones like Flower-Columns

1.

2.

True lechi-

Ste-tes.

Shell'd Belemnites.

Dendropotamites.

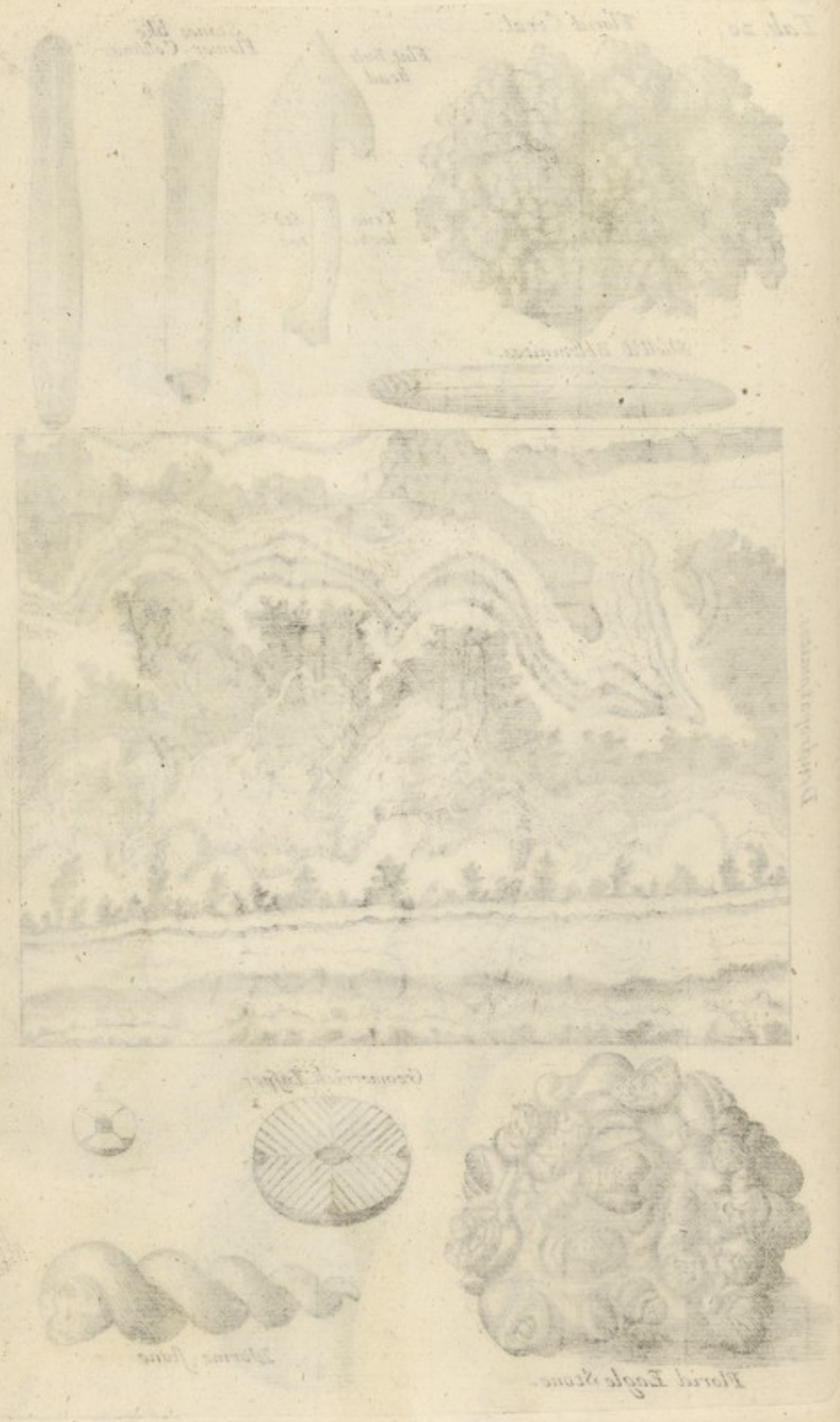
Geometrick Iasper

1

2

Florid Eagle Stone.

Worme-stone

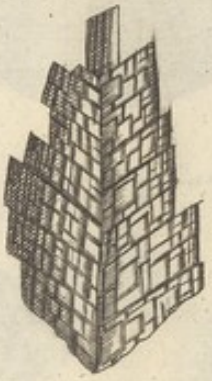


Tab. 21.

Astrochites

Silver-Spar.

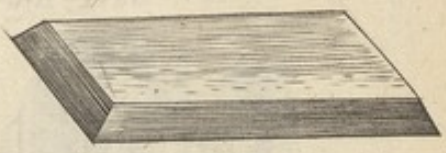
Foliated Talk.



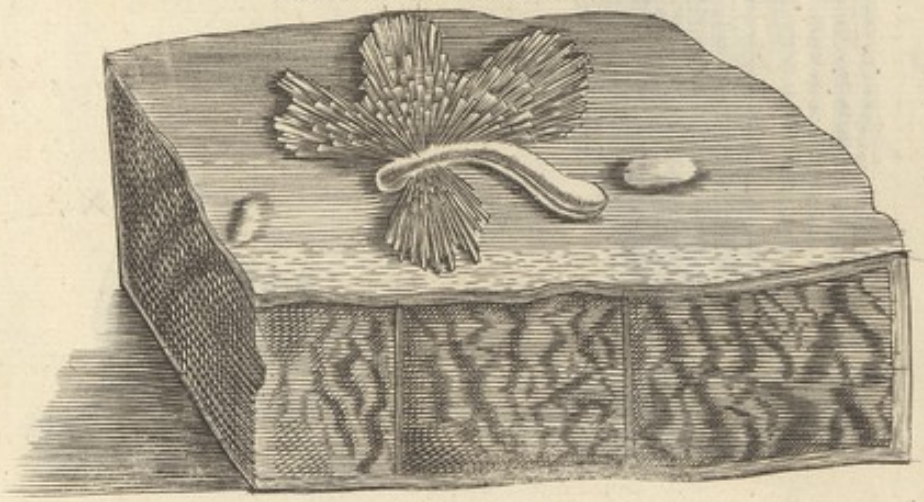
Mundick. Spar.

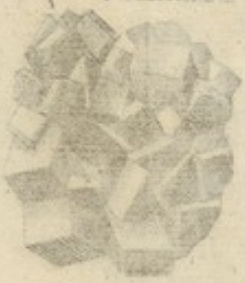
A Talk-Crystal

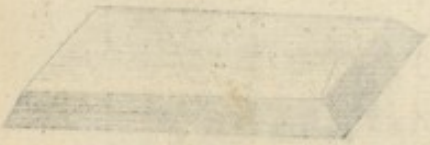
A Half Crystal

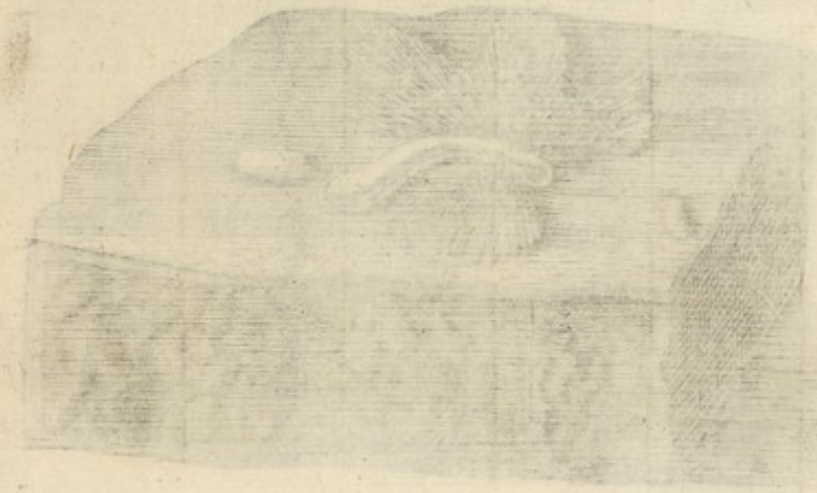


Starred Waxen-Vain



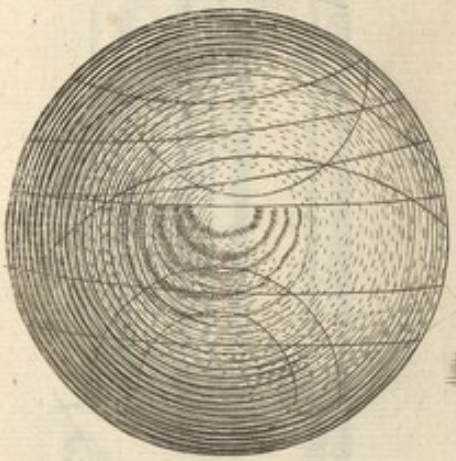






Onychine Marble

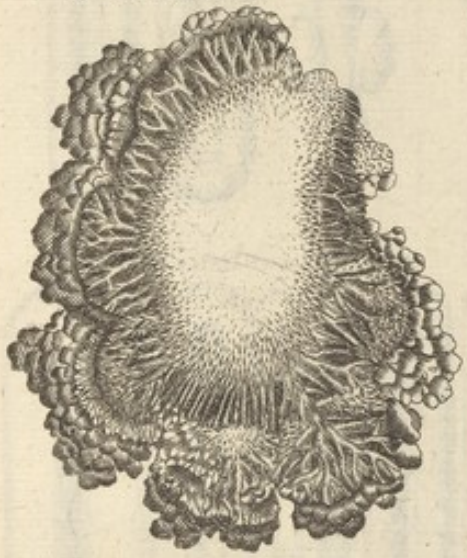
Tab. 22.



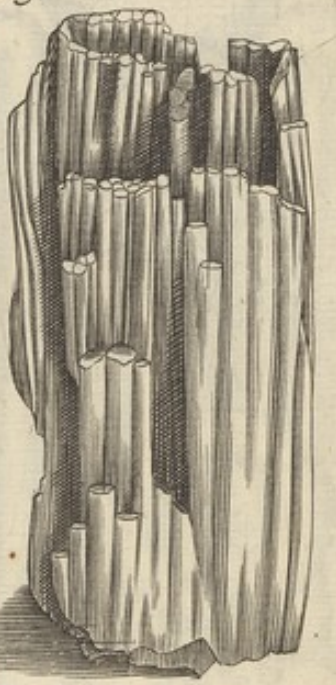
Plated Silver

Cryſtalline or Figurd Lead.

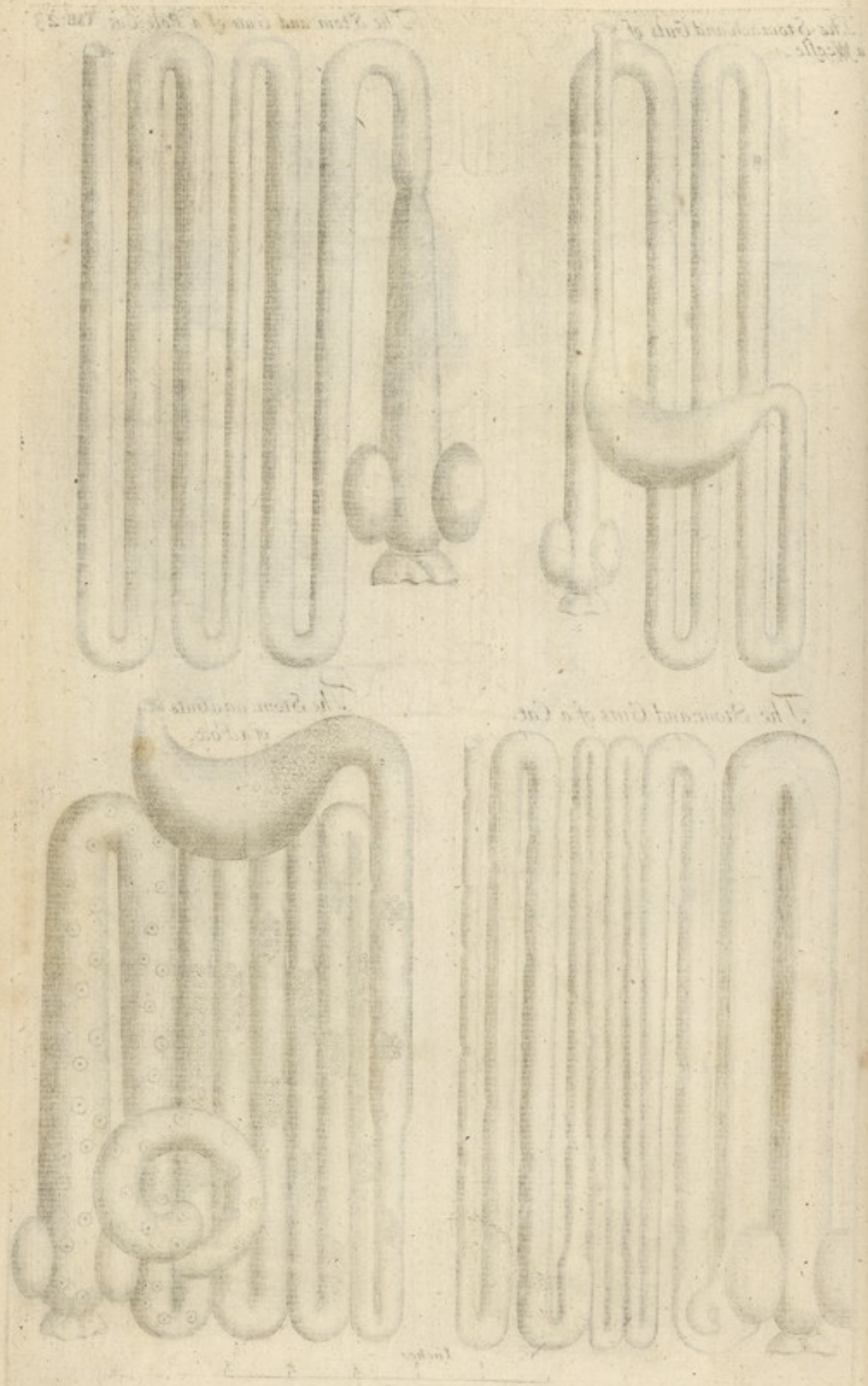
Copper both Capillary & Gravulat'd



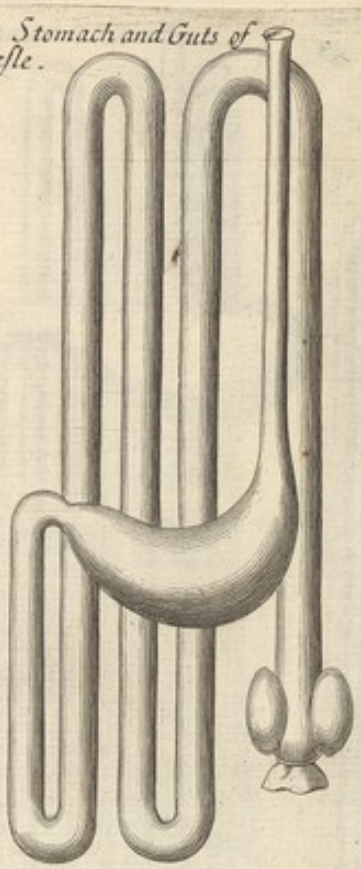
Bruſh-Iron Ore.



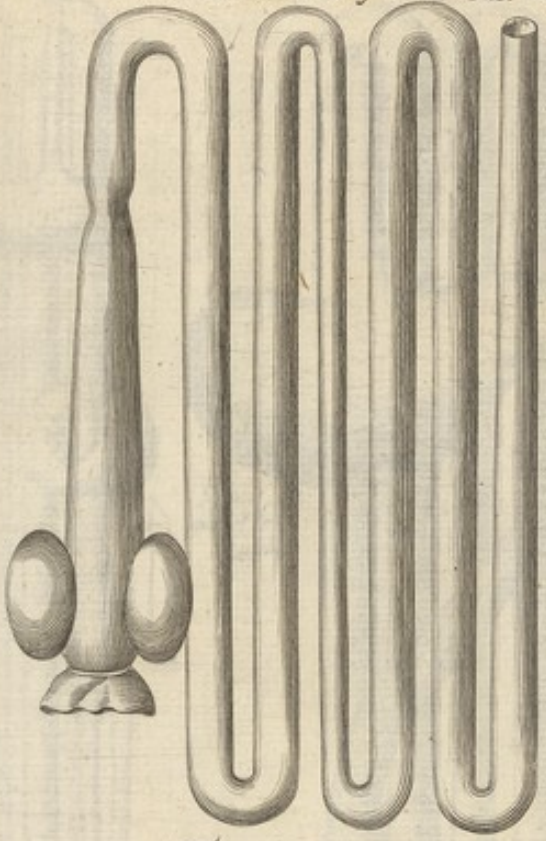
Bruſh Iron



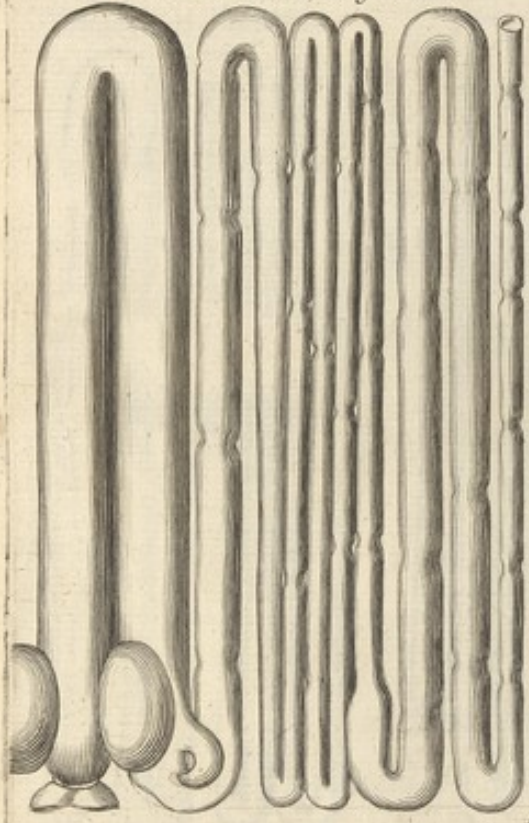
The Stomach and Guts of a Weesle.



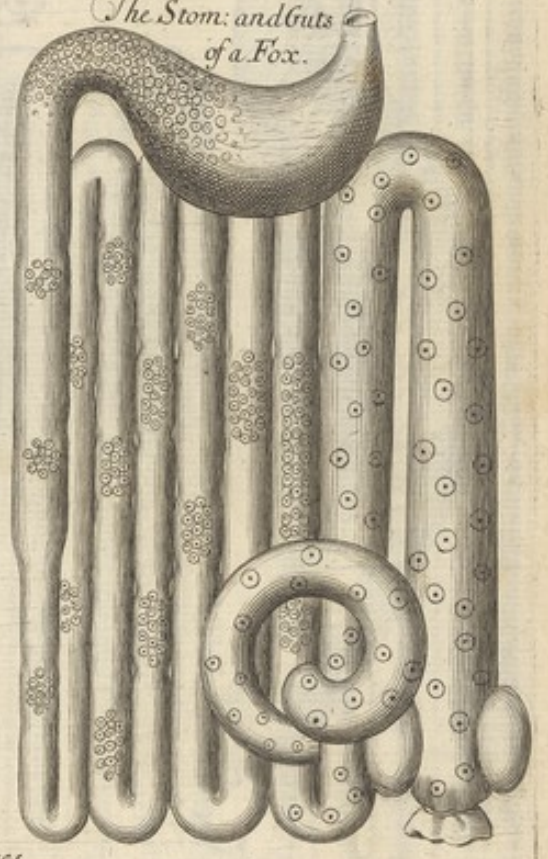
The Stom: and Guts of a Pole Cat.

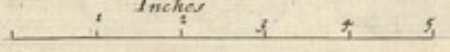


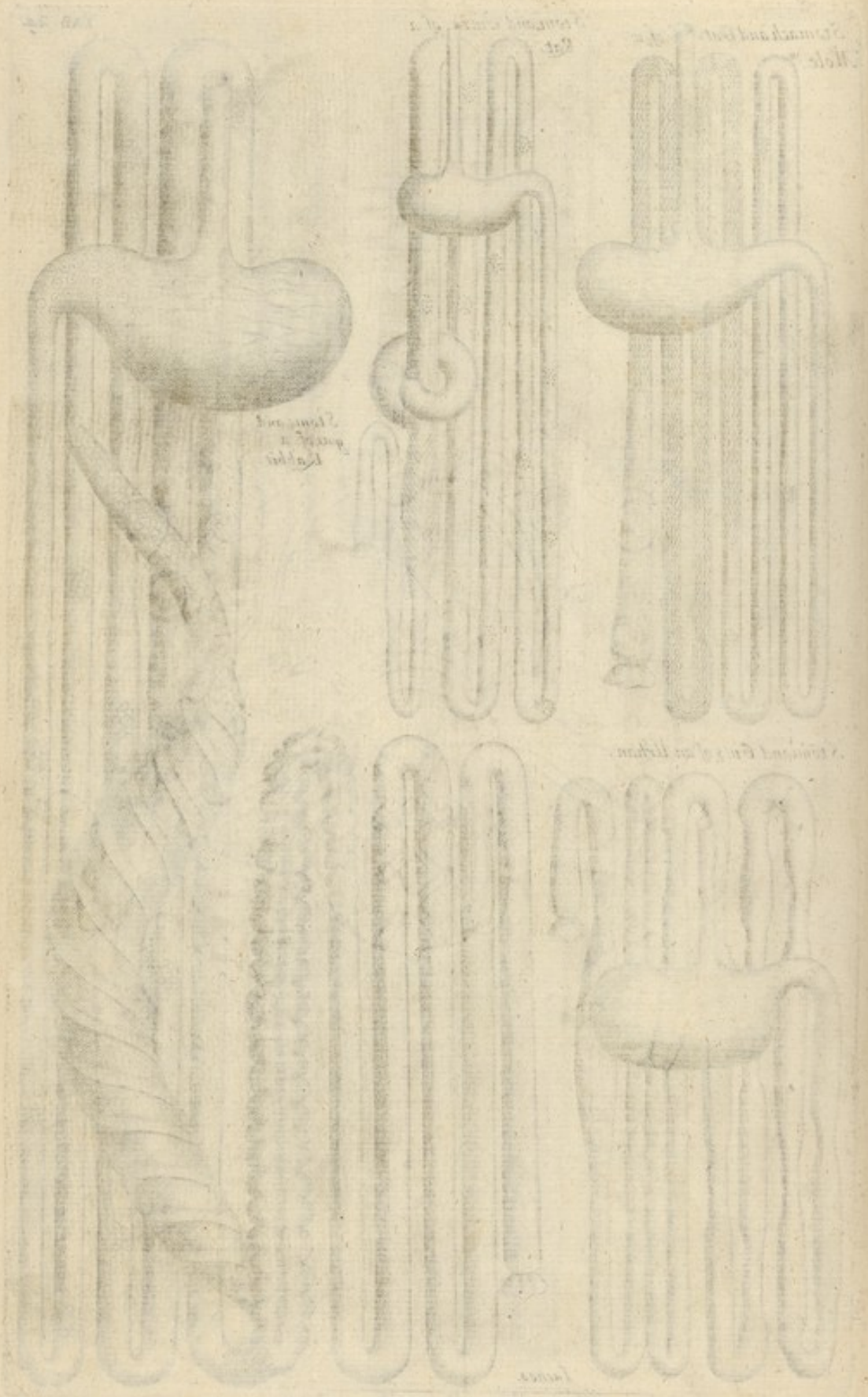
The Stom: and Guts of a Cat.



The Stom: and Guts of a Fox.







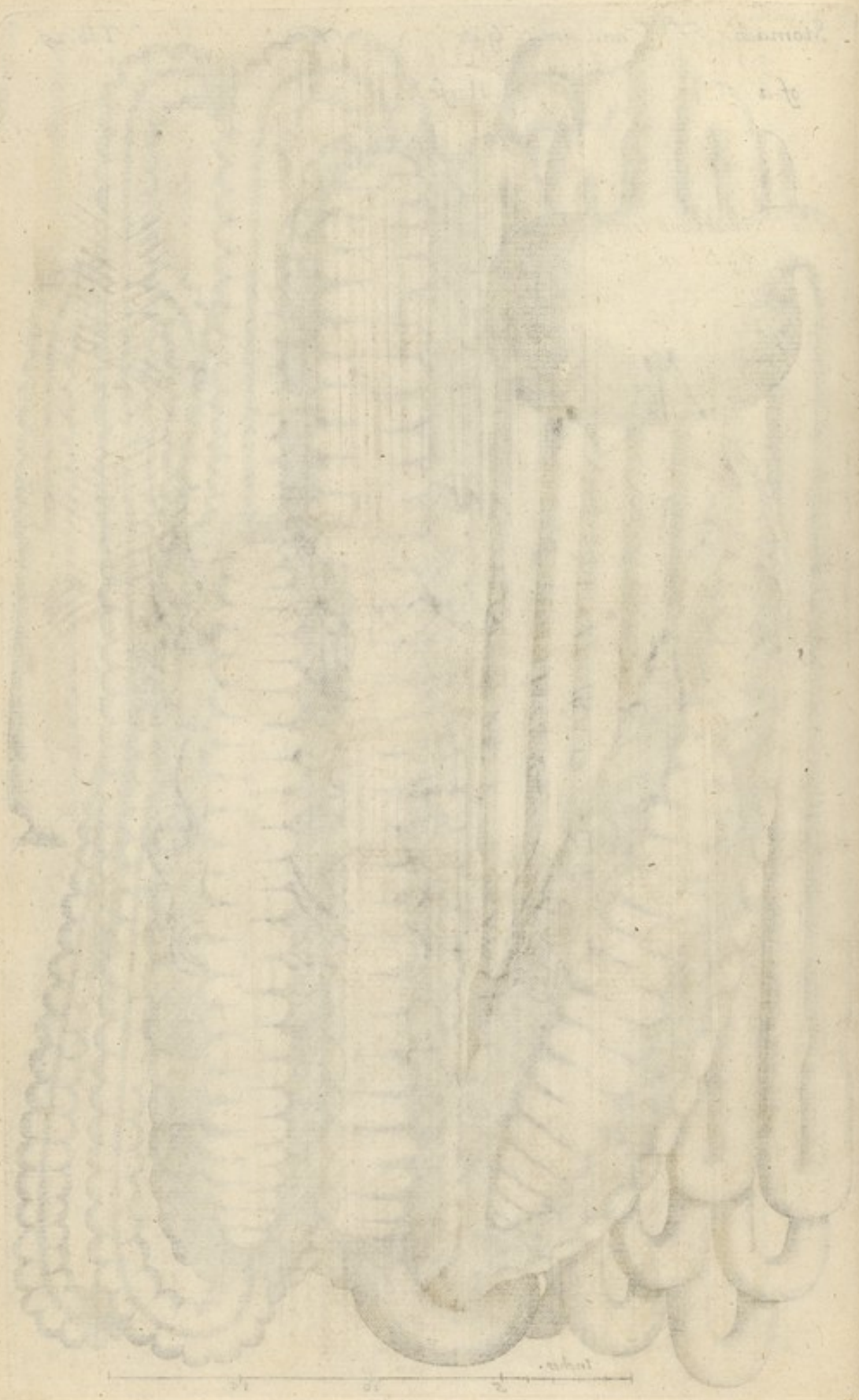
Stomach and Guts of a Mole.

Stom: and Guts of a Rat.

Stom: and guts of a Rabbit.

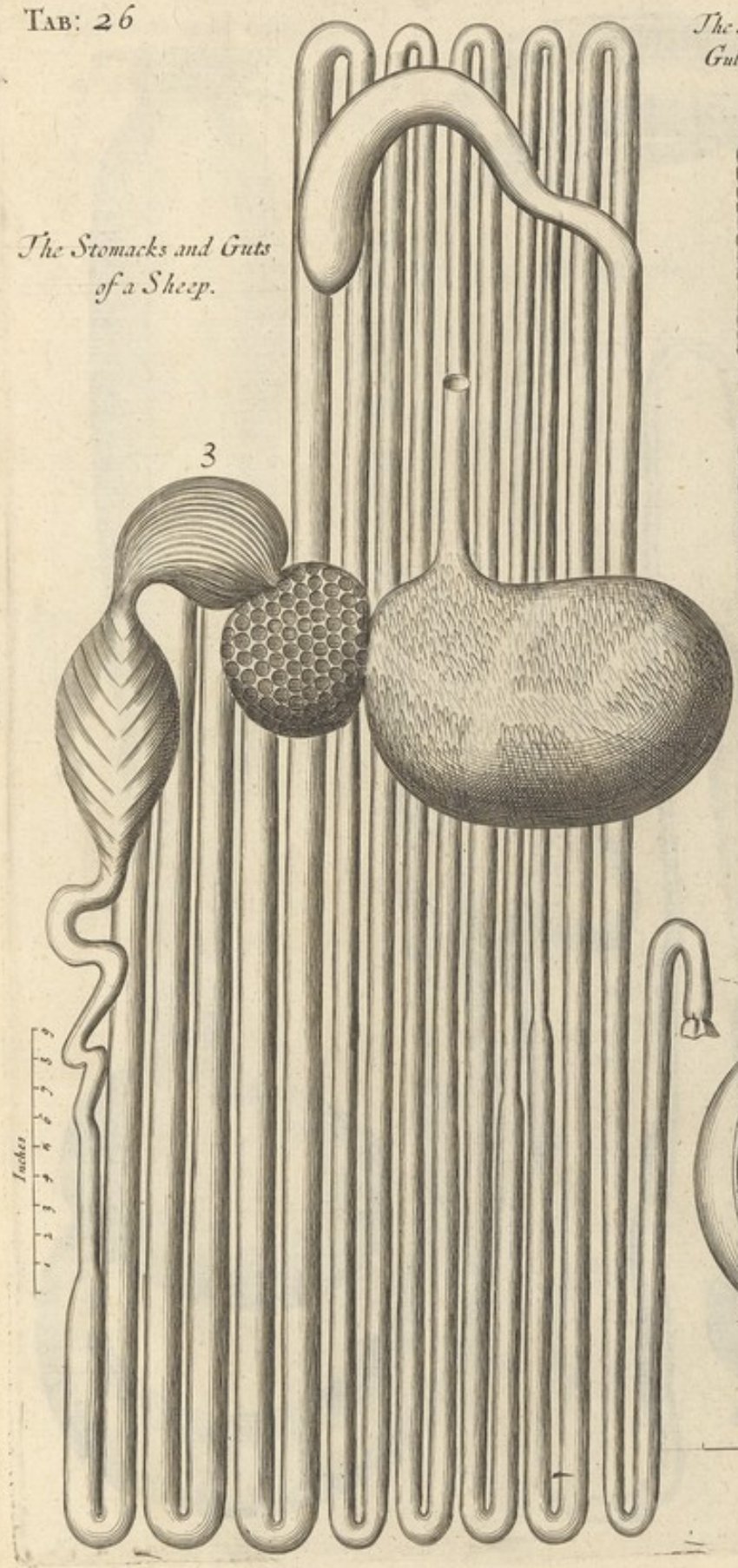
Stom: and Guts of an Urchan.

Inches.



TAB: 26

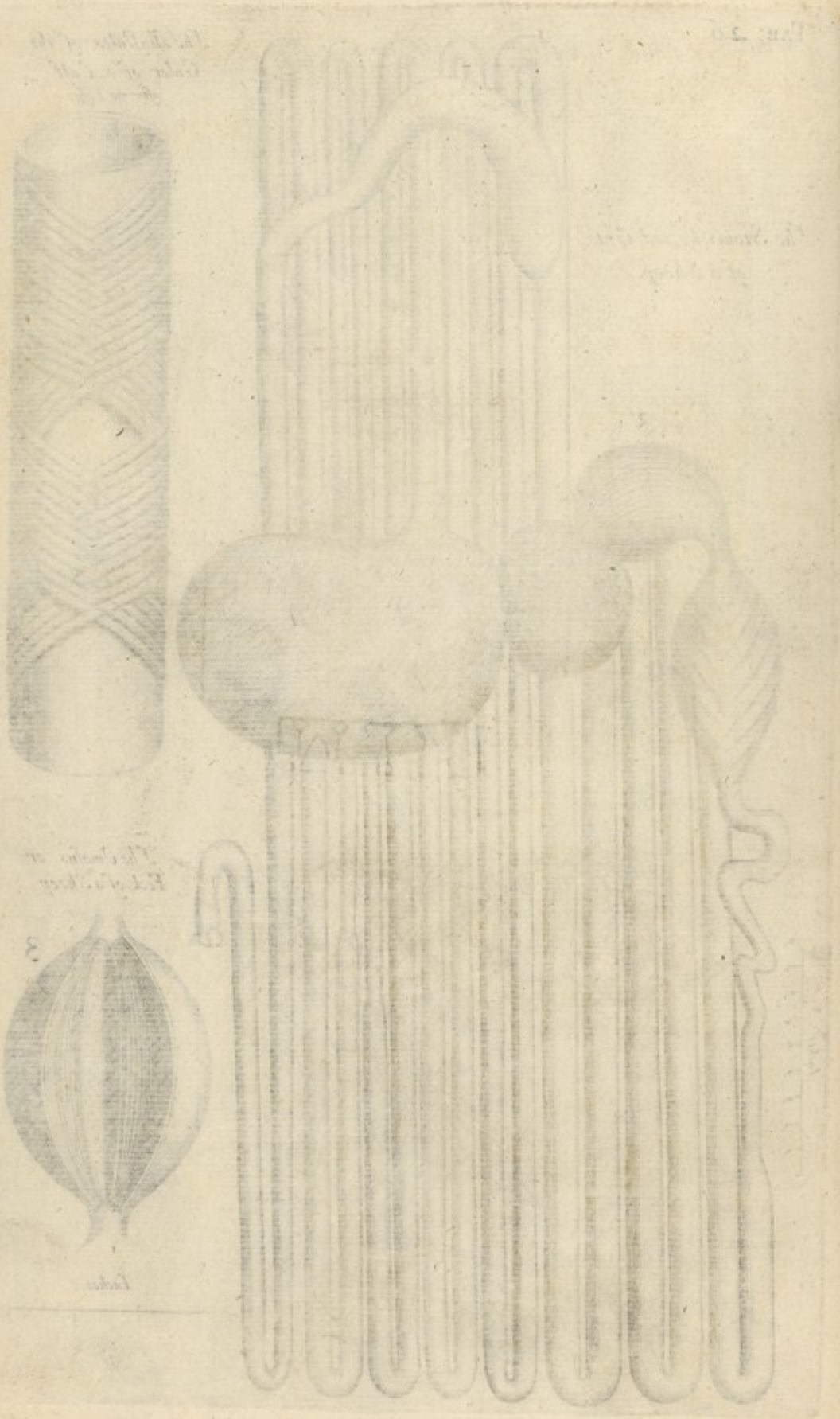
The Stomacks and Guts of a Sheep.



The Muſcules of the Gulet of a Calf after the Life.

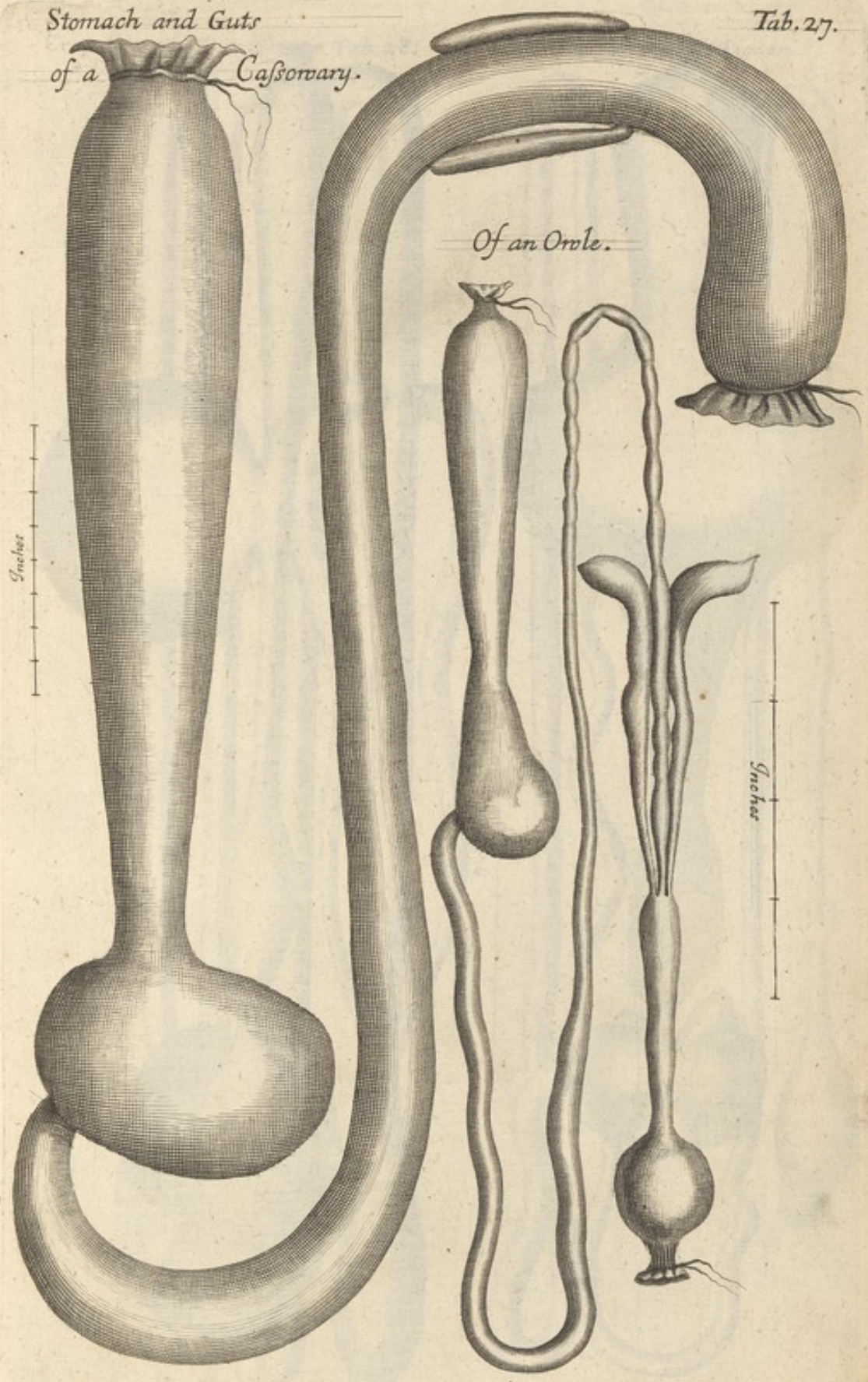
The Omaſus or Feck of a Sheep

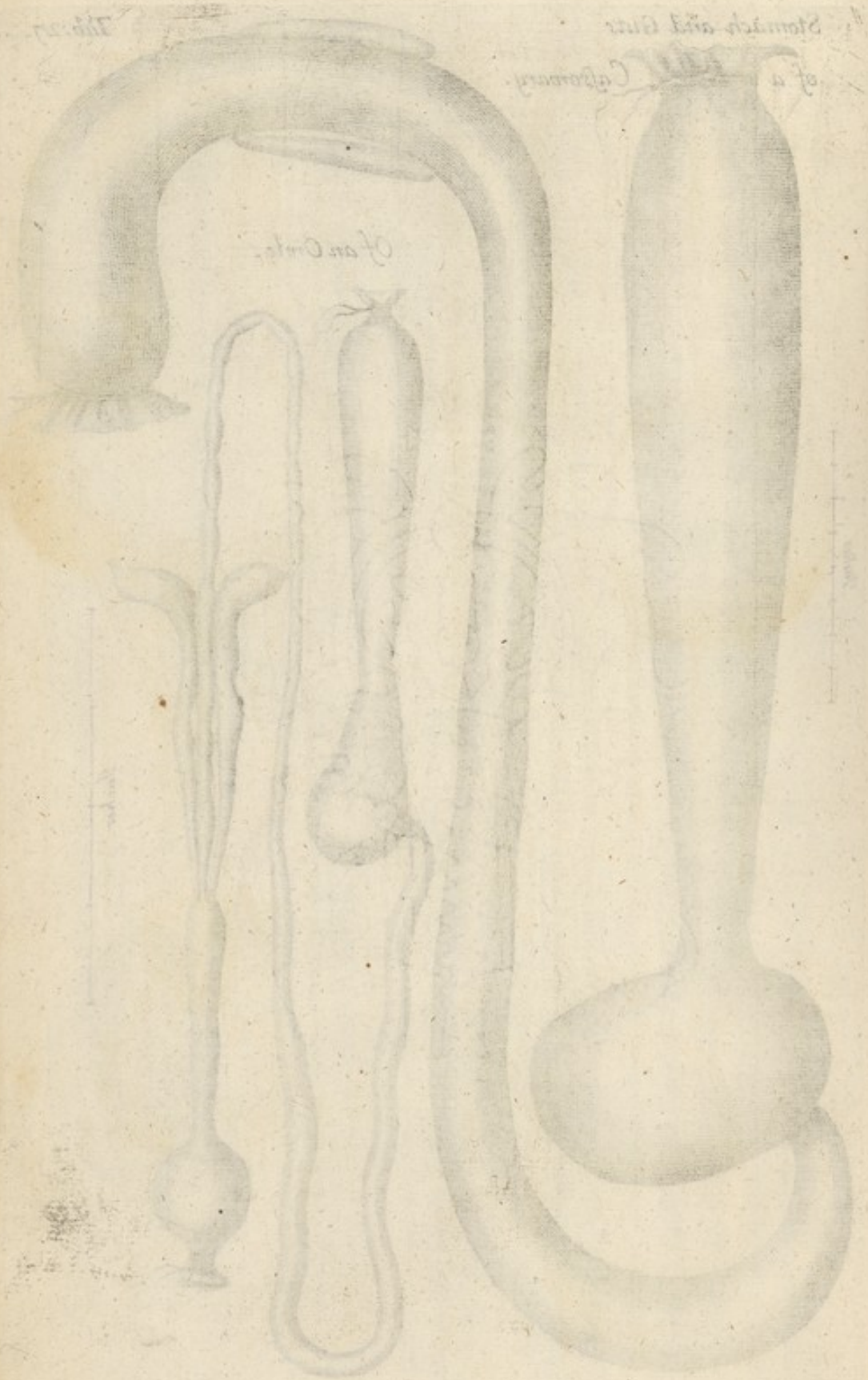
Inches.



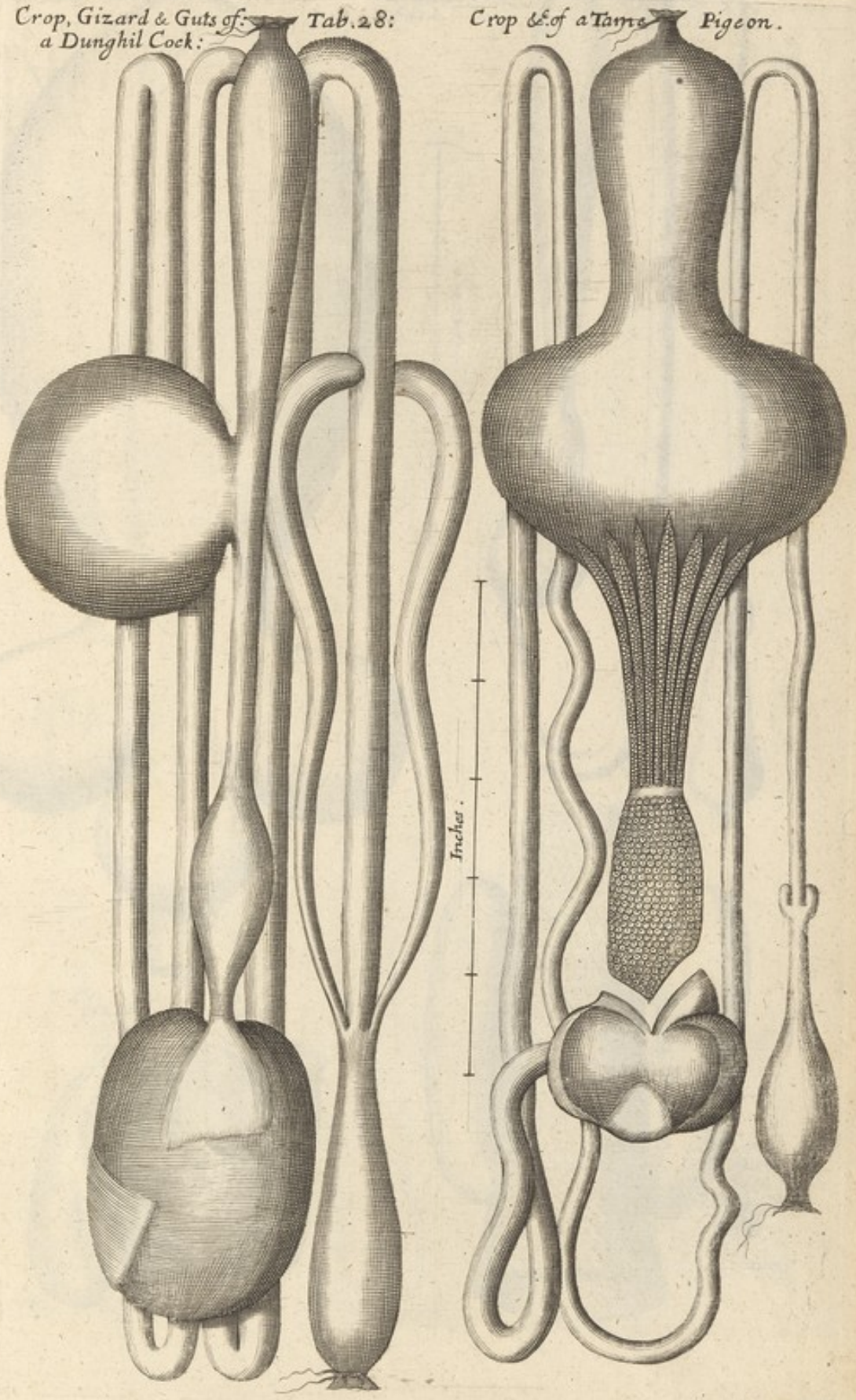
Stomach and Guts of a Cassowary.

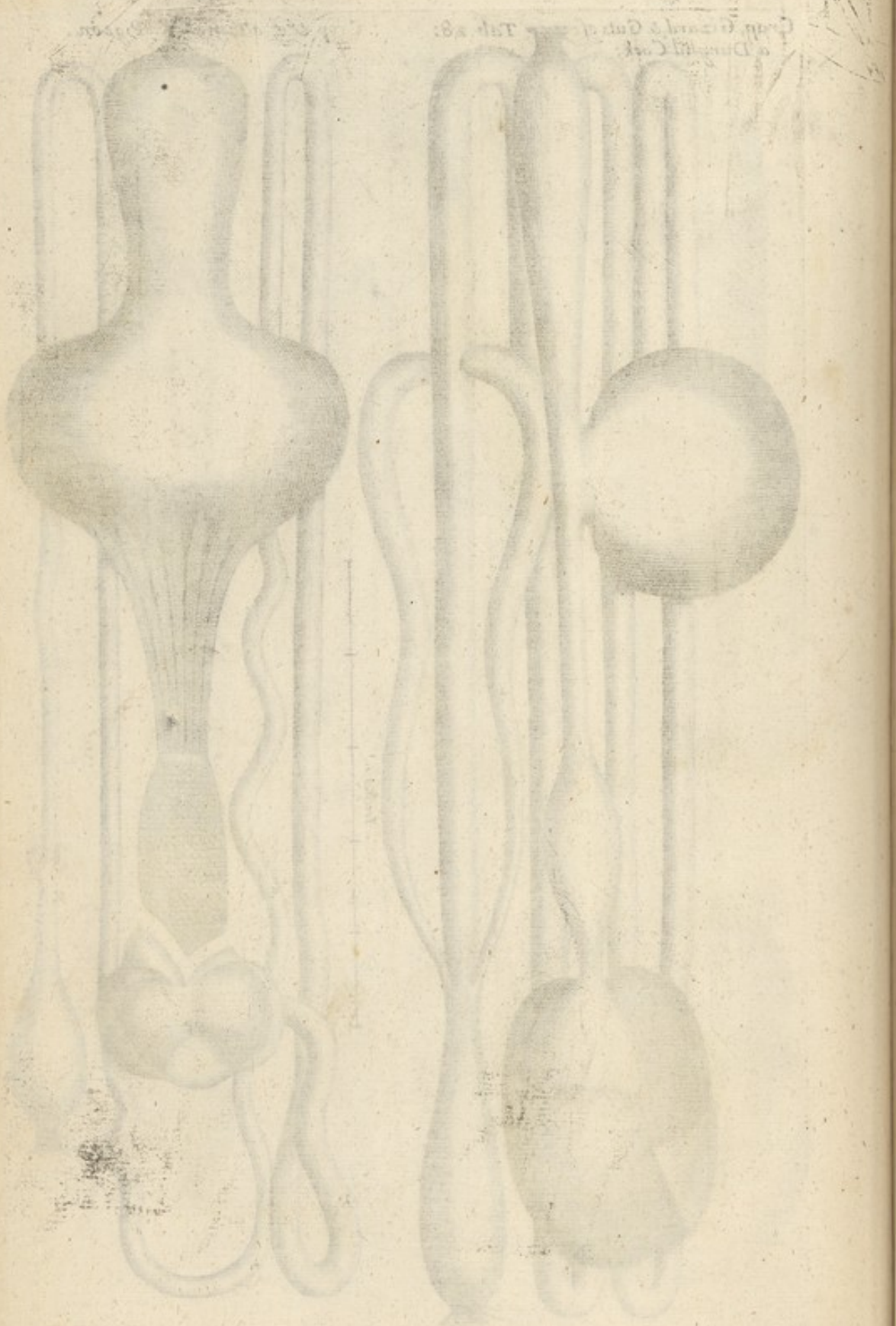
Tab. 27.





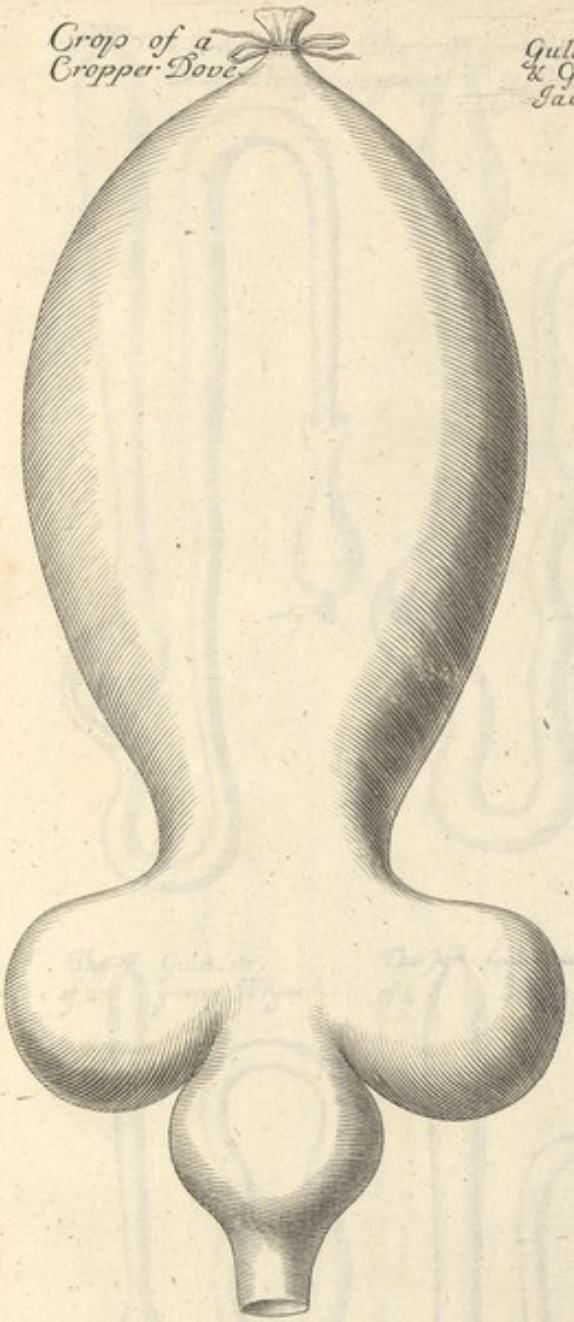
Crop, Gizard & Guts of a Dunghil Cock: Tab. 28: Crop & of a Tame Pigeon.



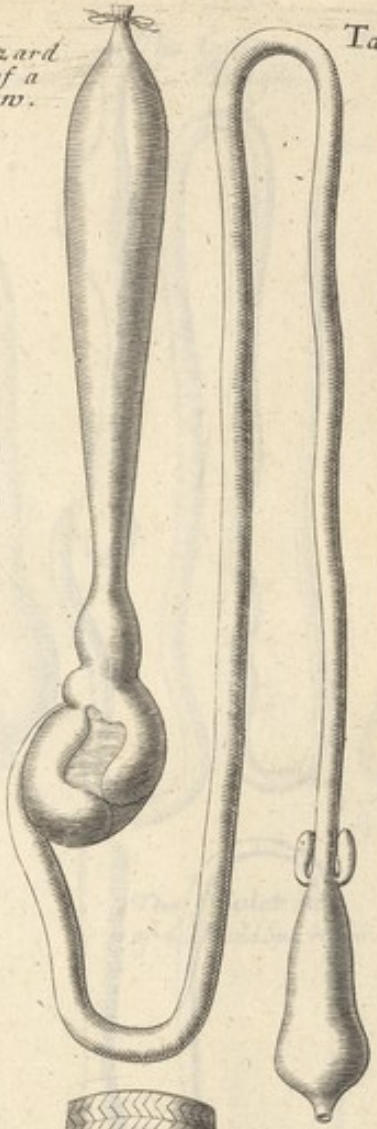


Tab. 29.

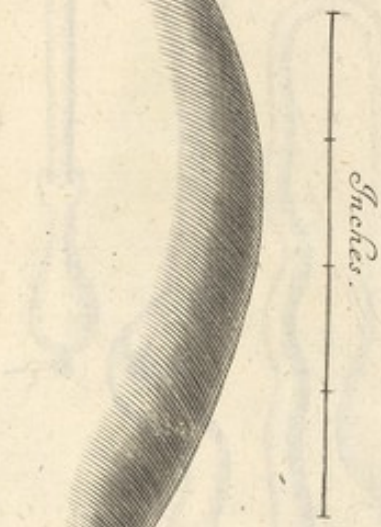
Crop of a Cropper-Dove.



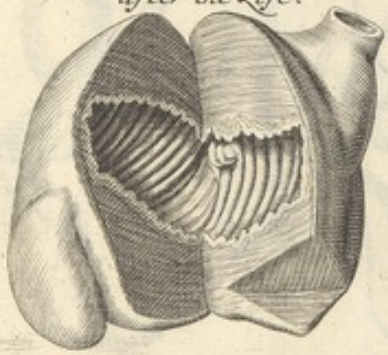
Gulet Gizard & Guts of a Jack-Daw.

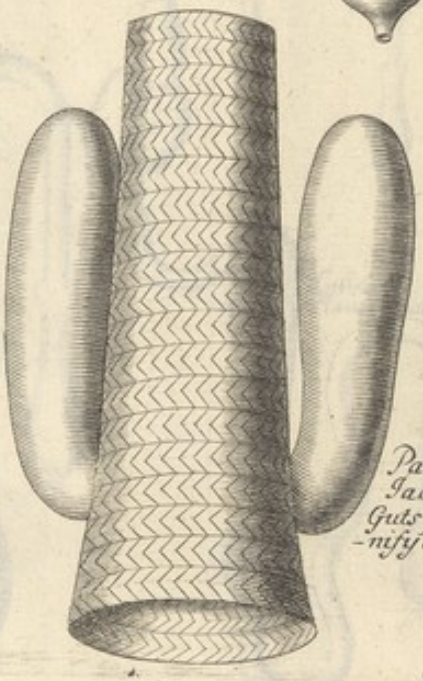


Inches.

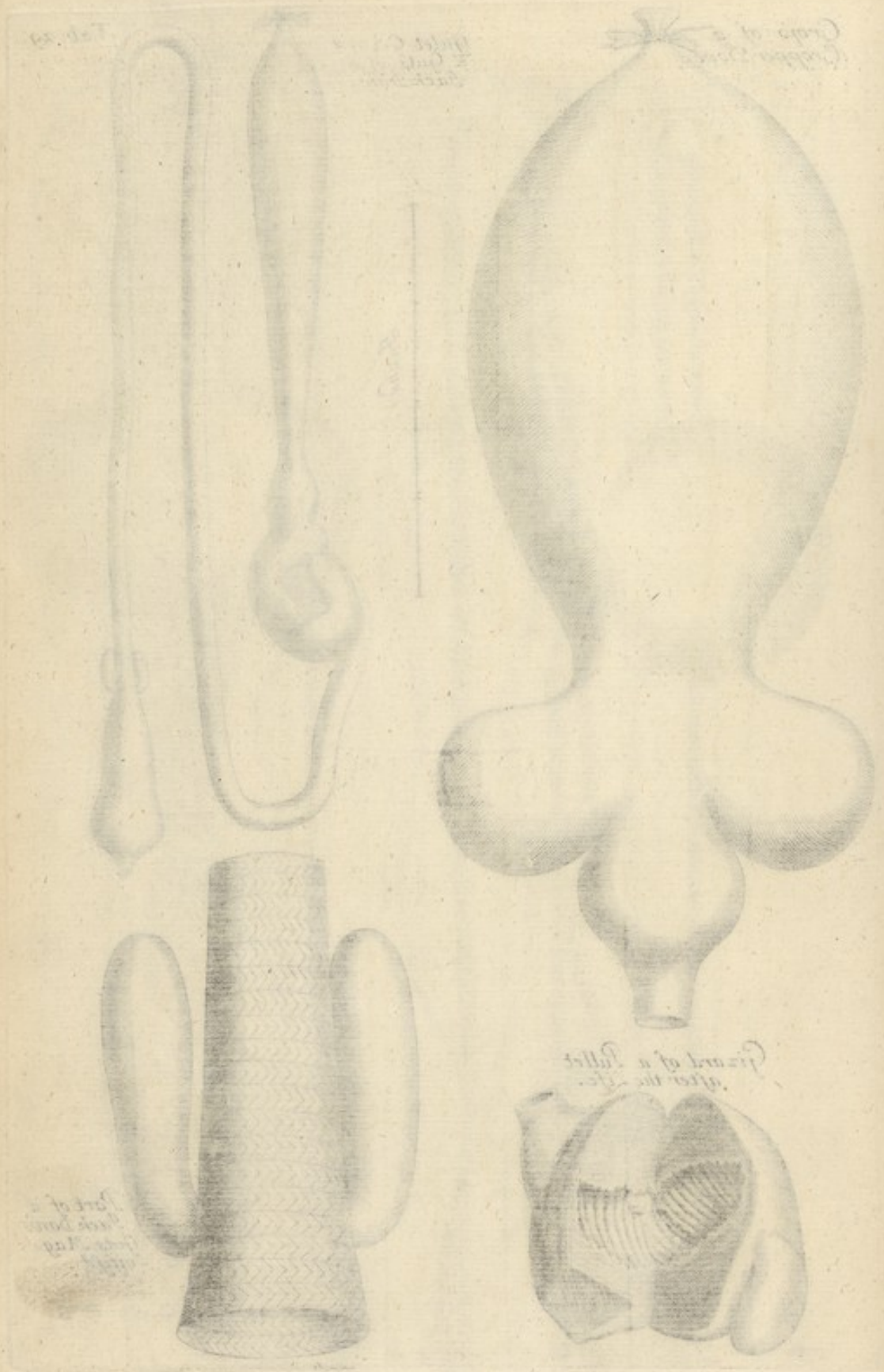


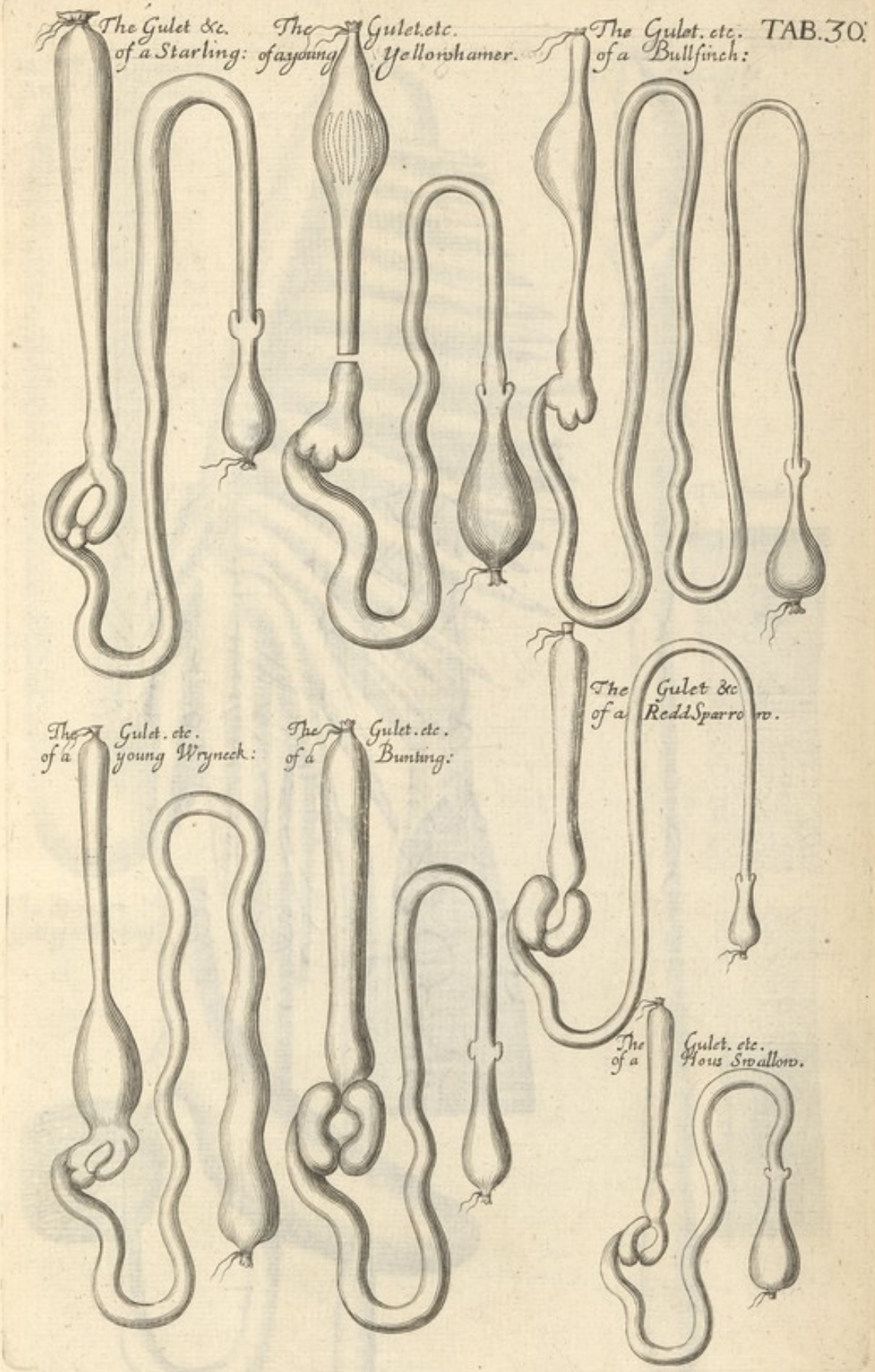
Gizard of a Pullet after the Life.

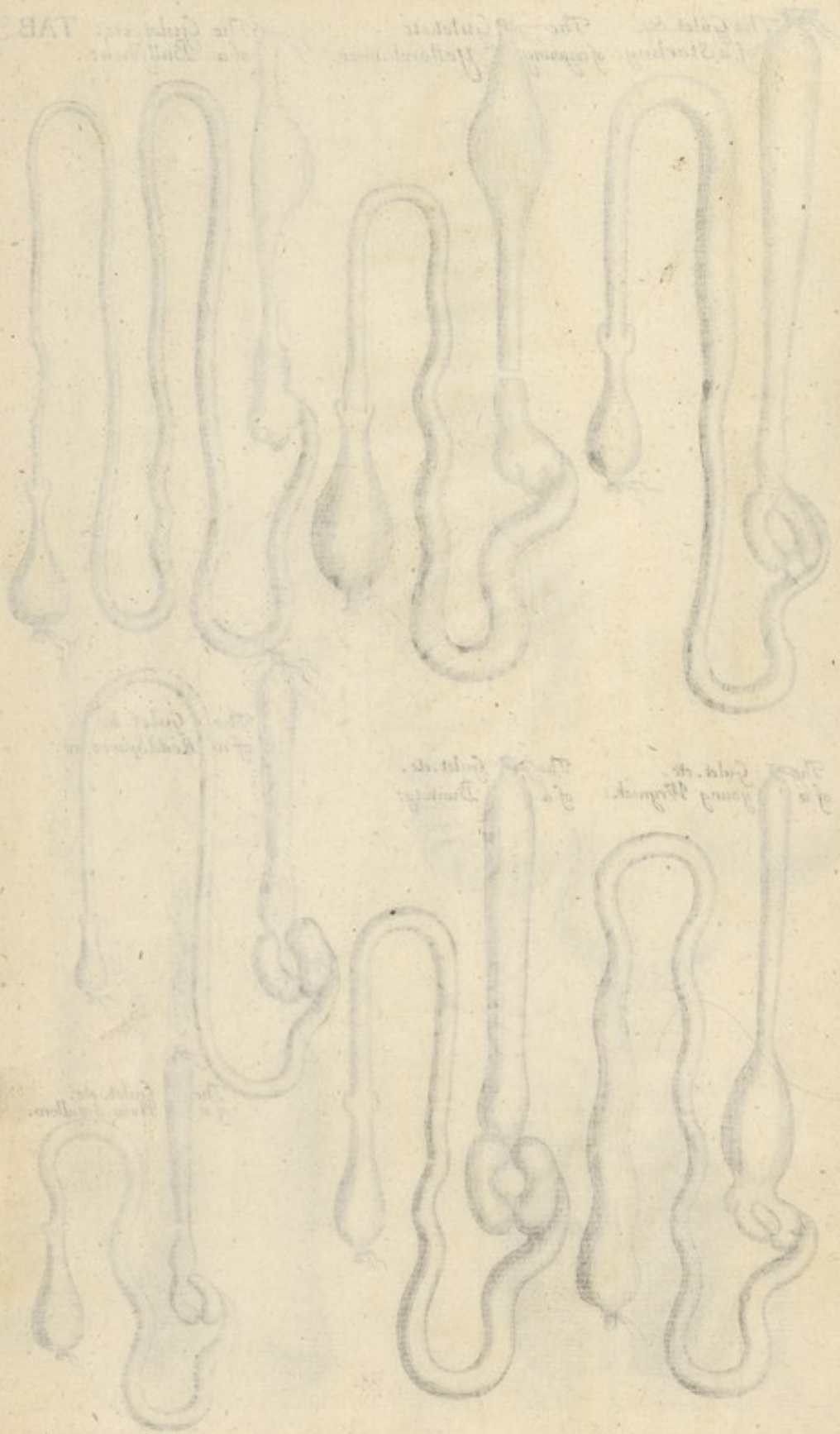


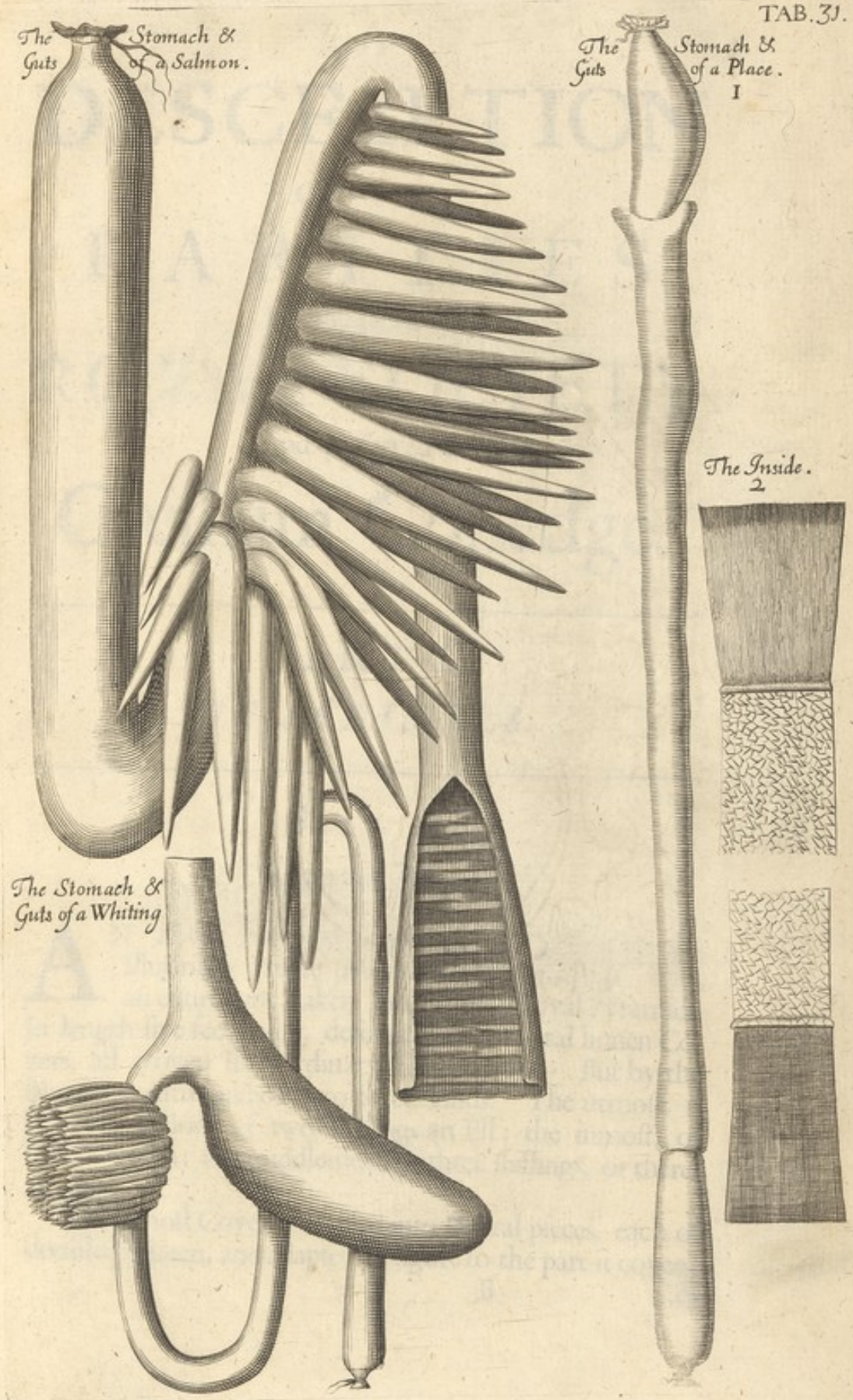


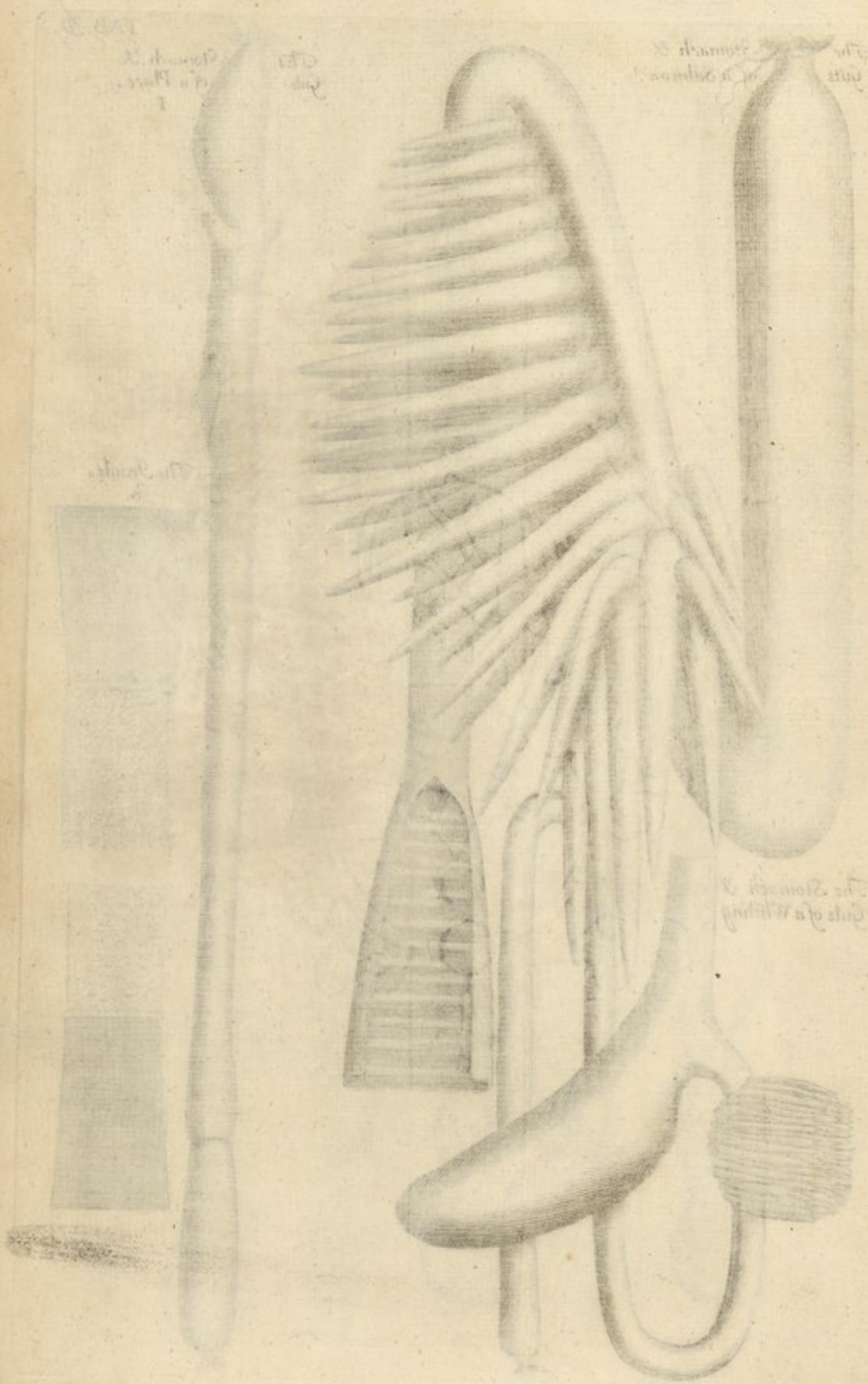
Part of a Jack Daws Guts Mag-nify'd.




The Gulet &c. of a Starling:
The Gulet. etc. of a young Yellowhamer.
The Gulet. etc. of a Bullfinch:
The Gulet &c of a Redd Sparrow.
The Gulet. etc. of a young Wryneck:
The Gulet. etc. of a Bunting:
The Gulet. etc. of a Hous Swallow.




The Guts
Stomach & of a Salmon.
The Guts
Stomach & of a Place.
1
The Inside.
2
The Stomach & Guts of a Whiting



A DESCRIPTION OF THE RARITIES Belonging to the ROYAL SOCIETY, And preserved at Gresham Colledge.

PART I.

OF ANIMALS.

SECT. I.

Of Humane Rarities.

AN ÆGYPTIAN MUMMY given by the Illustrious Prince *Henry* Duke of *Norfolk*. It is an entire one taken out of the Royal Pyramids. In length five feet and ½, defended with several linnen Covers, all woven like ordinary Flaxen Cloth. But by the spinning, distinguished into three kinds. The utmost, is like Flaxen Cloth of two shillings an Ell: the inmost, of half a Crown: the middlemost, of three shillings, or thereabout.

The utmost Cover is divided into several pieces, each of doubled Linnen, and adapted in figure to the part it covers,

as one on the Breaſt, another on the Belly, and ſo on all the principal Parts. On each of theſe pieces is laid a white Paint,of a kind of chalky or limy ſubſtance,of the thickneſs of a Hen-Egg-ſhell. Upon this chalky ground are drawn the Hieroglyphick Figures of Men, Women and Birds; in Gold, yellow, red and blew. But with very rude ſhapes, and the Colours no where mixed together. So very mean was the Art of Painting amongſt the *Ægyptians* heretofore. For we have reaſon to believe, that what was done for one of their Kings or Nobles,was done with their beſt skill.

The middlemoſt Cover conſiſteth of one ſingle and entire piece of Linnen, almoſt like a Winding-ſheet. It is alſo tinged with ſome kind of Paint, but very lightly, and without any Figures.

The inmoſt Covering is wrapped round about the Head, Trunk, each Arm, and each Leg apart, about thirty or forty times, like ſo many ſwathing Bands. About twenty of the utmoſt of theſe folds are lightly tinged, all the other inmoſt more fully,with a blackiſh and gummous ſubſtance. But the Fleſh ſo fully, as it ſeems to be converted into a black Roſin; which being held to the flame of a Candle, is a little odorous and inflamable. The Bones alſo,are not only outwardly, but alſo quite through of a black colour, as if they were burnt.

From hence it is very probable, That the way of Embalming amongſt the *Ægyptians*, was by boiling the Body (in a long Cauldron like a Fiſh-kettle) in ſome kind of liquid Balſome; ſo long, till the aqueous parts of the fleſh being evaporated, the oily and gummous parts of the Balſome did by degrees ſoak into it, and intimately incorporate therewith. Much after the ſame manner, as the Sugar doth, in the conditing of Pears, Quinces, and the like.

'Tis alſo likely, that a better way might be taken, than this uſed by the *Ægyptians*. And that is, by boyling, or rather ſoaking the Body in ſome white ſort of Oyl, and ſuch as will dry, (as that of Walnuts) made and kept ſo hot, as to evaporate the watery parts by degrees, and to keep the fleſh white, and not brittle, but limber and plient. Which, eſpecially in the buſineſs of Anatomy, would be of good uſe: becauſe, that all the Muſcules of the Body, being

being first parted one from another, might hereby be preserved sound, clean, and limber upon the Bones; and so all the motions of the parts be explicated with the greatest ease, and without any offensiveness.

'Tis equally probable, that the whole Compages of the Muscules, as they lie upon the Bones, might with little trouble, and less charge than by the former way, be truly Tanned, or reduced to a limber sort of Leather; whereby also the weftage of the fibers, or other mechanisme of the Muscules might more easily and leisurely be observed. For the skins of Beasts, whereof Leather is daily made, are Muscular; and in mans body consisteth, for the most part, of the same carneous fibers, as the Muscules, but more closely woven or matted together.

Mummy, saith *Wormius* (*a*) (and so most Writers hereof) is of great use against Contusions, clodded Blood, Hard Labour, &c. But let them see to it, that dare trust to old Gums, which have long since lost their virtue.

(*a*) Musæum Wormianum.

By some Chymists are also prepared *Mummiæ Tinctura Quercetani*; *Mummiæ Extractum Crolly*; *Oleum Olivarum Mummiatum*. (*b*) But the prudent Reader will take heed of words.

(*b*) Schrod. Pharm.

A MALE HUMANE FOETUS. Given by *Thomas Cox* Esq; An Abortive of about the 4*th* Month. In length five inches. The Head, from the hinder part to the face, an Inch and ½. The Face, an Inch and ¼. The Back, from shoulder to shoulder, an Inch and ¼ broad. The Buttocks an Inch. The Arms and Thighs ½ Inch over. The Wrist and small of the Leg, ¼ of an Inch. The Navel-string ½ of an Inch; twisted like a Rope; and cut off five Inches long. The Eyes shut. But the Mouth open. It hath neither Nails, nor Hair. The Skin white and smooth, almost as in Children newly born. See Dr. *W. Needham*'s curious Book *de Fœtu Formato*. (*c*)

(*c*) And *Hobenus*'s *Anatomia Secundinæ Humanæ*.

The largeness of the Head and Chest, with respect to the other parts, is observable. The mouth being open, shews that the *Fœtus*, even in the 4*th* Month, may that way take part of its Aliment. (*d*) The Skin hath been kept white and smooth for so long a time, *scil.* above fifteen years, by being included with rectified spirit of Wine in a Cylindrical Glass; to the middle of which the *Fœtus* is poised, by means of a

(*d*) See Harvey de Generat. Animalium.

Glaſs Buble of an Inch diametre, the Neck whereof is faſtned to the *Anus* of the *Fœtus* by a wyer.

The entire SKIN of a MOOR. 'Tis tanned with the Hair of the Head, and even the ſmalleſt in all the other parts remaining on it.

Herein are obſervable, the Fibers in the skin of the *Penis*, which are very white, and exquiſitely ſmall, like the thread of a Spiders Web. Likewiſe the thinneſs of the true Cutis in the ſole of the Foot; and on the contrary, the extraordinary thickneſs of the *Cuticula*, eſpecially in the Heel, exceeding the ſixth part of an Inch: which is about fifty times the thickneſs of that in the ball of the Hand. *Bartholine* (*a*) mentions a *Farrier* who had ſeveral Calloſities on his Right-Hand Fingers, as big as Walnuts.

(*a*) Hiſtoriar. Cent. 5.

The ſame Author (*b*) ſhews the way of tanning a Humane Skin. I believe it may be tann'd by all the ways which are us'd upon other Skins.

(*b*) Hiſtorian. Cent. 3.

He ſaith, (*c*) *That a Thong hereof ty'd about the middle, is of good uſe for facilitating the Birth; and eſpecially againſt Mother-Fits.* Whether any other way, if ſo, than by raiſing and fortifying the phancy (which will ſometimes produce ſtrange effects) I leave to the Reader to judge.

(*c*) Ibid.

All the Principal VEINS, ARTERIES, and NERVES, both of the *Limbs* and *Viſcera*. The generous Gift of *John Evelyn* Eſquire. He bought them at *Padoa*, where he ſaw them with great induſtry and exactneſs (according to the beſt method then uſed) taken out of the body of a Man, and very curiouſly ſpread upon four large TABLES, whereon they are now preſerved. The Work of *Fabritius Bartoletus* then *Veſtingius*'s Aſſiſtant there, and afterwards Phyſician to the King of *Poland*.

The *Veins* and *Arteries* are ſo exceedingly well done, as to ſhew the moſt curious Schemes which *Laurentius* and other Phyſitians have given us of them, are real and not fictitious. But the *Nerves* have been much more truly and fully repreſented to us of late by Dr. *Richard Lower*, in Dr. *Willis*. (*d*) Eſpecially as to their *Plexus* and *Inoſculations*, and their admirable *Diſtributions* to the *Organs* of the *Senſes*, and the *Viſcera*.

(*d*) De Nervorum Deſcript. & uſu.

Ariſtotle (*e*) by the account he gives of the Doctrine of the Naturaliſts of his Time, and before him, ſeems to have

(*e*) Hiſtor. Anim. lib. 3. c. 3.

have been the first, who to any purpose, observed the Distribution of the *Sanguineous Vessels*. Yet he describes them only from the Heart *upward*. Nor makes he any distinction betwixt the *Vena Portæ*, and the *Vena Cava*. So that even here he comes far short of that exactness which Anatomists have since arrived at; as appears, upon inspection, by the TABLES above mention'd.

The SCELETON of a Man. Wherein the number of Bones (about two hundred and fifty) together with their dimensions, figures, and articulations are all easily observable. Given by *Thomas Povey* Esquire.

The History of the Bones, as finished, is well perform'd by most Anatomists. But the manner, and order of their beginning and perfection, hath been given us, so far as I know, by the diligent Observations of *Kirckringius* (*a*) only.

(*a*) Kirckringii Osteologia.

Of all Humane Bones indifferently, as well as of the Skull, are prepared, *Spiritus simplicior*, *Spiritus oleosus*, *Oleum rectificatum*, & *Magisterium*. Amongst which, the *spiritus oleosus*, if well prepared, is of undoubted use against *Hysterical Passions*; and in some other *Cases*, where the *Nerves* especially are *affected*.

The SCELETON of a Woman; of equal height with the former. By comparing these two together, it may be noted, That the *Os Ilium* is larger and more outward in the Female Sceleton, than in the Male; *sc.* for the more easie Labour, as *Bartholine* and others have also observed by the like comparison. I add, That the same Bone is also broader by ½ an Inch in the Female Sceleton, than in the Male: *sc.* for the better sustentation of the *Fœtus* in the Womb. Again, That the *Os Sacrum* is half an Inch longer in the Female: both for the forementioned reason, and also the better proportion of the Parts. On the contrary, That the *Vertebræ*, especially of the *Loyns*, are much broader, thicker, and stronger in the Male Sceleton, than in the Female; being hereby better fitted for the bearing of burthens. And, that as in the Male Sceleton there are 32 Teeth, as is usual, and in the Female but 28; So the nether Chap in the Male Sceleton is half an Inch broader than in the Female, as being made to accommodate a bigger Muscule for the motion of those Teeth.

Teeth. And for the ſame reaſon, the Angles ſubjected to the *Os Jugale* are above ¼ an Inch more diſtant; For that a Man being fitted, in other reſpects, to undergo more labour; his Chaps alſo ſhould be the better made to eat the more. Once more, That the Skull of the Male Sceleton, is much bigger, than of the Female; and ſo capable of more Brains. Although a little Houſe may be well furniſhed, and look better than a great one that ſtands empty.

The SCELETON of an Abortive Humane *Fœtus*. 'Tis not above two Inches long. The parts of the Head, Cheſt, and Limbs are all entire, but not perfect. For the extremities of the Bones of the Arms and Leggs, are at both ends plainly cartilagineous. They are in thickneſs like a Taylors ſtitching Thread. Given by *Thomas Povey* Eſq; See *Kirckringius de Fœtûs Oſſibus*.

It may poſſibly be conceived by ſome, That the Bones, at leaſt ſome of them, are hard at the firſt; as Salts and other like Cryſtallizing Bodies are as hard upon the very firſt inſtant of their ſhooting, as they are when grown into great Cryſtals. But it is ſo far evident, that all the Bones are ſoft at the firſt, that I am of opinion, That originally they are a *Congeries* of *Fibers* or fibrous Veſſels, as true as any other in the Body; which by degrees harden into Bones: even as the inmoſt Veſſels in a Plant, do in time harden into Wood. (*a*) And that as in a Plant, there are ſucceſſive additions of Rings or Tubes of Wood, made out of Veſſels: So in an Animal, it ſeems plain, That there are additions ſucceſſively made to the Bones out of the Fibrous parts of the Muſcules; eſpecially, thoſe whiteſt Fibers which run tranſverſly, and make the ſtamen or warp of every Muſcule. So that as in the *Barque* of a Plant, part of the Veſſels are ſucceſſively derived outward to the *Rind*, and part inward to the *Sap*, which afterwards becomes *hard wood*. (*b*) So in the *Fleſh* of an Animal, part of the *white tranſverſe Fibers* are ſucceſſively derived to the *Skin* (of which this chiefly conſiſts) and part of them inwardly, making ſtill new *Perioſteum's* one after another, as the old ones become ſo many additions to the *Bones*.

(*a*) See the Authors Anatomy of Plants.

(*b*) See the Authors Comparative Anatomy of Trunks.

A HUMANE SKULL that was never buried. Whereof there are ſeveral Medicines prepar'd, (*c*) as *Cranium*

(*c*) See *Schrod. Pharm.* and others.

nium Humanum præparatum, Cranium Humanum Calcinatum. Cranii Humani Magiſterium, Spiritus Eſſentificatus, Oleum, Sal Volatile, Tinctura, Galreda, i. e. *Extractum Cranii Theophraſti.* But the *Cranium præparatum,* and the *ſpirit* are moſt, and moſt deſervedly, in uſe.

A HUMANE SKULL cover'd all over with Moſs, by the *Paracelſians* call'd *Uſnea.* This Moſs is by them commended for its peculiar Virtue in ſtopping of bleeding at the Noſe.

Upon compariſon it appears to me, to be the ſame, *in ſpecie,* with that deſcribed by *Johannes Bauhinus* under the Title of *Muſcus facie Abietis.* So that we may probably expect the ſame advantage from the uſe of this, as of that which grows upon Skulls. For a Skull can have no further influence, than hath the alteration of the ſoil: which although it may produce ſome differences, yet is ſeldom or never known to alter the ſpecifick Virtue of a Plant.

A HUMANE SKULL cover'd all over with the Skin. Having been buried, as is probable, in ſome Limy, or other like ſoil, by which it was tann'd or turn'd into a kind of Leather.

The GALL BLADDER, together with the VASA BILARIA, taken out of the Liver, and filled with ſoft red Wax. Performed, and given by Dr. *Swammerdam.*

The SPLEEN moſt curiouſly EXCARNATED, and the Veſſels filled with wax: whereby its Fibers and Veſſels are very well ſeen. Performed, and given by the ſame Hand.

A Portion of the PENIS and Urethra: wherein the *Corpora Nervoſa* are moſt conſpicuous. By the ſame Hand.

A Portion of the INTESTINUM JEJUNUM: wherein the *Valvulæ conniventes* obſerved by *Rhuyſſerius,* delineated by *Kirckringius,* are well ſeen.

It is obſerved (*a*) by Dr. *William Cole,* That not only theſe Valves, but the Fibers of the inner Muſcular Membrane of the Guts are admirably continu'd in a ſpiral Line, all along from the *Stomach* to the very *Anus.*

(*a*) Philoſoph. Tranſ. N. 125.

The PROPER VESSELS of a HUMANE TESTICLE,

TESTICLE, ſeparated and expanded, from their moſt cloſe and numerous into wider folds, for the ſpace of a foot in length, and half a foot in breadth. Performed by Dr. *Edmund King*.

It is taken for granted, I think almoſt by every body, That *Van Horne* and *de Graaf* were the firſt Obſervers of theſe Veſſels. But that every one may have his due, it is worth the Readers notice, That ten years before *de Graaf*'s Book concerning the ſame, a Deſcription with Figures thereof, in the *Teſticles* both of a *Boar* and of a *Man*, were firſt publiſhed by *Vauclius Dathirius Bonglarus*, *ſc.* in the Year 1658. Whereof alſo Mr. *Oldenburgh* hath given an account in the *Philoſophical Tranſactions*. N. 42.

The WOMB of a WOMAN, blown up and dried. Together with the *Spermatick Veſſels* annexed; and the *Arteries* in the bottom of the *Uterus*, undulated like the Claſpers of a Vine; all filled up with ſoft Wax. Alſo the Membranous and Round *Ligaments* of the Womb, the *Ureters*, *Bladder*, *Clitoris*, *Nymphæ*, *Hymen*, *Fallopian Tube*, and the *Ovarys*, commonly called the *Teſticles*; all made moſt curiouſly viſibly, and given by Dr. *Swammerdam*. The Deſcriptions and Figures hereof may be ſeen in the ſame Authors Book, printed at *Leyden*, 1672. and preſented to the *Royal Society*.

Of the Organs appropriated to Generation in both Sexes, ſee alſo *Van Hornes Prodromus*, and *Regnerus de Graaf*.

Of the manner and uſe of filling the Veſſels with Wax, or other like ſubſtancee, ſee the Honourable Mr. *Boyle*, in his Firſt Part, *Of the Uſefulneſs of Natural Philoſophy*; who, I think, was the firſt that made mention of managing and repreſenting them this way.

A TOOTH taken out of the Teſticle or Ovary of a Woman, and given by Dr. *Edward Tyſon*. 'Tis near ½ an Inch long, pointed like the Eye-Tooth of a Man, but more ſlender. As hard and white as any in the Head.

Here is alſo the Draught of another TOOTH, taken alſo out of the Ovary of a Woman, by the ſame Hand, being ſhaped pretty like one of the Grinders or great Teeth, and as big. It is as white and as hard as the former. The Womans Husband keeps the Tooth it ſelf by him.

Hair

HAIR taken out of the *Ovary* of a Woman, and given by the ſame Hand. It is fine, and moſt of it grey. The length of one Hair (longer than the reſt) ¾ of a yard.

HAIR found by the ſame Perſon in the *Ovary*, and Hornes of the Womb of a Bitch: as alſo in the *Omentum*, Veins, and Heart. 'Tis all ſhort, anſwerable in length to the Hair of a Dog; and of a brown colour.

The BONES of a Humane LEG and FOOT grown together, and in ſome places rarified like a Sponge or Pumice-Stone. 'Tis very probable, it was a Diſeaſe in the Bones ſomewhat like to that which Chirurgions call an *Exoſtoſis*; and that they became ſuch, by ſome malignant and ſtrumous Ulcer.

A piece of a BONE voided by Sir *W. Throgmorton* with his Urine. Given by *Thomas Cox* Eſq; 'Tis about the 3d. of an Inch over, and almoſt ſquare. Smooth on one ſide, and ſpongy on the other, on the edges rugged. About the bigneſs of a little green Peas.

In the Philoſophical Tranſactions (*Num.* 41.) there is a Relation of a BULLET that was voided by the *Penis* with the Urine. Communicated by Dr. *Nath. Fairfax.*

A STONE voided from the *Penis* or *Urethra* of a Man who lived at *Exeter*. Given by Dr. *Cotton*. It is of a whitiſh colour, and ſoft ſubſtance, almoſt like Chalk. In length two Inches and a quarter. Of a Pyramidal figure; with an obtuſe Cone. Near the Baſe an Inch over. Where it hath a little Hole or Canale tending towards the Cone. When it firſt ſlipped out of the Bladder into the *Penis*, it was neither ſo thick or big, nor ſo hard, but that, as it ſeems, the Urine preſſing forward, forced a hole for its paſſage through the middle of it. Which being opened, the Stone continued fixed in the ſame place, *viz.* about an Inch behind the *Glans Penis*, for the ſpace of Thirteen Years. In which time, it gradually grew bigger, till it came to the bulk above mention'd. And the ſaid Hole or Canale being by the continual accretion of new matter, at laſt ſtop'd up, the Stone was then forced out of the end of the *Penis*.

This Man, in all this time, ſcarce felt any great Pains; neither did he omit his uſual Recreations or his buſineſs. And once he took a Journey (*on Horſeback*) from *Exeter*

to *London*, is about an hundred and thirty eight miles, without any trouble.

(a) Hiſtor. Cent. 5. *Bartholine* (a) mentions a Stone as big as a Walnut, of an Ounce weight, which was voided at the upper end of the *Urethra*, through which it there forced its way.

Of Humane Stones bred either in the Kidneys or Bladder, are prepared, The *Cryſtalline Salt*, and the *Elyxir*. Medicines hardly to be got, and at laſt, to little purpoſe.

Of the Nature of the Stone, and of thoſe Medicines which are moſt effectual to prevent the Generation of it, ſee ſome experiments of the Authors in his Book of the Luctation ariſing from the mixture of Bodies.

SECT. II.

Of Quadrupede's.

CHAP. I.

Of Viviparous Quadruped's; particularly, ſuch as are *Multifidous.*

A MONKEY. *Cercopithecus:* qu. *Simia caudata.* See the Deſcriptions and Figures of ſeveral kinds in *Aldrovandus*, *Marggravius*, and others. *Aldrovandus* ſpeaks of ſome as big as a Maſtiff, having Tails five Cubits long. In *Braſile* there is a ſort of yellowiſh Monkey, which ſmell like Musk. (b) In which place they are numerous, and in great variety. (c) As alſo in all the Mountanious places of the *Eaſt Indies*. (d) As they climb the Trees, if in danger of falling, they ſave themſelves not only with their Feet, but their Tails, by wraping them round about the next Bough. The *Zygantes* in *Africa* eſteem them good meat.

(b) Barl. Rerum geſt. in Braſ. Hiſt. p. 223.
(c) Joh. de Laet.
(d) Aldrovandus a Monfet de Re Cibariâ.

The SCELETON of a MONKEY. Wherein the diſtance betwixt the *Os ſacrum* and the *Iſchia*, as it is much greater, than in the Sceleton of a Woman, is obſervable. Likely ſo, in other Viviparous *Quadrupede's:* for

for which cauſe, partly, they have all more eaſie Labour than a Woman.

The THROTTLE BONE of a Male AQUIQUI; which the People of *Braſile* call the *King-Monkey*; being far bigger than all the other kinds; deſcribed by *J. de Laet*, (*a*) out of *Lerius*. 'Tis a Bone, ſo called by the *Engliſh*, with the help of which he makes a very great noiſe. For 'tis hollow, and very hard. Exceeding thin, and ſo half tranſparent. In length two Inches and ½. In height an Inch and ¼. In breadth almoſt two Inches. At one end, hath an Aperture an Inch wide every way. On the top furrow'd, ſo as to reſemble a Puppies Skull.

(*a*) Lib. 15. c. 5.

I ſuppoſe it is placed in the Throat, or at the upper end of the *Larynx*, near the *Epiglottis*. *Joh. Lerius* deſcribing of it, (*b*) falſly calls it a Membrane.

(*b*) J. de Laet. lib. 15. c. 5.

The SLOATH. *Ignavus ſive Pigritia.* An Animal of ſo ſlow a motion, that he will be three or four days, at leaſt, in climbing up and coming down a Tree. (*c*) And to go the length of fifty Paces on plain ground, requires a whole day. (*d*) The Natives of *Braſile* call him *Haii*, from his voice of a like ſound: which he commonly repeats about ſix times together, deſcending, as if one ſhould ſing, *La, ſol, fa, mi, re, ut.* (*e*) Whatſoever he takes hold of, he doth it ſo ſtrongly (*or rather ſtifly*) as ſometimes to ſleep ſecurely while he hangs at it. (*f*) See his Deſcription in *Cluſius*, *Marggravius*, *Piſo*, and others. They all ſeem to omit the length of his fore feet, which is almoſt double to that of his hinder.

(*c*) Bartæus de Reb. Braſ. p. 222.
(*d*) Cluſius.
(*e*) Id.
(*f*) Guliel. Piſo.

From the ſhag of his Body, the ſhape of his Legs, his having little or no Tail, the ſlowneſs of his gate, and his climbing up of Trees, as little *Bears* are us'd to do, he ſeems to come near the Bear-kind: from which he chiefly differs, In having but *three Claws* upon a foot. He breedeth principally in *Florida* and *Braſile*.

Two BLACK-BEAR CUBS. The Deſcription of the *Bear*, ſee in *Aldrovandus*, *Geſner*, &c. The Anatomy, in the *Philoſophical Tranſactions*, N. 49. They breed moſt in *Nova Zembla*, and other of the more Northerly Countries. In *Norway* they hunt him, and ſo in *Helvetia* and *Muſcovy*, and if he be fat, they account him a delicate Diſh. (*g*)

(*g*) Mouſet, de Re Cibaria, & Muſæum Worm.

'Tis obſerved by *Aldrovandus*, That a *Bear* hath Hair on both the Eye-lids, as a *Man*, which other *Quadrupedes* have not. *Natalis Comes* (cited by the ſame Author) comparing his parts with thoſe of a Man, reckons his *Claws* among them, which are much more like to thoſe of a *Lion*. So eaſie it is, to drive on the compariſon too far, to make it good.

The FOOT of a white *Groenland* BEAR, which is *half a foot* broad. *Vadianus* (*a*) ſaw a Bear-skin five feet long, and broader than a Bulls Hide. The Bear to which this Foot did belong, might be as big.

(*a*) Quoted by *Geſner*.

A LEOPARDS SKIN. 'Tis a yard broad. From the Snout to the hinder end of the Tail near three yards. The Tail a yard. See the Deſcription of the Animal in *Aldrovandus*, *&c.*

If they are well compar'd, he is every way, in ſhape, like a *Cat*: his Head, Teeth, Tongue, Feet, Claws, Tail, all like a *Cats*. His actions alſo like a *Cats*; he boxes with his fore-feet, as a *Cat* doth her *Kitlins*; Leaps at the Prey, as a *Cat* at a *Mouſe*; and will alſo ſpit much after the ſame manner. So that they ſeem to differ, juſt as a *Kite* doth from an *Eagle*.

The *Leopard* (and all of this kind) as he goes, always keeps the *Claws* of his fore-feet turned up from the ground, and ſheath'd as it were in the Skin of his Toes, whereby he preſerves them ſharp for Rapine, extending them only, when he leaps at the Prey. See ſomewhat to this purpoſe in *Geſner*, out of *Pliny*.

He is begotten by a *Lion*, upon a *Panther*, (*b*) which hath her name from her being ſo fierce. Yet in *Tartary* they keep Leopards tame, and breed them up for hunting of *Deer*, and other Beaſts; eſpecially for the *Great Cham's* uſe. (*c*) They are moſt numerous in *Africa* and *Syria*.

(*b*) Aldrovandus.

(*c*) *Geſner* out of *Paulus Venetus*.

The SKULL of a young TIGER. Both as to the *Teeth*, and otherwiſe it well reſembles that of a *Cat*. Except that in the room of the Tranſvers *Suture* in a *Cat*, there is one in the figure of a great Y; ſo wonderfully cloſe and firm, as the Bones ſeem to be continuous. Except alſo the outward *Sinus's* of the lower Jaw, where the *Muſculi Temporales* and the *Manſorii primi* are inſerted: as being, rateably, much deeper than in a *Cats*; and ſo better fitted to receive thoſe *Muſcules* which are here alſo much more robuſt.

Two

Two CLAVICULAR Teeth or Tusks of a Tiger. A little crooked like those of a *Dog* or *Cat*. Their exerted part very white. By the bow, almost five Inches long. From the top of their Root, or from the seat of the Gooms, to their *apex* near two Inches. An Inch over, and two and ½ about. The Animal to which they belonged, was kill'd in *Java major*, and weighed 435 pounds. A great weight, considering, that not feeding on Grass, but Flesh only, they have no great Belly. *Aldrovandus* saith, He saw the Skin of one above five foot long, and therefore guesses the Animal was almost as big as a Horse. Which this also may well be thought to have match'd.

One of the fore-CLAWS of the same TIGER. 'Tis somewhat white and half transparant, very flat, sharp pointed, and extreamly hooked; every way in colour and shape like the Claw of a *Cat*. At the *Basis*, 'tis an Inch broad, and measur'd by the bow, 'tis two Inches and ½ long. Note, That as the Bone, whereon the Claw is set, receives it into a little *Fovea* or Groove; so is the Bone, again, by a double *Epiphysis*, inserted into the Claw: by which means it is more strongly and immovably contained in its place, for the surer grasping of the Prey.

Two other lesser CLAWS of a TIGER.

The Tiger excels in swiftness; from whence he hath his *Arabick* Name, as well as the River call'd *Tigris*. As also in Fierceness: and yet in fondness and love to her *Cubs*; of which see divers instances in *Gesner*. An Impression which Nature hath stampt upon all Creatures, to secure the succession of Generation. They abound in *Mexico*, *Brasile*, and in the *East Indies*.

A Great STONE taken out of a *Dogs* Bladder. Given by the most Reverend *Seth* Lord Bishop of *Sarum*. The figure hereof is Oval, but flat on both sides. 'Tis above an Inch and ½ thick, two Inches and ½ over, and above three Inches long. Of a limy or chalky colour, and all over rough.

Note, that nitrous spirits dropped here upon, scarce produce any ebullition; although dropped on the rediſh Stones, bred in a mans bladder, it produceth a great one. Of a like *Stone* bred in a *Dogs* bladder, see a Relation in the *Phil. Transf. N.* 84. Taken out of the *Roman Journal de Letterati*.

The

The GREAT TAMANDUA; by the People of *Braſile*, *Tamandua-guacu*; by the *Engliſh*, the *Great Ant-Bear*; Becauſe he feeds upon *Ants*, and is ſhagg'd, and hinder-footed almoſt like a *Bear*. He hath alſo a very long and ſharp Snout, a ſlender Tongue, and extenſible to a great length, alſo a long and bruſhy Tail: which are his principal Characters. See him deſcribed in *John. de Laet*, out of *Lerius*, in *Guliel. Piſo*, *Marggravius*, and others. *Abbæ-villanus*, quoted alſo by *Joh. de Laet*, (*a*) hath given a different Deſcription; and probably a falſe one.

(*a*) Lib. 16. c. 15.

He catcheth *Ant's* by ſcratching open their ſubterraneal Hives, and then thruſting his Tongue into them; which after a while, he draws back into his mouth laden with the Prey. (*b*) He uſeth his Tail for a Cover, which, like a Squirrel, he ſometimes ſpreads over his whole body. (*c*)

(*b*) Barlæi Res Braſil. p. 223.
(*c*) Ibid.

The SKULL of the RIVER-HORSE or HIPPOPOTAMUS. If we reſpect his Figure, he were more properly called BUPOTAMUS, or RIVER-OXE. And accordingly the *Germans* rightly call him *Waſſer-Ocks*; and the *Italians* at *Conſtantinople* BOMARIN. The ſame Animal, which in the Book of *Job* is called *BEHEMOTH*; as is ſolidly proved by *Bochart*, in his *Hierozoicon*. He is almoſt every where deſcribed very falſly. *Ariſtotle* falſly gives him a Maine, like that of a Horſe: deluded, 'tis likely, by the Name. *Kircher* (*d*) falſly gives him all Horſe Teeth. In the *Muſæum Romanum*, he is deſcribed with double Hoofs like an *Ox*, and pictured with four or five Claws like a *Bear*; neither truly. *Bellonius*, who ſaw one alive, but yet very young, was the firſt that hath given any tollerable Deſcription of him. Yet as to the Teeth, he is miſtaken, comparing them all to thoſe of a Horſe: probably becauſe they were not yet grown. (*e*) But *Columna*, who alſo ſaw one, and that full grown, hath given a moſt accurate Deſcription hereof, his principal Characters being theſe; Four yards and half long, about two yards high, a yard and half broad. Short leg'd. Cloven-hoofed; yet not with two, but four Hoofs. Tailed like a *Tortoiſe*. (Or like a Hog, (*f*) which he alſo twiſts in the ſame manner) Head almoſt like an Ox. His Chaps wide. His Eyes ſmall. His fore Teeth prodigiouſly great, being ſome of them ½ a foot round about, above ¼ of

(*d*) Chin. Illuſtr.

(*e*) Fab. Colum. lib. de Aquat. & Terreſt.

(*f*) *Solinus* and others quoted by *Bochart*.

of a foot long; as is evident in the Skull here preserved; and other particulars mention'd by *Columna* in his copious Description hereof.

The great prominency of the *Os Jugule* is also observable; as being thereby fitted for the reception of marvelous great and strong *Muscules* for the drawing of his Chaps together.

Rings made of his *Teeth*, are believed to be very effectual against the *Cramp*. (*a*) Those that sell *Artificial Teeth*, usually make them of the long Teeth of this Animal, as being supposed the best for this purpose.

(*a*) Charl. On. Zoci.

His Teeth, says *Columna*, are so hard, that being struck against Steel, produce sparks of fire. And thence concludes it probable, That this Animal, by striking his Teeth one against another, in the night time, might produce the like, and so seem, as it were, to vomit or breath out fire; a thing attributed to him by the Ancients. But the error of this Conjecture is double: First in his not considering, That the fire (could any be produced by striking Steel against these Teeth) would be struck not out of the Teeth, but out of the Steel. And next, In that, in truth, no fire can be produced by either striking of these Teeth one against another, or against Steel it self; as I have try'd.

He is found in the Rivers *Nile* and *Bamboth*; (*b*) as also near the *Indian*; and in *Zaire*, the great River of *Congo*. (*c*)

(*b*) Fab. Colum. *out of* Strabo *and Solinus.*

(*c*) Muf. Septal. c. 29. & Linschot. 204.

Several Teeth, both of the upper and nether Jaw of the *Hipopotamus*. Some so big, that they seem to have belonged to a much bigger Skull, than this here.

A PISLE said to be that of the HIPPOPOTAMUS. It seems to be only that part of the Pisle which he exerts. 'Tis in length, above a foot. The Glans even now it is dry, above seven Inches about. The other end very slender.

The fore-TOOTH of a BEVIR, so called from FIBER, by a transposition of Letters. 'Tis three Inches and half long, with the Root, or that part which is fixed in the Chap. Near half Inch broad. A little crooked, and distorted or writhen. Triangular, the inner Angle more obtuse. Its end sharpen'd very obliquely, after the manner of a *Chizel*. So that these Teeth may properly be called DENTES SCALPRARII: wherewith this Animal, as with so many strong Chizels, pairs off the *Barques* of Trees for his use.

The

The TAIL of a CASTOR or BEVIR. Of a peculiar ſhape, being very broad and flat, like an *Apothecaries Spatula*, but much bigger, being ten Inches long, and five broad. Almoſt bald, though the Beaſt very hairy; and cancellated with ſome reſemblance to the *Scales* of *Fiſhes*. Nature having hereby, as well as in other reſpects, marked him for an *Amphibious* Animal. The *Scythians* (*a*) eat the Tail of a *Caſtor*, as a dainty, being ſometimes as fat as bacon.

(*a*) Geſner *out of* Pomponius Sabinus.

The PISLE-BONE of a CASTOR. So I find it inſcrib'd. 'Tis very ſmooth and ſolid. In length four Inches and ½. Chonical, about ½ Inch over at one end, ¼ Inch at the other. At both ends inflected like the letter S.

See the Deſcription of the Animal in *Geſner*, and others. His parts moſt remarkable, are thoſe now deſcribed, and the *Caſtor-Bag*. His Anatomy ſee in the *Philoſophical Tranſactions*, N. 49. Many ſtrange Stories of his Ingenuity in *Aldrovandus*, *Wormius*, and others. He breeds in *Italy*, *France*, and other places: but our beſt *Caſtor* is from thoſe of *Ruſſia*. The great and principal uſe whereof inwardly, is in *Hyſterical* and *Comatoſe Caſes*.

An OTTER. *Lutra*. See him deſcrib'd in *Aldrovandus*, *&c.* The Toes of his hinder feet, for the better ſwimming, are joyn'd together with a Membrane, as in the *Bevir*. From which he differs principally in his Teeth, which are *canine*; and in his Tail, which is *feline*, or a long Taper. So that he may not be unfitly called *Putoreus aquaticus*, or the *Water Polecat*. He makes himſelf burrows on the water ſide, as a *Bevir*. Is ſometimes tamed, (*b*) and taught, by nimbly ſurrounding the Fiſhes, to drive them into the Net. In *Scandinaria* they will bring the Fiſhes into the very *Kitchen* to the *Cook*. See ſome Obſervations of this Animal in the *Philoſ. Tranſ.* *N.* 124. He breeds every where.

(*b*) Geſner *out of* Olaus Magnus.

The QUILLS of a PORCUPINE. *Tela Hiſtricis*. The Animal is deſcribed by *Aldrovandus*, and others; but the *Quills* not ſo fully. They are very ſmooth, and thick as a Gooſe-quill. With black and whitiſh portions alternately from end to end. Their Root ½ of an Inch long. Their Point not round, but flat and two-edg'd, like that of

of a Sword,or of ſome Needles.So that they both bore with their Point, and cut with their edges at the ſame inſtant, whereby they wound the more ſurely.

The *Porcupine* erects his *Quills*, at his pleaſure, as a *Peacock* doth his Tail. And, partly by ſtretching his *Skin*, (*a*) ſhoots them at his purſuing Enemy. It may alſo be noted, That being rooted ſo little a way in the Skin (nothing near ſo deeply as the Quills of Fowls) they are the more eaſily ejaculated. They breed in *India*, *Africa*, and *Ethiopia*.

(*a*) Geſner *out of* Solinus.

An HEDGHOG, or Urchan. *Echinus*, *Herinaceus*. See him deſcrib'd in *Aldrovandus*. Anatomiz'd in *Bartholine's Acta Medica*. The Urchan, though a Viviparous Animal, yet hath his Teſticles lying within his Body, as in the Oviparous kind. (*b*) In the Iſland *Maraguan*, in the North of *Braſile*, are ſome Urchans very great, almoſt as big as Boars. (*c*) He makes his Bury with two Entries, to the North and South; and according to the weather and ſeaſon, keeps the one ſtopt up, the other open. (*d*) The Liver, Stomach, and fat of this Animal are ſometimes medically uſed.

(*b*) Ariſt. H. Anim. l. 3 c. 1.

(*c*) Joh. de Lact. (*out of* Abbævilanus) lib. 16. c. 15.

(*d*) Geſner, *out of* Plutarch.

The GREAT SHELL'D HEDGHOG. By the Natives of *Braſile*, called TATU; By the *Spaniards*, ARMADILLO; as Names common to the ſeveral *ſpecies*. And by *Latin* Authors, *Echinus Braſilienſis*. This once belonged to the Duke of *Holſtein*. See the Deſcription of this *Species* in *Cluſius*, and others.

Thoſe Creatures which are cover'd with Feathers, Scales, or Shell, ſaith *Ariſtotle*, (*e*) have no *Auricula* or outward Ear. So that he never ſaw this Animal; nor many others now known, and ſome which he ventures to deſcribe; as appears by thoſe general Aſſertions, whereof he is too often guilty.

(*e*) Hiſtor. Anim. lib. 1. c. 11.

He gathers himſelf up, Head, Feet and Tail, within his Shell, as round as a ball: as *Piſo* hath alſo pictur'd him. (*f*) And this he doth, not only when purſued, but alſo when he ſleeps. Unleſs he be ty'd, he will dig out his way under the very walls of a houſe. (*g*) For it is his nature to dig himſelf Buries, as the Coney doth; which he doth with very great celerity. (*h*)

(*f*) Hiſt. l. 3. S. 3.

(*g*) Muſ. Septal.

(*h*) Cluſius.

For the tenderneſs, whiteneſs and delicacy of his Fleſh, he is reſerved for Feaſts; (*i*) and therein prefer'd before either

(*i*) Barlæus de Rebus Braſ. p. 222.

either Conies or ſucking-Pigs. (*a*) The Plates of his Shell being powder'd and given in a draught of the Decoction of Sage in the quantity of ʒj, provoketh ſweat; and are a ſingular remedy againſt the *Lues Venerea*, ſaith *Barlæus*. (*b*) If it provoketh ſweat, it may be uſed to good purpoſes, whether it cureth that Diſeaſe, or no.

(*a*) Guil. Piſo.

(*b*) P. 369. *out of* Franc. Ximines.

The PIGHEADED ARMADILLO. *Tatu Porcinus. Nierembergius* hath deſcribed this *Species*, but yet imperfectly. The beſt of any *Wormius*; who alſo omiteth ſome particulars, and in others is miſtaken.

From his Snout-end to his Tail, about ten Inches and ½; being younger and leſſer than that of *Wormius*. His Body four Inches over. His Head an Inch and ¼, and three Inches long. The end of his Noſe ſcarce half an Inch over, ſhaped like that of a Pig; from whence I have taken leave to name it. His Ears not above ¼ of an Inch diſtant one from the other. His fore-foot two Inches and ½ long, above ½ Inch over. On which he hath four Toes; the two foremoſt of which are an Inch long, the other two ¾ an Inch. The hinder-foot of equal length, but thicker. On which there are five Toes; the three foremoſt, and thickeſt whereof are an Inch long, the other two ¾ an Inch. His Tail about 11 Inches long, at the Buttocks an Inch and ¼ over, at the end as ſmall as a *Shoomakers* waxed Thread.

His Head, Back, Sides, Legs, and Tail, are all cover'd with a ſhelly Armour. His Head, with Shells, Scales for the moſt part, five and ſix angled. His Shoulders, with round ones, and leſſer, about ¼ of an Inch over; betwixt which other leſſer ones are interjected. The Back-piece conſiſteth of about ten ſhell Plates, joyned together by the mediation of as many parallel Skins. Every Plate is about ½ Inch broad, curiouſly compoſed of ſmall triangular or wedge-like pieces, indented one againſt another, and pounced or pricked all along their edges. His Buttocks adorned in the ſame manner as his Shoulders. His Shell ending next his Tail, with an *Elipſis*. The fore-part of his Tail is encompaſs'd with ſhelly Rings, in number eleven; compoſed not of triangular, but ſixangl'd and ſquare pieces. The other half with Scales ſet together, as on his Head. His nether Buttocks, Belly, Breaſt, Neck, and Ears are all naked. His Eyes

Eyes black, round, and very little; reſembling a black Bead of the bigneſs of a Vetch. His Grinders in each Chap about twelve. More properly Tunſores; becauſe they are level and ſmooth on the top. No thicker than a great Needle. Beſides theſe Teeth, I find none.

By the help of the aforeſaid *Plates*, and parallel *Skins* together with the Muſcules that lie under them, this Animal is able, like the Hedge-Hog, to gether up himſelf into a round ball. For the better performance of which action, Nature hath alſo left his Throath, Neck, Breaſt and Belly naked. As alſo his Ears, that he may turn them more expeditely for the reception of ſounds from every quarter. His Eyes, like thoſe of a Mole, very little, as moſt ſuitable to a Creature living for the moſt part in the dark, and under ground. His hinder feet, like a Conies, more ſtrong, for the better working of his Buries.

Piſo (*a*) maketh the action of conglobation peculiar to this *ſpecies*, but very falſly, as will appear by the following Deſcription. (*a*) Hiſt. l. 3. S. 3.

The WEESLE-HEADED ARMADILLO. *Tatu Muſtelinus.* I find this *ſpecies* no where deſcrib'd. For that Deſcription of a third *ſpecies* in *Cluſius*, was taken only from ſome Picture, no way anſwering to the Animal before us.

His Head in figure almoſt like a *Weeſles*, whence I take leave for his Name. 'Tis three Inches and ½ long; his Forehead two Inches and ½ broad, and very flat; the end of his Noſe ½ Inch. His Eyes ſmall, ¼ of an Inch long. His Ears two Inches diſtant one from another; an Inch long. His Body or Trunk 11 Inches long, about ſix broad. His Tail 5 ½ long; near the Buttocks an Inch and ¼ over, the extremity ¼ of an Inch. His fore-Leg two Inches and ½ long, ¼ broad. On which there are five Toes; whereof the three foremoſt are an Inch long, the other two half an Inch: all with Claws the ¼ of an Inch. On his hinder foot (which is ſomewhat bigger) he hath alſo five Toes, as in the foremoſt.

His Head, Back, Sides, Legs, and Tail are cover'd with a ſhelly Armour. His Head-piece, as alſo the ſhells on his Legs, are compoſed of roundiſh Scals, a ¼ of an Inch over. His Neck-piece is a ſingle Plate, compoſed of little pieces, a ¼

of an Inch ſquare. His Shoulder-piece conſiſteth of ſeveral Ranks or Rows of ſuch like ſquare pieces, but not ſet together by any Articulation, or movable Conjunction. His Back-piece, reaching alſo over his Buttocks to his Tail, is compoſed of ſeveral Plates, in number eighteen, moveably joyned together by as many intermediate Skins. The foremoſt and greateſt of theſe Plates, conſiſt of ſquare pieces ½ Inch long, and a ¼ broad. The hindermoſt, of ſquare and round ones together. The extream part of the Shell next the Tail, is Parabolick. The fore part of the Tail is ſurrounded with ſix Rings; conſiſting of little ſquare pieces. The other half with Scals. His Breaſt, Belly, and Ears all naked; for the ſame purpoſes, as in the former.

This *Species*, by the greater number of Plates, ſeemeth able to draw, eſpecially his hinder parts, more roundly inward, than the other.

The FLYING SQUIREL, *qu. Sciurel*, from *Sciurus*. Not deſcribed, unleſs by *Scaliger*. The colour of his Body a dark grey. Of his Tail, almoſt that of ſtraw. Leſſer than the common Squirel, not above five Inches and ½ from his Noſe end to his Buttocks. His Skin, from his Sides, Thighs and Legs (almoſt as the wings of a Bat) is ſtretched out about an Inch in breadth, or more or leſs at his pleaſure: by means whereof he leaps further, and alights the more ſafely; and is therefore called *The flying Squirel*. In other reſpects, like the *Europæan* kind. It was ſent from *Virginia*, its breeding place.

He ſeems to be the ſame Animal which *Scaliger* deſcribes under the Name of the Flying Cat. *Exercit.* 217. *S.* 9.

The Squirel, when he hath a mind to croſs any water for a good Nut-Tree, picks out, and ſits on ſome light piece of Barque for a Boat, and erecting his Tail for a Sail, he makes his Voyage. (*a*)

(*a*) Geſner, *out of the Author of the Book*, de Naturâ Rerum; *out of* Vincentius, Beluacenſis, and Olaus Magnus.

CHAP.

CHAP. II.

Of VIVIPAROUS QUADRUPED'S, Particularly such as are BIFIDOUS, and SOLIDIPEDOUS.

THE LEG of a GREENLAND STAG. It is scarce four Inches long. Nor above $\frac{1}{3}^{d}$ of an Inch over. Cover'd all over with very short hair, of the ordinary russet or reddish brown colour. The hoofs somewhat black, $\frac{1}{3}$ inch long, $\frac{1}{3}$ broad, and $\frac{1}{4}$ high. Given by Mr. *Palmer*.

The BONES of a STAGS heart. About an inch and $\frac{1}{2}$ long, and $\frac{1}{4}$ broad. Very thin, but yet hard and solid. They seem to be a help for the stronger and more steady motion of the Muscules of the heart. Butchers often find the like in the heart of an Ox; which are easily substituted for the former: and I would as soon trust the one, as the other.

A STAGS TEARS. A thicken'd Excretion from the inward Angle of his Eye. In colour and consistence almost like to Mirrh; or Ear-wax that has been long harden'd in the Ear. Of a strong stinking smell, like that of the Animal's sweat. They are generally affirmed to be sudorifick, and of an Alexipharmick nature. And if they were as easie to be had, as some Womens, it were worth the trying.

They are quite a different thing from that little round and hard Bone, which *Scaliger* describes (*a*) by the Name of *Lachryma Cervina*, and which he affirms to grow in the great Corner of a Stags Eye to the Bone, after an hundred years old. I doubt a stranger sight, than the *Ludus Secularis*; such as no man (but himself) ever saw, or shall see.

(*a*) Exerc. 112.

The MUSK DEER. *Capreolus Moschi.* *Gesner* reckoning up the Names, tells us, That the *English* call him a *Musk Cat*. But is better at other Languages. He breeds in *China*, and the *East Indies*. Not ill pictur'd

in

in *Calceolarius*'s *Muſæum*. That in *Kircher*'s *China Illuſtrata* faulty as to the Snout and Feet. That of *Johnſton* abſurd. Almoſt every where worſe deſcrib'd. *That he is a two-horn'd Animal, ſays* Aldrovandus, *all agree, except* Simeon Sethi, *who ſaith he hath but one.* Neither of which is true. The Deſcription likewiſe given by *Scaliger*, and out of him by *Chiocco* in *Calceolarius*'s *Muſæum* is falſe, and very defective. The beſt I find is amongſt the *German* Tranſactions. To which I would have refer'd the Reader, but that comparing it with That I had drawn up before I met with it, I ſee ſome differences.

From his Noſe end to his Tail, a yard and ½ a foot long. His Head above ½ a foot. His Neck ¼ of a yard. His Forehead three inches broad. His Noſe end ſcarce ¼ of an inch, being very ſharp, like that of a Grey-Hound. His Ears like a *Coneys*, about three inches long, and erect. As alſo his Tail or Scut, which exceeds not two inches. His fore-Leg a foot and two inches long, taking in Foot and Thigh. Near an inch over: the Foot deeply cloven; with two fore-Hoofs, an inch and ½ long, each ¼ of an inch over; and two Heels, almoſt as big, and therefore conſpicuous. His hinder feet are here wanting.

His hair on his Head and Legs about ½ inch long, and rateably ſmall. On his Belly an inch and ½ long, and ſomewhat thicker. On his Back and Buttocks three inches long: thicker in proportion, than in any other Animal, except perhaps ſome of the Deer kind, *ſc.* three or four times as thick as Hogs Briſtles: conſiſting of brown and white portions alternately from the Root to the top. On the Head and Legs, brown; On the Belly and under the Skut, whitiſh. As it were frizled, eſpecially on the Back and Belly, by a kind of undulation. Softer than in moſt Animals, and exceeding light and rare. For being ſplit, and view'd with a Glaſs, they appear to be made up of little Bladders, like thoſe in the Plume or Stalk of a Quill: ſo that it is a thing betwixt a common Hair and a Quill. On each ſide his lower Chap, almoſt under the corners of his mouth, there is a peculiar Tuft (about ¼ of an inch long) of ſhort, thick and hard hairs, or rather Briſtles, of equal length, as in a ſcrubing-Bruſh.

The Musk Bladder or Bag is about three inches long,

two

two over, and swelling out from his Belly one and ½. Standing before his Groin about as much. I find it cut open, whereby the observation of its natural Aperture (which I suppose it hath as the Castor-Bag) is prevented.

He hath 26 Teeth. In his lower Chap, sixteen; of which there are eight little Cuters before; behind, four Grinders on each side, rugged and continuous. As many like Grinders in the upper Jaw. About an inch and ½ from the Nose end, in the same Jaw, on each side a Tusk, two inches and ½ long, hooked downward, and backward, and ending in a point. Not round, but flat, the breadth of ½ an inch; thin, and having a sharp edge behind: so as it may not unfitly be liken'd to a Sithe. There are no Horns.

The Hair of this Animal, by its softness and rarity, are a singular contrivance of Nature to keep him warm. For all Garments, the softer and rarer they are, (*cæt. par.*) they are the warmer. For the same cause, the Hair on his Back, is also the longest; *sc.* for the better protection of the *Spinalis Medulla*, His two Tusks, by the Figure, appear to serve for fighting partly, and partly for feeding; by the help whereof he is able either to stub up edible Roots out of the ground, or to tear off the Barques, or break down the Boughs of Trees. By the help of his great Ears, he hears his approaching enemy the further off, to make his flight. So also the *Hare*, being a fearful Animal, hath the like. Nature hath furnished him with great heels, both to enable him to make the greater leaps, and to light also upon his Feet the more safely, for by their means, the force of his weight is gradually broken.

Scaliger's mistakes (*a*) about this Animal, are principally these two; In saying his Tusks grow out of his nether Jaw; and in calling the Musk, A postemated Blood. For he might as well call Civet and Castor the Blood of those Animals that yield them. And if it were apostemated, it would not be separated from the Flesh, but contiguous to it: whereas it is plain, that the Musk was here inclosed on all sides, in an entire Cystis or Bag made by nature for that purpose.

(*a*) Exercitat. 21.

The VELVET HORNES of a *Greenland Roe-Buck.*

Buck. They are a yard high, with numerous, and round Branches. Covered all over with an aſhcolour'd hair, a ¼ of an inch long, and ſtanding upright, as the *Pile* of Velvet.

The HORNES of an *Indian Roe-Buck*; which the people of *Braſile* call *Cuguacu-apara.* See the Deſcription of the Animal in *Marggrarius.* His Picture in *Johnſton*; but under the name of the *Capreolus Marinus.*

The HORNES of a *Roe-Deer* of *Greenland.* They are very little more than an inch long, and half an inch over. They are pointed at the top, and knobed or tuberous at the bottom.

(a) Joh. de Laet. *from the Obſervation of* Alfonſus de Benavides.

Deer in *New Mexico* ſo big, (a) that they breed them up to draw with, as we do with Oxen and Horſes. So ſtrangely does the Climat alter the Bulk of ſome Animals. Dear, and they only, may be ſuppos'd to caſt their horns, becauſe they have neither a long Tail, as Oxen; nor ſo long hair as a Goat or a Ram; by either of which is made a continual conſumption of the ſame matter, which in Deer goes into the horns. The horns of Deer, are of all other the fulleſt of Volatile Salt. Which may lead us to conjecture of the like nature of his fleſh, and blood; and the cauſe of his great ſalacity.

The ROCK-DOE. *Ibex fœmina.* A kind of wild Goat. See the Deſcription of *Pliny*, and *Bellonius.* She breeds chiefly upon the *Alps.* A Creature of admirable ſwiftneſs. And may probably be that very *Species* mention'd in the Book of *Job.* (b) Her horns grow ſometimes ſo far backward, as to reach over her Buttocks.

(b) Chap. 39.

The HORNES of the WREATHED-Horn-Goat, or *Antilope* of *Barbary*, called *Capra Strepſicerotes*, and *Gazella.* See the Deſcription of the Animal in *Wormius.* Theſe Hornes are about a foot and ¼ long. But in *Septalius's Muſæum* there is one pair ſaid to be above a yard in length. They are twiſted into a kind of ſpiral ſhape, but the Rings which ſeem to be ſpiral, are really circular.

The BONE of the ANTILOPES HORN; which is ſolid, and alſo ſpiral or twiſted, but without Rings. Given by *Henry Whiſtler* Eſq;

The HORNES of the SYRIAN GOAT; called *Capra Mambrina* 1. *Syriaca* being. *Mambre*, a Mountain

tain near *Hebron*; where about, chiefly, this Goat breeds. (*a*) See *Gesner's* Description of him. And compare it with the Picture he gives, which seemeth to be the truer, as to the hornes. His Ears are so long, (*b*) as to reach almost to the ground. A sufficient supplement for the shortness of his hornes: being not above two inches and ½ long, and a little crooked backward, almost like a Dogs Tooth.

(*a*) Gesner *in his* Paralypom.

(*b*) Gesner ibid.

The HORNES of a DOG-GOAT. I find them inscribed, The hornes of a Dog. *Johnston* giveth the figure of the Animal, without any Description. According to that figure, he is headed like a Dog, and of the bigness of a Tumbler. But footed, and horned like a Goat. To whose also the hornes here preserved are like in colour, and somewhat near in shape: but nothing near so big; being not much above two inches long. Not only the hornes themselves, but also the bones whereon they stand, are hollow to the top. They were sent from a certain Kingdom near *China*.

The HORNES of a HARE; so I find them inscribed. Although it is probable, that they are the hornes of a small kind of *German* Deer. Yet *Wormius* saith, There are horned-Hares in *Saxony*. See also *Gesner* of the same. *Johnston* gives the Picture, without a Descripton. This pair, once belonged to the Prince Elector of *Saxony*.

A pair of very great *English* Rams HORNES.

The HORNES of a *Spanish*-Ram. In length, ¾ of a yard. The Tips a yard distant. Somewhat flat, wrinkled, and twisted, as those of an ordinary Ram.

The HORNES of a MUSCOVY-Ram. I meet no where with the Description of the Animal, or these Hornes. He seemeth to be of kin to the *Hircus Cotilardicus*, which *Johnston* hath pictur'd. These hornes are black: and somewhat wrinkled. Consist of four Branches: The two greater whereof are a foot long, and as thick as an ordinary Rams, very strait, standing in the form of the letter V, or like the legs of a pair of Compasses, and a little writhen. The two lesser are seven inches long, not so thick, winding downward, and inward one towards another, in the form of two half Moons. The points of all four very blunt.

A very great HORN of the ROCK-BUCK, or

of the *Ibexmas.* In ſhape almoſt like a bended Croſs-bow. By the ſtring, ¾ of a yard long; but by the bow, about an Eln. It was formerly tipp'd with ſilver, and kept in a Gentlemans houſe, and ſhew'd (to ſome ſpecial Friends) for the Claw of a *Griffin.* See the figure hereof in *Moſcardus*'s *Muſæum.*

The HORNES of a WILD BULL; called *Bubalus ſive Buffalus.* They are broad at the Roots, but grow very ſharp of a ſudden; and bended inwards about the middle; ſo that the Tips are not above two inches diſtant. See the Animal deſcrib'd in *Bellonius*, and others. He is much bigger than the *Europæan* Bull. This kind breeds moſt in *Aſia.* But they are alſo kept in *Italy*, in their Cities. In *Indi*a they ſell the Milk of the Female about the ſtreets, as they do Cows Milk here. The Leather call'd *Buff*, is made of the Hyde. Theſe Hornes were brought from *Africa.*

The HORNES of the BUNCH-BAK'D BULL. *Cornua Biſontis.* This pair belongeth to that *Species*, which hath a great Maine. Theſe, contrary to the former, ſtand wide, and eſpecial upwards, their Tips being ½ an Eln diſtant. See the Deſcription of the Animal in *Aldrovandus*, his Picture in *Johnſton.* He is ſwifter than any other Bull, and untameable. He breeds in *Lithuania.* To the hornes is joyn'd the fore-part of the skull, together with the skin, which is very thick and tough. The skin of any Bulls Forehead, either for its toughneſs, or other cauſe, is the only part of the Hyde made uſe of by *Horners*, whereupon they ſhave their Hornes (which they take out of a Tub of warm water by them) to fit them for *Lamp-horns.*

The TAIL of an *Indian* COW. The Male is call'd *Bonaſus.* The hairs hereof are greyiſh. Above a yard and ¼ long. Yet almoſt as ſoft and fine as a Womans. The Cow is ſaid to be worſhipped by the people that live near the River *Ganges.*

A little STONE out of an Oxes Liver. Inſcribed *Tetraedrum inventum in Hepate Bovis.* But I find it broken into ſeveral pieces. It is juſt of a liver-colour. And is compos'd, as the *Bezoar* Stone, of ſeveral cruſts or ſoft ſhells one over or within another.

A MON-

A MONSTROUS CALF with two heads. Each head is a little leſs than uſual; the reſt of the parts according to Nature.

The SKIN of a CALF with two heads, tann'd with the hair on. There is a very ſtrange ſtory of a Monſtrous Calf in the *Philoſ. Tranſ. N.* 1. *&* *N.* 2. compar'd together: communicated by the Honourable Mr. *Boyle.*

The TUSK of a Wild BOAR. It winds about almoſt into a perfect Ring or Hoop; only is a little writhen. In meaſuring by the ambit, 'tis long or round about a foot and two inches. Its baſis an inch over. Almoſt all the way triangular, eſpecially towards the point.

Another BOAR-TUSK, ſomewhat ſlenderer, and of a ſemiannular Figure.

The wild Boar breeds in *Helvetia*, eſpecially near the *Alps*. In *Barbados* very great. *Ligon* (*a*) ſaith, he ſaw there one ſo big, that when his head was off, and his entrails taken out, weighed 400 *l.* It was well obſerved by *Ariſtotle* (as to thoſe Beaſts which he had ſeen) that no one was horned and tusked too: (*b*) the ſuperfluous parts of the blood proper for their production, not being ſufficient to feed them both.

(*a*) Hiſtory of *Barbados.*

(*b*) Hiſtor. Animal. lib. 2. c. 1.

The SKULL of the HORNED HOG. By the people of the Iſland *Bouro*, not far from *Amboina*, he is called *Baby Rouſſa.* (*c*) See the Picture hereof in *Bartholine*, (*d*) taken in *Java*, from whence he received it. As alſo the Deſcription, though but imperfect. See likewiſe *Guilielmus Piſo*, (*e*) who gives a figure ſomewhat different, making him ſlenderer and ſhaped in Body like to a Deer. But his Deſcription ſeems to be taken out of *Bartholine.* His principal Characters are theſe, About as big as a *Stag*, ſnouted and tailed like a *Boar*, footed like a *Goat:* beſides what is obſervable in the skull, which I ſhall now particularly deſcribe.

(*c*) Barthol. Hiſt. Cent. 2.
(*d*) Ibid. 2.

(*e*) In Boutius's Hiſt. N. Ind. Orient. l. 5. c. 9.

It is a foot long, ſeven Inches high, and about five over. The Snout ſcarce two. The Teeth are 32. In the upper Jaw, four Cuters; in the nether, ſix. In each Jaw, ten Grinders. In the lower Jaw, two Tusks, one on each ſide, like thoſe of a *Boar*, ſtanding outerly, an inch behind the Cuters; near their Root, ¼ of an inch over, ſharp-pointed, hooked very much backward; by the bow, four inches long.

On his upper Jaw, he hath two *Horns*, of the ſame hardneſs and ſubſtance with the two great Teeth now deſcrib'd: and *Bartholine* (*a*) calls them Teeth. Yet are they not Teeth, but *Horns*; becauſe they are not, as all Teeth, even the Tusks of an *Elephant*, fixed in the Jaw with their Roots upward, but downward: and ſo their *Alveoli* are not open downward within the Mouth, but upward upon the top of the ſnout: where theſe *Horns* bore or pierce the fleſh and skin, as the Teeth do the Gooms. Yet being two, they ſtand not in the middle, as in the *Rhinoceros*, but on the ſides of the ſnout, *ſc.* behind the Cuters about two inches. Near their Roots about half inch over, ending in a ſharp point, bended upward and backward like a fiſh-hook, by the bow about ½ a foot long.

(*a*) Hiſtor. Cent. 2.

Piſo (*b*) deſcribing of it, ſaith, That in his nether Jaw (his upper Jaw he deſcribes after) there are two great Tusks which ſtand upright, and bore through his ſnout (*Roſtrúmq; perforantes*): which is a ſenſeleſs miſtake. *Bartholine* indeed ſaith of the Horns (which he calls the Teeth) of the upper Jaw, —*prodeunt ex ſuperiori Maxilla carnem Roſtri perforantes*: which *Piſo* tranſcribing, miſtakes, and feigns as great an abſurdity, as if Nature had put a Padlock or Bolt upon the Creatures Mouth.

(*b*) In Bont. Hiſt. N. Ind. Orient. l. 5. c. 9.

Ariſtotle, as was before noted, ſaid well, as to the Animals he had ſeen, That no one hath both Tusks and Horns. But of his fault in affirming too generally, this Animal is not the only inſtance, by many. The reaſon why this hath both, may be, becauſe neither of them are very great, and his Horns, proportionably to what they are in others, are very little. Beſides that he is cover'd with hair, and not, as the Boar, with Briſtles, which probably ſpend more upon the ſame matter, which in other Creatures makes the Horns. For *Briſtles* ſeem to be nothing elſe but a *Horn ſplit into a multitude of little ones.*

This Creature is ſaid (*c*) to breed only in the Iſland *Bouro*. Yet that which the *Braſilians* call the *Tajacuguitas*, (*d*) may be the ſame. As alſo *Pigafeta's Porcus Quadricornis*. There are Swine, ſaith he, (*e*) in the *Philippick* Iſlands, with two, three, and four Horns. He might miſtake the two Tusks for Horns; and from thoſe which he ſaith had but two or three, they might be violently broken off.

(*c*) Piſo in Bont.

(*d*) Joh. de Laet, *out of* Lerius.

(*e*) Cited by *Aldrovandus.*

Another

Another SKULL of the BABY ROUSSA. It is altogether like the former, saving that the Tusks and Horns are not so crooked. So that one seems to be of the elder, or the Male, the other of the younger, or else the Female. Both the Natives, and others that live amongst them, esteem this Animal a delicate sort of Venison. (*a*)

(*a*) Piso in Bontius.

The SKIN of a young RHINOCEROS, composed indifferently to the shape of the Animal. In the Description whereof *Jacobus Bontius* (*b*) comes the nearest to the truth. Yet is he very short and defective. To whose therefore, as far as may be by this Skin, I shall add a better.

(*b*) Histor. Nat. Ind. Orient.

'Tis a yard long, and almost a foot over; his head nine inches long, almost eight over at the top. His Snout broadish, as in a Calf. His Eyes little, as those of a Hog, about ¼ of an inch long. They stand low, not much more than three inches above his Nose end. His Ears also like a Hogs. His Legs, as of the *Hippopotamus*, rateably short; about ten inches long. His Tail, five and ½; flat, as that of the Castor; but not so broad, near the Buttocks an inch and ½, at the end ½ an inch.

The said Skin is every where thick, and very hard; excepting only his Ears which are softer, and extream thin. It hath about ten *Plicæ* or Folds; two under the nether Jaw, one on the Breast, in the figure of the letter V, on the Neck one on each side, one between the Shoulders semicircular, on the Back two transversly extended to the bottom of the sides, with two more strait ones, carry'd obliquely on the Buttocks.

The lower part of the Forehead and Snout cover'd with a kind of hard Crust. His Ears naked and smooth. All the other parts rough with round scaly Crusts; on the Back, Sides, and Belly, lesser, near a ¼ of an inch over; on the nether Chap and Shoulders, bigger; on his Buttocks and Legs, the biggest, about ½ an inch over. His Hair is black, short, and fine. So few, that there are not many more than scales or shells; growing for the most part, out of the centre of the shell; so that he is almost naked. His Dock is also naked on both sides, but on the edges there grows a considerable quantity of longer and thicker Hair. The Animal being very young, had no Horn, nor so much as any sign of it.

The

(a) Hiſtor. Nat.

(b) Ibid.

The *Rhinoceros*, ſays *Bontius*, (*a*) is near as big as an *Elephant*, ſaving that he is not ſo tall. He will lick a Man to death, (*b*) by raking away the fleſh to the Bone with his rough and ſharp Tongue.

In *Piſo*'s Figure, which he hath added to *Bontius*'s Deſcription, and which, he ſaith, was taken from the life, the Eyes are placed very low, as they are alſo in this Skin. But the Cloven-Feet, in the ſame Picture, I find not here: peradventure, the Skin not being well taken off the Feet.

In the time of *Domitian* the Emperour, there was one ſo big, as to toſs not only a Bear, but a Bull upon his Horn.

(c) Mart. Epigr. 22. & Epigr. 9. lib. 1.

(*c*) But what *Martial* means, ſpeaking of the *Rhinoceros*,

Namq; gravem gemino Cornu ſic extulit Urſum, &c.

I do not well underſtand. The Figure given by *Piſo*, as above, repreſents but one Horn only. Neither doth *Bontius* (who ſaith he hath ſeen great numbers of them both in houſes and in the woods) deſcribe or mention any more than one Horn, And thoſe who do ſpeak of another, yet make it a very ſmall one, and not over againſt the other, but on the forepart of his back, and ſo in a place where it is immoveable, and can no way be made uſe of for the toſſing up of any thing, as the other on his Noſe.

(d) Linſchot p. 88.

The *Rhinoceros* breeds not in *India*, (*d*) but in *Bengala* and *Patane*, where they much frequent the River *Ganges*.

A piece of a great RHINOCEROS-SKIN, tann'd. 'Tis wonderful hard, and thick, about ½ inch; exceeding that of any Land Animal which I have ſeen.

The HORN of a RHINOCEROS. It once belonged to the Duke of *Holſteine*. Although *Bontius* deſcribes the Animal the beſt of any before him, yet neither he, nor others deſcribe the Horn to any purpoſe. 'Tis in colour and ſmoothneſs like thoſe of a Bull. Almoſt a yard long. At the baſe, above half a foot over; and there ſurrounded with a Garland of black and ſtubby Briſtles. Sharp-pointed. A little crooked backwards, like a Cocks Spur. Quite through ſolid. An inſtance contrary

trary to that Assertion of *Aristotle*, (a) Ἔστι δὲ τὰ κέρατα δι' ὅλου στερεὰ τοῖς ἐλάφοις μόνοις. (a) De Partib. Animal. l. 3. c. 2.

Another HORN of a RHINOCEROS, as big as that now describ'd. Given by Sir *Robert Southwell*, present Embassador to the Prince Elector of *Brandenburge*.

A THIRD, almost as big as the former.

A FOURTH, a little one, about a foot long.

The *Rhinoceros* fights the *Elephant* with his Horn, and sometimes overcomes him. In *Septalius*'s *Musæum* there are several Vessels mention'd to be made out of this Horn, as well as divers others. The *Rhinocerous* Horn, in *India*, as also his Teeth, Claws, Flesh, Skin, Blood, yea Dung and Piss, are much esteemed, and us'd against Poison, and many Diseases; and sold at great rates. (b) Yet some for an hundred times as much, as others of the same colour and bigness; for some difference which the *Indians* (only) discern betwixt them. (c) (b) Linsch. p. 88. (c) Ibid.

The TAIL of a great RHINOCEROS. Not well described by *Bontius*. The Dock is about ½ inch thick, and two inches broad, like an *Apothecaries Spatule*. Of what length the whole, is uncertain, this being only part of it, though it looks as if cut off near the Buttock; 'tis about nine inches, black, and very rough. On the two edges, and there only, grow also very black and shining hairs, a foot long, stubborn, and of the thickness of a smaller *Shoomakers* Thread. Yet not round, as other hair, but rather flatish; like so many little pieces of Whale-Bone.

A SPIRAL or WREATHED TUSK of an ELEPHANT. Presented from the Royal *African*-Company by *Thomas Crispe* Esq; 'Tis about an Ell long. At the base, a foot about. From the thin edges whereof, it is chonically hollow to the depth (or height) of near ½ a yard. It is twisted or wreathed from the bottom to the top with three Circumvolutions, standing between two strait lines. 'Tis also furrow'd by the length. Yet the furrows surround it not, as in the horn of the Sea-Unicorn; but run parallel therewith. Neither is it round, as the said Horn, but somewhat flat. The Top very blunt.

Pausanias (cited by *Gesner*) affirms, and seems to speak it as a thing well known, That the Tusks of *Elephants*, which he calls, and useth arguments to prove them Horns, may, by

by the help of fire, like Cows horns, be reduced to any ſhape. Whether this be naturally twiſted, or by art, I will not determine. *Terzagi* in *Septalius's Muſæum* mentions though not a Spiral, yet ſtrait Tusk of an *Elephant*, two yards high, and 160 pounds in weight.

The LEG BONE of an ELEPHANT. It was brought out of *Syria* for the Thigh-Bone of a Giant. But the proportion which the thickneſs bears to the length of the Bone, ſhews it to be the Bone not of a Man, but an *Elephant*. For the Leg-Bone is uſually about ½ of an inch over: and ſo its traverſe *Area* contains about (49) ſquare eighths of an inch. But this Bone is above four inches over, in the tranſverſe *Area* whereof therefore, are contained about (1088) ſquare eighths of an inch. Which number (1088) being divided by (49) gives (22) for the Quotient. So that it is two and twenty times as thick as the Leg-Bone of a Man: I mean, the tranſverſe *Area* of the one containeth that of the other 22 times. Yet is it but three times as long; and therefore ſhould contain the ſame but about nine times, were it the Leg-Bone of a Man. 'Tis about a yard and ½ foot long, and above a foot about in the ſlendereſt part. And the ſhape of it, ſhews it to have belonged to the Leg, and not the Thigh. The *Elephant* to which it did belong, might be about five yards high.

Another LEG-BONE of an ELEPHANT, ſcarce ſo long, but of equal thickneſs. Given by Sir *Thomas Brown* of *Norwich*.

Elephants are brought into *Europe* out of *Ceylan*, *Sumatra*, *Cochin*, *Siam*, *Bontam*, *Melinda*, &c. But they breed moſt in the Kingdoms of *Aracan* and *Pegu*. (a) In the Iſland of *Ceylon*, moſt docile. The *Æthiopians* behind *Moſambique* eat them, and ſell their Teeth. The *Indians* uſe them to draw, and ſhip their Goods. In Winter, when it begins to rain, they are altogether mad and ungovernable, and ſo continue from *April* to *September*, chain'd to ſome Tree; after that, they become tame and ſerviceable again. (b) See more of the nature, and ingenuity; and of the way of hunting and taming them, in *Linſchotus* and *Tavernere*. (c)

(a) Linchol. p. 29. &c.

(b) Ibid.

(c) Eaſt. Ind. Voyage.

One of the GRINDERS of an ELEPHANT. He hath four of theſe Teeth in each Jaw, wherewith he grinds his meat. This here is above a foot long. But

the

the exerted part, or that part which ſtands above the Goomes, is but ſeven inches in length, and three in breadth. 'Tis not above ½ an inch above the Goomes, but faſten'd within the Jaw ½ a foot, where deepeſt. The ſaid exerted part looks like eight or nine Rows of Teeth, three, four, and five in a Row, all coaleſcent. The ſides all along waved. The furthermoſt Roots like the folds of an old ſet Ruff. It weighs above eleven pounds and ½ *Haver-du-poyſe.*

ANOTHER of the ſame Teeth, ſomewhat leſſer.

A THIRD, having part of it broken off.

The *Elephant*, in my mind, hath ſome affinity with the *Boar*. Both are Taper-Tail'd, hunch-back'd, little-Ey'd, arm'd with Tusks, have the nether Chap ſharp before, and a moveable Snout; the *Elephants Proboſcis* being but a long Snout, and the *Boars* Snout a ſhort *Proboſcis*.

The HOOF of a *Solidungulous* Animal. It was brought from *Angola*. Perhaps of a kind of *Zebra* there, anſwering to the *Indian* deſcribed by *Pigafeta*. 'Tis much about the ſhape of a Horſe's, but not ſo big; two inches and ½ broad, two inches long, and as much in height. Somewhat thick and ſtrong. For the greateſt part, blackiſh; but juſt before yellowiſh, and half tranſparent. Within this is contained another young one (together with its incloſed Bone) all over of a yellowiſh colour. The *Zebra, Indica*, (*a*) is in all his parts like a *Mule*, ſaving that it is not barren. (*a*) Aldrovandus.

Another ſtrange HOOF of a *Solidungulous* Animal. It is of a blackiſh brown and opacous colour. Very thin, like that of a Calf. But rateably much broader than in other Animals, being not much above an Inch over foreward, yet expanded ſide-ways two inches and a ¼.

Another HOOF of the former kind, a little leſs, blacker, and altogether opacous.

APPENDIX.

Of certain BALLS found in the Stomachs of divers Beaſts.

A NAKED and round HAIRY BALL; almoſt three Inches over, taken out of the Stomach of a Calf.

Another ſomewhat Oval, and more compact.

Several other leſſer ones, and with the hairs more looſely compoſed.

Another, with the outward parts of the hair not complicated, as in the former, but ſtanding parallel, and ſomewhat winding, as in the Crown of a Mans head.

Two HAIRY BALLS, SPHÆRICAL, and INCRUSTATED. About two inches Diametre, cover'd with a ſmooth and very thin Cruſt, of the colour of Occidental *Bezoar*, having neither taſt or ſmell, nor ſtirring at all, upon the effuſion of Acids.

A HAIRY BALL, incruſtated, and FLAT. Taken out of the ſtomach of a Bull in *Braſile*. 'Tis very ſmooth, and of the colour of Oriental *Bezoar*. Figur'd juſt like a Bowl. Somewhat above two inches thick, and three, over. *Ferranti Imperato* (*a*) hath another like it. If you ſcrape a little of the Cruſt off, and pour ſpirit of *Nitre* upon it, it makes a conſpicuous bullition, as it doth upon *Bezoar*. (*b*)

(*a*) Lib. ult.

(*b*) See the Author's Diſcourſe of the Luctation ariſing from the mixture of Bodies.

Another BALL, in figure, colour, and ſubſtance, like the former; but bigger, being above three inches Diametre. It was taken out of the ſtomach of a Cow.

Another with the like Incruſtation, but of an Oval Figure.

A FIBROUS BALL. Conſiſting, not of Hair, but for the moſt part of the fibers of Plants. Perfectly Sphærical. An inch and ½ Diametre. Cover'd with a brown, and very rough Cruſt. The like ſubſtance being alſo mixed with the moſt intimate parts of the Ball.

Another like Ball, but ſomewhat leſs.

Half a FIBROUS BALL taken out of the ſtomach of

of a Sheep. Two inches over, and a little flat. It consisteth of most fine herby Threads or Fibers, short, and very closely compacted. Cover'd with a black, shining, and most thin Cuticle. A piece hereof fired, burns like Match-cord, all away to ashes.

These Balls, especially those of Hair, we may suppose to be made by the motion of the stomach, which in these Creatures is very strong, and frequent: by which motion the Hair is wrought and compacted together, as Wooll is, by the Workmans hand, in the making of a Hat.

CHAP. III.

Of OVIPAROUS QUADRUPED'S.

A Femal LAND-TORTOIS. *Testudo terrestris famina.* Usually described, but no where fully, nor without errors. This here is eight inches long, and five broad. The Head an inch and ½ long, almost as broad; in shape somewhat like a Toads. The Orbits of the Eyes very large, almost ½ inch over; a ¼ of an inch behind the Snout. The lower Chap is received by a groove into the upper. The Tail three inches long, and sharp-pointed. The Feet two inches and ¼, and above ½ inch over. The fore-Feet have five very short Toes, with Claws about ¼ inch long. The hinder feet have but four Toes, with somewhat bigger Claws.

The Head, Back and Belly, have all bony Covers, faced or over-laid with shells. The head and back-pieces blackish, with citrine or straw-colour'd specks sprinkled up and down upon them. The back-piece convex, and almost Oval. On the sides, for the length of two inches as it were doubled inwards, and joyned to the Belly-piece. 'Tis cancellated with little squares on the Margin; on the top of the back, sexangularly; and with the largest *Area's* between. The Belly-piece is party-colour'd black and citrine, almost flat; but turned up a little at the ends. Cancellated in the middle with squares, with triangles before, and behind with Hyperbolick lines. The Feet are cover'd with small round Scales, the Tail with square ones. He breeds in the Deserts of *Africa.*

Three little LAND-TORTOISES of the same kind.

Another little LAND-TORTOISE, of kin to the former. 'Tis somewhat rounder.

A lesser LAND-TORTOISE, almost circular and ridged on the back.

A great CHEQUERD TORTOISE-SHELL. *Testa Testellata major.* It was sent from *Madagascar.* I find the Animal no where describ'd or figur'd. It is above half oval; being of all that I ever saw, the most concave; a foot long, eight inches over, and almost six inches high.

The Convex is curiously wrought with black and whitish pieces, alternately wedged in, one against another, and notched, as it were, with transvers Incisions. Those near the Margines and on the sides are composed into several Pyramidal *Area's*, or great Triangles, whose Bases are about two inches broad. On the Back, into sexangular ones, each of them convex. On the sides, and quite behind, the Shell is carry'd somewhat inward. Before, and hinderly, the edges are toothed, and bended outward and upward. The inward edges are cover'd with shelly Plates above an inch and ½ broad.

The Concave is composed of six and forty Bones. Along the middle of the Back, are twelve, all, except the foremost and the four last, almost square. Next to these, are eight on each side, like to so many contiguous Ribs; together with two lesser square Bones before: Next to these, eight more, as it were, under-Ribs, on each side. To the twelve middlemost Bones, the Ribs are joyned by an alternate commissure, so as one of them answers to the halfs of two Ribs, *& vice versa.* To these, the under-Ribs, in a wonderful manner, *scil.* by a branched Suture or Indenture. For the great Teeth of the under-Ribs, being first inserted into those of the upper-Ribs; the Indenture is afterwards repeated, by lesser Teeth, out of the sides of the great ones. The Belly-piece is here wanting.

Besides the most elegant ordering of the Work in the Convex, there are three things chiefly observable, which serve for the greater strength of the Shell. That is to say, The *Convexity* of the several *Area's* on the Back, the

branched

branched Sutures, and the *Alternate commiſſures* of the Bones. Anſwerable to the Rule of Nature, in a *Humane Skull*: and of Art, in the laying of *Stones* in *Buildings*; and in covering of broader Vaults, not with one *Arch*, but ſeveral leſſer ones, for the greater ſtrength.

A leſſer CHEQUER'D SHELL. Perhaps *Stellata Wormii*, (*a*) or a kin to it. The Convex work is compoſed of black and citrine pieces, cancellated, and tranſverſly notched; ten, eleven, or twelve of them meeting in a ſquare, and rugged centre; each looking like a Star ſurrounded with Rays. The ſeveral *Area's* riſe up into a convexity ſomewhat greater, than in the Shell above deſcrib'd. Juſt before the Tail, the edges are bended a little upward; over the Tail, downward. The Belly-piece is joyned to the Back-piece for the length of two inches and $\frac{1}{2}$, with the edges turned upward. The middle of it flat, ſtreak'd, and cancellated; the hinder part endeth in a double broad point.

(*a*) See his *Muſæum.*

Two more CHEQUER'D SHELLS of the ſame *Species*; ſaving, That here are not ſo great a number of Rays to each Star.

Another of the ſame; excepting, that the ſeveral arched pieces are not ſo high, as in the former.

A CHEQUER'D-SHELL, from *Suranam*. I think no where deſcrib'd, or figur'd, unleſs perhaps by *Moſchardus*. The convex work is compoſed of black and citrine pieces, in the Margin, of a Pyramidal or wedged Figure, oppoſitely ſet, and with *tranſverſe* Notches: amongſt which there are alſo little ſquare, rugged, and citrine pieces intermixed. All the reſt, which are alſo black and citrine, are ſix times as big, adorned not with tranſverſe but *paralell* Notches. Neither are they Radiated, but ſeveral of the ſame kind contiguous ſide to ſide. They are compos'd into *Area's* almoſt flat: the centres whereof are alſo rugged, but much bigger than in the Shell laſt deſcribed. The Belly-piece is alſo leſs convex.

Another of the ſame *Species*.

Another CHEQUER'D SHELL from *Suranam*, of kin to the laſt deſcrib'd. The edges of this are round about, excepting before, turn'd up outward. The Back alſo is leſs convex; the Belly, more deep.

Another

Another of the ſame *Species*.

A CHEQUER'D SHELL from *Virginia*. 'Tis in figure ſomewhat like the femal *Tortoiſe* firſt deſcrib'd. Saving that it is more convex, and divided into *Area's* alſo ſomewhat convex, and with tranſvers Furrows or Notches. 'Tis alſo near the Tail, turned up outward; but the hindermoſt part bended inward.

Another Shell of the ſame *Species*.

Another, like the firſt deſcrib'd, excepting alſo, That it is more convex; and inſtead of ſpecks, hath long ſtreaks, and great blotches.

A SCALY TORTOISE SHELL. It ſeems to be of the Lutarious kind. I find it not deſcrib'd, or figur'd. Above a foot long, ten inches broad, convex to the height of 3 ½. The convex, all along the middle, high ridg'd. Compoſed of Scales, very ſmooth, particolour'd, of a browniſh red and citrine; in the utmoſt edge leſſer, and almoſt ſquare, but with acute Angles prolonged towards the Tail, and towards the Head doubled downwards. The reſt are five, ſix, and eight times bigger, ſet alternately, as the Scales in Fiſhes, or Slate-work upon a houſe. The Concave is ſtrengthened with a Back-Bone, and eight Ribs, obliquely appendent, on each ſide. The Belly-piece is here wanting.

A SEA-TORTOISE. Curiouſly figur'd by *Beſler*. (*a*) Deſcribed by *Aldrovandus* and others. He differs from the Land-*Tortoiſe*, chiefly, in having a more rude, and ſofter ſhell, and Feet rather like the Finns of a Fiſh, as proper to ſwim with. As alſo in Bulk. In the *Braſilian* ſhore, ſaid to be big enough, for one ſometimes to dine fourſcore men. (*b*) In the *Indian*-Sea ſo big, (*c*) that the ſhells ſerve the Natives for Boats. In the Iſland *Cuba* ſo great, that they will creep along with five men upon their Backs. (*d*)

(*a*) Faſcicul. Rariorum.

(*b*) Muſ. Roman.

(*c*) Ibid.

(*d*) Joh. de Laet.

He ſquirts the water out at his Noſtrils, in the ſame manner as the *Dolphin* doth at his Spout. (*e*) In Generation, the embraces of the Male and Female continue for a whole Lunary month. (*f*) They take them, by turning them on their Backs with ſtaves, in which poſture they lie, till they are fetch'd away. (*g*) As they lie on their Backs, they will ſometimes fetch deep ſighs, and ſhed abundance

(*e*) Rondelet

(*f*) Trapham's Diſc. of Jam. Cap. 4.

(*g*) Lig. Hiſt. of Barbados.

abundance of Tears. (*a*) They kill them, by laying them on their backs, and so ripping them up round about where the Back and Belly-pieces meet. (*b*) They abound in the *Caribdy* and *Lucayick* Islands, and in *Jamaica*, As also in the *Red-Sea*.

(*a*) Trapham, ut sup.
(*b*) Lig. Hist.

Of their Nature, Generation, and inward Parts, see some Observations in the *Philos.* Transactions. (*c*) The flesh hereof maketh a most pleasant jelly. (*d*) The *Callapee*, *i. e.* the Belly-part so called, baked, is an excellent Dish. (*e*)

(*c*) N. 27. & N. 36.
(*d*) Trapham's Disc. *of* Jam.
(*e*) Ibid.

The Legs, saith *Schroder* out of *Solenander*, applied to the part affected, are a most experienced Remedy in the Gout. In *Turky*, the Shells are used for Bucklers. In *Tabrobana*, to cover their houses. (*f*) In *China*, (*g*) to make Girdles for Noble men.

(*f*) Ælianus.
(*g*) Mus. Rom.

A LITTLE SEA-TORTOISE, taken out of the Egg.

The SHELL of a Sea-*Tortoise*.

The HEAD of a SEA-TORTOISE. 'Tis large, and so shews the make of the Mouth the better: where the sharp and toothed edge of the nether Chap, strikes into a Canale cut into the Bone of the upper; and the toothed protuberance of the upper, into a Canale in the nether: by which means he easily sheers the Grass, or other Plants, whereon he feeds. Given by Mr. *John Short*.

The SKULL of a SEA-TORTOISE, Nine inches long. The head of a Sea-*Tortoise* a foot long, is but about two inches. Therefore the *Tortoise* to which this skull belong'd, was a yard and half in length.

Three other SKULS about the same bigness. One whereof, given by *Henry Whistler* Esq;.

Two pieces of the SHELL of a very great TORTOISE, each with a Rib fixed in it. Given by Sir *Robert Southwell*.

The HEART of a SEA-TORTOISE. It is about as big as a Lambs. Herein both the single *Ventricle*, and two *Auricles*, are all plainly visible. *The Hearts of all great Animals*, saith *Aristotle*, (*h*) *have three Ventricles; of lesser, two; of all, at least one.* One would a little wonder, how so observing a man, should discover so many mistakes, in so few words.

(*b*) De Part. Anim. lib. 2. c. 4.

The PISLE of a SEA-TORTOISE. 'Tis fourteen inches long, and two and ½ round about. In substance like a Bulls. There are three more about the same bigness.

See

(a) Hist. of Barbad. p. 118.

See the great efficacy attributed hereto by *Ligon*, (a) in curing him of two Fits of the Stone.

An EGG of a SEA-TORTOISE. 'Tis very white, and *Sphærical*, which I find no Author distinctly to say, but only to be like the Eggs of Fowls. About the bigness of an Hand-Ball. The shell rather thinner and softer than of a Hen's. She lays them in the sand, where they lie till they are hatch'd. Sometimes above a hundred at a breed.

The CHAMÆLEON. By *Wormius* well described. *Johnston*'s Figure, especially as to the feet, very false. A most curious one in *Calceolarius*. As also in *Besler*, saving that his eyes are drawn somewhat too little. Of the skin it may be noted, that 'tis every where rough, as it were, with little round blisters or knobs; on his Head and Back, greater; on his Legs, Sides and Belly, lesser; of the bigness of Silk-worms Eggs. As also, that his hinder Feet are thicker than the fore-Feet: and the Heels or hinder Toes as long again, as the other; whereas in the fore-Feet, they are all of a length. The shape of his hinder Feet is therefore the better fitted to assist him in the climbing of Trees; the Heels being like strong Leavers to hoist him up. And the *make* of his Skin, for the changeableness of his Colours; which seems to depend on the falling or swelling of the said Knobs; whereby the light, receiving different Reflections, produceth different Colours. Of his Colours, saith *Scaliger*, (b) from the Observation of *Joh. Landius*, it is not so properly said, that they are chang'd, but only the several *Species* highten'd or deepen'd. He hath a long Tail, as a *Lizard*, but slenderer: which, (c) as he descends from a Tree, he laps round about the Boughs, to keep himself from falling. His Feet also are all made where with to take fast hold.

(b) Exercit. 196. Sect. 4.

(c) Panarolus.

Of the inward Parts, see the *Philos. Transf. N.* 49. But especially *Dominicus Panarolus*, who together with his Medicinal Observations, hath published the Description and Anatomy hereof. Amongst other particulars, the Muscular Membrane of the Eye, by which singly all those motions are perform'd, which in other Animals require six, and in some seven Muscules, is remarkable. As also the distinct continuation of the Optique Nerves from their Original to each Eye; whereby the uniform or conjunct motion of both his Eyes is not necessary, as in other Creatures;

Creatures; but he is able to move one upward or backward, and the other downward or forward, or any other way, at the same time. No less the fabrick of his Tongue; which being hollow from end to end, with a string running through the hollow, fasten'd behind to the *Os hyoides*, before to its extremity, it darts out and contracts it self in an instant: and with a Viscous substance at the end, catches the Prey, which are Flys and other Insects, as we use to do Birds with Limetwigs. Thus far *Panarolus*.

In the *High-hoe*, and other Birds of this kind, there is a peculiar *Cystis*, wherein a Viscous matter, like that above mention'd, is stored, and a Pipe deriving it thence into the Mouth; the Description whereof I may hereafter publish. I suppose therefore, that upon further examination; the like Contrivance will be found in a *Chamæleon*.

It may be noted, That *Panarolus*, about the beginning of his Description, calls the *Chamæleon* a slow Creature: Yet saith afterwards, (towards the end) that he climbs Trees so wonderfully swift, as if he flew. He is not therefore so properly slow, as perhaps sullen and humerous.

Bartholine (*a*) hath also the Anatomy of this Animal, but transcribes it all out of *Panarolus*. In one particular much forgets himself, saying about the beginning of his Discourse, that the *Chamæleon* hath very great Lungs; and in the end, that they are but little. (*a*) Hist. Cent. 2.

A young brown CHAMÆLEON.

A third, with black, yellow, and ash-colour mixed together.

A CROCODILE, about two yards and ½ long. He differs not much from a *Lizard*; chiefly in his Bulk, and the hardness of his Skin, which on his Back hath Scales proportionably hard and thick. In *Paname* there are some an hundred feet long; as is affirmed both by *Joh. de Lopez*, (*b*) and *Joh. de Leri*. (*c*) In the *Musæum Romanum*, there is a Tragical Relation of a very great one that devoured a Virgin, *Cap.* 6. The same Animal which in the Book of *Job* is called the *Leviathan*, and hath been commonly taken to be the *Whale*; but falsly, as *Bochart* hath demonstrated. He is tolerably well described by most; and curiously figur'd by *Besler*. He breeds in divers places in both the *Indies*, as well as in *Egypt*. (*b*) Hist. Ind. l. 6. c. 1. (*c*) Cap. 10.

Nature, saith *Aristotle*, hath denied a Tongue to this Animal. Which Sir *Thomas Brown* takes notice of as a Vulgar Error. On the hinder half of his Tail he hath firm leathern upright Finns, wherewith he governs himself, as a Fish, in swimming.

He is esteemed good meat, not only by the Natives in *Brasile*, but also by the *Hollanders* there. (*a*) He is taken thus; They fasten a thick long Rope to some Tree by the Water-side, and to the other end, a strong iron Hook, which they bait with a Weather. (*b*)

(*a*) Gulielmus Piso.

(*b*) Scal. Exer. 196. Sect. 5.

In *Brasile*, they hunt them much for the sake of their Fat, which they commonly and successively apply to their Wounds, when bitten by him. (*c*) As also for his *Testicles*, which smell like Oyntment, and which they sell very dear. (*d*) In *New Spain*, the Kernels under their Throat, smell like Musk, and are a present Remedy against burning Fevers. (*e*) The Stomach dry'd in the Sun, powder'd, and taken to the quantity of 3j, is an admirable *Diuretick*, and brings away Stones from the Reins and Bladder. (*f*) The same taken to the quantity of a spoonful in the Morning, after Dinner, and before Supper, or as often as the Patient can bear it, is an excellent Remedy for the Dropsie. (*g*)

(*c*) Gul. Piso.

(*d*) Ibid.

(*e*) Joh. de Laet. l. 5. c. 4. *out of* Franc. Ximenex.

(*f*) Ibid.

(*g*) Ibid.

A CROCODILE, which, with part of the Tail that is broken off, is about a yard long. Perhaps that lesser sort which breeds in *Brasile*, whereof *Linschoten* saith, That they will come into the Houses, and let the Children play with them harmlesly.

Another young CROCODILE not a foot long.

The SKELETON of a CROCODILE. Given by Sir *Robert Southwell*; to whom it was sent from the *East-Indies*. 'Tis about four yards and three quarters long. The Head about two feet. The Neck, from the hinder part of the Head, almost a foot and ½. The Trunk, from the fore-Ribs to the Tail, four feet. The Tail, seven. From the top of the Back to the Breast, a foot and ½ high.

The *Orbites* of the Eyes proportionably little; what ever *Piso* saith of his great Eyes.

The Articulations of the lower Jaw with the upper; and of the *Occiput* with the foremost *Vertebra* of the Neck; are here both made in the same manner, as in other *Quadru-*

peds

peds: notwithſtanding the Tradition of his moving the upper Jaw.

The Teeth are about threeſcore, thirty in each Jaw. All of them *Claviculares*, or Peg-Teeth, not much unlike the Tusks of a Maſtiff; and ſcarce bigger: notwithſtanding that *Ariſtotle* calls them great Teeth, ὀδόντας μεγάλους. (a) And yet, whereas a Dog hath but four Tusks, or exerted Teeth, in this Animal being all of that figure, their ſmallneſs, with reſpect to ſo great a Head, is fully compenſated by their number. For the moſt part, thoſe that are new and not worn, are toothed, like a ſmall Saw, on their ſides.

(a) Hiſt. An. l. 2. c. 10.

The *Vertebræ*, in all, ſixty. Thoſe of the Neck, are ſeven, as in a Man. The firſt whereof, in a Man called the *Atlas*, hath a *Proceſſus* in the figure of the *Epiglottis*. The other ſix, have each one *Proceſſus* or *Prominent* Part, which is long, broad, ſharp, and upright: and two that are tranſverſe, and ſhort; to which are joyned, by a *Cartilage*, ſo many *Oſſa mucronata*, one ſhorter than another from the Head toward the Trunk. But the *Vertebræ*, one leſſer than another, from the Trunk towards the Head.

The *Vertebræ* of the Back, nineteen; that is, three ſevens running one into another. Each of which hath three *Prominent* Parts, which are ſharp, broad, and long; one perpendicular, and two that are tranſverſe, or at right angles.

The Ribs 24, twelve on each ſide. Seven of which, have each of them double *Cartilages*, that is, one after another, appendent to them.

The fore part of the *Sternum* is plainly bony. The hinder part, cartilaginous; ſhaped like the *Os Hyoides* in a Man.

The *Vertebræ* of the Tail, are 34; or (if you add the laſt of the Trunk as common to both) 35; that is ſeven times ſeven. The firſt fourteen, have each three *Prominent* Parts, like thoſe of the *Vertebræ* in the Back. The next nineteen, have only an upright *Proceſſus*. The laſt of all, hath none. The firſt 14, are double, in number to thoſe of the Neck, the next 19, are equal to thoſe of the Back; the laſt anſwers to the Head. To all the *Vertebræ* of the Tail, except the laſt, are alſo ſubjoyned ſo many

Ossa Mucronata, directly opposite to the upright *Processus*.

The Shoulder-Blades are two on each side; each ½ foot long.

The Bones of the fore-Foot, 27. The Thigh-Bone near a foot long; an inch and ¼ over. The Leg-Bones, two; each a little above ½ a foot long; and of equal thickness, *sc.* about ¼ of an inch over. The Foot strictly so call'd, the length of the Thigh. The Bones of the *Pedium*, four. The Fingers or Toes, five. The inmost, the thickest, like a Thumb. From thence, the third, the longest. The Bones of the Thumb, three; of the next Finger, four; of the next, five; of the two outmost, four; in all 20. All armed with black Claws, a little crooked, and not much above an inch long.

The Hip-Bones are three; each of them ½ a foot long.

The Bones of the hinder Foot, 24. The Thigh-Bone above a foot long, and an inch and ½ over. The Leg Bones almost eight inches long. The inmost, above an inch over; the other, but ½ an inch. The Foot, so called, the length of the Thigh. The Bones of the *Pedium*, four. The Toes, four; whereof the inmost, the greatest; the third, the longest. The Bones of the great Toe, three; of the next, four; of the third and fourth, five. The Claws somewhat bigger than in the fore-Foot.

Amongst other things worthy of note, the senselesness of the tradition of the *Crocodiles* moving his upper Jaw, is plain from the structure of the Bones, that is, the Articulation only of the *Occiput* with the Neck, and of the nether Jaw with the upper, as above said.

The first Author of it was *Aristotle*, in his Fourth Book *de Partibus Animalium*, *Cap.* 11. And thus much is true, not only of this Creature, but of all others, which have a long Head, and a wide *Rictus*, that when they open their Mouths, they seem to move both Jaws; as both the *Viper*, and the *Lizard*. And for the same reason, *Columna* (*a*) might say as much of the *Hippopotamus*, that he moves the upper Jaw, as the *Crocodile*. So all Birds, especially with long Bills, shew the contemporary motion of both the *Mandibulæ*; the *Musculi splenii* pulling back the *Occiput*, and so a little raising the upper, while the *Musculi Digastrici* pull the

(*a*) Lib. de Aquatil.

the other down. But that this motion was not meant by *Ariſtotle*, appears in his Firſt Book *de Hiſt. Anim*, *c.* 11. & *lib.* 3. *c.* 7. where he ſaith more plainly, That of all other Animals, only the *Crocodile* moveth the upper Jaw. So that he ſpeaks of it, as a motion ſtrange and peculiar; as if the upper Mandible did make an *Articulation* with the *Cranium:* contrary to what is here ſeen. And if we will hear *Piſo*, who probably ſpeaks *Ariſtotle*'s meaning, as plainly as he doth his own, he goes further, and ſaith, (*a*) That the *Crocodile* doth not only move his upper Jaw, but that his nether Jaw is immoveable. Than which Aſſertion, to one that hath any competent knowledge in Anatomy, and ſeeth the Head and lower Jaw of this Animal articulated in the ſame way, as in other Animals, nothing can appear more ridiculous.

(*a*) Hiſt. N. lib. 5.

The WINDPIPE of a CROCODILE. It is almoſt an inch and ½ over. Compoſed of *Cartilaginous* Rings, not broken off, with a Membrane betwixt their ends, as in moſt *Quadrupedes*, but entire.

The GREEN LIZARD. It was brought from the *Weſt-Indies*. See the Deſcription hereof in *Geſner*, and others.

The SENEMBI, a *Lizard* ſo called in *Braſile*. Alſo called *Igvana*. Curiouſly figur'd by *Beſler*. Well deſcrib'd by *Marggrarius*, and after him, *Wormius*. Saving as to the odd ſtructure of the hinder Foot. The inmoſt Toe is joyned to the next, by a Membrane, for the length of an inch and ½. This to the third, by a like Membrane for the length of an inch. This again to the fourth, for the length of an inch and ½. The fourth, almoſt looſe from the laſt. The Picture alſo, commonly given, falſly repreſents the fore-Leg equal to the hinder, which is far longer and thicker.

Another SENEMBI leſſer than the former.

The SWIFT, or SPOTTED LIZARD. Commonly called STELLIO, or the STARRY-LIZARD; but not properly, the Stars, in the Figure given by *Aldrovandus* and others, being feigned. For the Animal is not marked with Starry, but with round Spots. The leſſer are ſprinkled up and down. The greater compoſed into about 13 half Rings or Girdles. On the Back the ſpots

are

are also more distinct, than on the Tail. They breed in *Thracia*, *Syria*, and *Sicily*. The Powder hereof being taken, is believed by some *plurimum stimulare Venerem*.

The SWAPTAIL LIZARD. *Uromastix, vel Caudiverbera.* Called also CORDILUS. In *Calceolarius*'s *Musæum* there is a curious Picture hereof, under the Name of CROCODILUS TERRESTRIS. As also in *Besler*. *Gesner*, from *Thomas Erastus*, hath very copiously describ'd him, especially his Tail.

The BUGELUGEY. Of kin to the former. *Aldrovandus* and *Johnston* give only his Figure, with the Name of *Lacertus Indicus*. He is distinguished from other *Lizards*, chiefly, by the Scales on his Belly, which, like those of a *Crocodile*, are very great; *sc.* five or six times bigger than those on his back. It was brought from *Africa*. This *Lizard*, saith *Wormius*, moveth his upper Jaw, as the *Crocodile*. Which, in what sense it is false and absurd, I have above shew'd.

The SCALY-LIZARD. He is well pictur'd in *Besler*. As also in the *Musæum* of *Olearius*. *Aldrovandus* gives only a rude half draught, and without any Description, as well as the former. *Clusius* only saith, He remembers that he had seen one of them. *Bontius* (*a*) hath his Picture, but a very bad one. Else-where I find it not. He hath also described him, but very defectively, and with several mistakes.

(*a*) Hist. N. l. 5. c. 8.

He is a yard and ½ long. His Head from his Nose-end to his fore-Feet not above three inches. He hath no Neck. His Trunk, from the fore-Legs to the hinder, not above ten inches and ½. His Tail exceeding long, *sc.* a yard and half a quarter. His Head above two inches over. His Nose near an Inch. His Trunk almost four. His Tail moderately taper'd, and ending obtusely. The under part of the Tail is plain or flat; the upper part, hyperbolick. His fore-Legs, contrary to what they are in other *Lizards*, are longer than the hinder; these, not above three inches and ½; those, above four. The Claws also of the fore-Feet are longer; the longest about an inch; those of the hinder, but ½ an inch. He hath only four Toes and a Heel, both before and behind.

He is all over, except his Throat, Belly, the lower part of

of his fore-Leg, and the inward part of his hinder, cover'd with Scales, very thick, and in hardneſs anſwering to the moſt ſolid Bone. The baſis of each Scale (perhaps through age) of a blackiſh yellow, the Cone betwixt yellow and ſtraw-colour, or like old *Ivory*. Adorned with *Striæ* proceeding from the baſe to the Cone. Set together, with an alternate reſpect, as the Scales of Fiſhes. In the Trunk, there are 10 or 11 filed to each Rank. Towards the end of the Tail, but five. The greateſt, near two inches broad; the leaſt, a quarter of an inch. On his Forehead, Back, and fore part of his Tail, they are flat. But on the edges of the Tail, they are doubled into an acute Angle, the one half of each ſtanding on the Convex, the other on the flat of the Tail.

He is ſaid to be a moſt tame and innocent Creature. Which is very likely; according to the way of Nature, which uſually leaveth dangerous Animals, as *Serpents*, and other hurtful *Lizards*, naked: but defendeth the Bodies of fearful and innocent Creatures, as the *Tortoiſe*, the *Tatu*, and the like, with Armor.

Johannes Lerus, quoted by *Linſchoten*, mentions a white ſcaly *Lizard* in *Braſile*, as thick as a Mans middle, and five or ſix feet long. Perhaps a bigger of the ſame kind with this above deſcribed.

There is a ſort of little *Lizard*, (*a*) which when he ſwelleth with anger, like the *Chamæleon*, changeth his colour, from green to a kind of Hair-colour or Ruſſet. The Eggs of ſome, if not of moſt *Lizards*, eat very pleaſantly. And in (*b*) *Braſile* there are a ſort of Water-*Lizards* five feet long, which being flay'd and ſodden, for whiteneſs, ſweetneſs, and tenderneſs, ſurpaſs all other meats.

(*a*) Ligon's *Hiſt. of* Barbad. p. 62.

(*b*) Linſchot. Lib. 2. 248.

A LAND-SALAMANDER. Deſcribed by *Aldrovandus*, and others. Much like a *Lizard*; but his Mouth is ſhorter, and broader, more like a *Toads:* and ſeldom exceedeth a foot in length.

Bartholine tells of one that was kept alive in a Glaſs nine Months without food. (*c*)

(*c*) Hiſt. 50. Cent. 2.

The LITTLE COMMON EFT. He hath a thicker Trunk, a blunt Oval Snout, his hinder feet are very diſtant from the foremoſt.

The SLENDER EFT. His Head is rateably very great;

great; his Snout alſo longer and ſharper than in the former. His Trunk ſlenderer and much leſs belly'd. His hinder Legs alſo ſtand nearer to the foremoſt.

The THICK-TAIL'D EFT. His Head is here wanting. His Tail is not ſo ſlender or tapering as in both the former, but ends more obtuſely. And his hinder feet ſtand yet nearer to his foremoſt.

The SCINK. Deſcribed by *Wormius*, and others. Curiouſly pictur'd by *Beſler*. Like a *Lizard*; ſaving that he hath a ſhorter Neck and Tail, ſhort Legs, a flat and broad Foot like a Hand, with very ſhort Toes, and without any Claws. The Powder hereof is ſaid, *Potenter Venerem ſtimulare.*

SECT. III.

OF SERPENTS.

A SNAKE preſerved in Spirit of Wine. In *Barbados* there are ſome about a yard and half long, that (*a*) will ſlide up the perpendicular Wall of a Houſe out of one Room into another. A greater agility without feet, than we ſee in moſt Creatures that have four. Much helped, as it ſhould ſeem, by their great length; whereby they can, in an inſtant, reduce themſelves into ſo many more undulations for their better aſſent. In *Braſile*, ſaith *Joh. de Laet*, (*b*) there are Snakes found ſometimes 25 or 30 feet long. The *Indians*, in ſome places, eat Snakes very greedily.

(*a*) Ligon's *Hiſt. of* Barbad. p. 61.

(*b*) Lib. 15. c. 14.

The greater SLOW-WORM; *Cæcilia.* Called alſo the BLIND-WORM; ſo commonly thought to be, becauſe of the littleneſs of his Eyes. His Skin alſo is very ſmooth and gliſtering. His Teeth very ſmall. Of a lighter colour than the Adder; which are his principal Notes. See the Deſcriptions of *Geſner* and *Aldrovandus.* The Female is Viviparous, as well as the Viper. *Bellonius* ſaith, that out of one, he hath taken above forty young ones.

The VIPER. *Vipera*, qu. *Vivipera*; becauſe ſhe only among Serpents hath been thought to bring forth her young

young Ones. All Animals, saith *Aristotle*, (*a*) that bring forth their young, have alsoexternal Ears: yet knew that an Adder which hath no *Auricle* is Viviparous. And this, indeed, he observes with a good Remark, which is, That she first lays her Eggs within her Womb; (*b*) wherein they are afterwards hatched. Which had been a fair Introduction to him, to have observed, That all other Viviparous Animals are Oviparous within themselves. And 'tis much, that the hint hath not been long since taken from the *Raya*, and some other Fishes. The Viper, saith Sir *Thomas* (*c*) *Brown*, from the experience of credible Persons, in case of fear, receiveth her young Ones into her Mouth; which being over, they return thence again.

(*a*) Hist. Anim. l. 1. c. 11.

(*b*) Histor. Anim. l. 6. c. 34.

(*c*) Pseudod. Epidem.

The chief use of Vipers is for the Medicine called *Theriaca Andromachi*. But there are also divers Medicines made out of them: as

Oleum per Infusionem,	*Sal Viperarum*	*Spiritus,*
Oleum Stillatitium,	*Volatile,*	*Essentia,*
Vinum Viperinum,	*Fixum,*	*Alcohol Burgravii,*(*d*)
	Theriacale,	*Pulvis Viper' Germanus.*(*e*)

(*d*) Schroderi. Pharmac.

(*e*) Prævotius.

Of the nature of the Viper, see the Observations of *Bourdelot*, *Redi*, & *Charas*. See also the *Phil. Trans. N.* 87.

The SLOUGH of an ENGLISH VIPER. That is, the *Cuticula*. They cast it off twice every year, *sc.* at Spring and Fall. The separation begins at the Head; and is finish'd in the space of 24 hours. From all parts so entire, that the very *Tunica Adnata*, or outward Skin of the Eye it self is here plainly to be seen.

A Gelly made hereof, is order'd to be used for the making up of the compounded Powder of Crabs Claws into Balls. Which way of preservation, were no less proper for divers other Cordial Powders; especially such as are *Aromatick*, and whose Virtue lies in parts that are of themselves volatile and easily evaporable. Of which kind, there are none in this Powder.

The SKIN of a BOIGUACU; a Serpent so called, by the Natives of *Brasile*. As far as can now be seen, 'tis mixed of ash-colour with cancellated work of brown;

ſomewhat after the manner, as in divers other *Indian* Serpents. Towards the Head it is ſomewhat ſlenderer, than about the middle; where it is in compaſs, half a yard. 'Tis almoſt ſeven yards long. See the Deſcription of the Serpent in *Piſo*. He is of all other kinds the greateſt. But not ſo venimous, as are many others. *I have now at home*, ſaith Bontius, *the Skin of a Serpent* (of this kind) *twelve yards long, which I kill'd in a Wood in* Java. And, that in that Kindgom, was one taken *thirteen yards and ½ long, with a Boar in her Belly*; of which, being boyl'd, the general *D. Petrus*, and others did eat a part. (*a*) And *Joh. de Laet.* reports, (*b*) That in *Rio de la Plata*, a Province of the *Weſt-Indies*, there are ſome *quatuor Orgyas longi*, and ſo big, as to ſwallow a Stagg whole, horns and all. Of ſuch kind of Serpents, ſee alſo *Marcus Paulus Venetus*, and *Athan. Kircher*. (*c*)

(*a*) Hiſt. Nat. l. 5. c. 3.
(*b*) Lib. 14. c. 1.
(*c*) China Illuſtrata.

This Serpent, ſays *Piſo*, will thruſt his Tail up a Mans Fundament, and gird him about the middle till he kills him. (*d*) Yet is it probable, that they communicate no Venime by their Tail, but only are ſo cunning as to uſe that way, whereby to take the faſter hold. Not only the Natives, but the *Hollanders* that live amongſt them, make them part of their food. (*e*)

(*d*) Hiſt. N.
(*e*) Ibid.

The SKIN of the IBIBABOCA. Another Serpent of *Braſile*, ſo called by the people there. 'Tis a foot round about, and almoſt three yards and half long. His colours, originally, are white, black, and red. (*f*) Of all the kinds of Serpents, his Bite is the moſt pernicious, yet worketh the ſloweſt. (*g*) 'Tis healed by a *Cataplaſme* made of the Head of the Serpent. (*h*)

(*f*) Joh. de Laet. *from* J. Lerius.
(*g*) Ibid.
(*h*) Piſo.

Two SKINS of the ſame kind, about eight feet long; and with their colours elegantly chequer'd, as in the former.

The SKIN of a RATTLE-SNAKE; a Serpent ſo called, from the Rattle at the end of his Tail. By the Natives of *Braſile*, BOICININGA. Well deſcribed by *Franciſcus Ximenez*; and from him by *Joh. de Laet.* But his Rattle is no where well pictur'd. Neither doth *Ximenez*, or any other Author obſerve the true ſtructure of it.

It is compoſed of about 8, 10, or 12, ſome times, as this

this before us, of sixteen white Bones, but very hollow, thin, hard, and dry, and therefore brittle, almost like Glass, and very sonorous. They are also all very near of the same bulk; and of the self same Figure, almost like the *Os Sacrum* in a Man. For although the last of all only, seems to have a kind of a Ridged Tail or *Epiphysis* adjoyned to it, yet have every one of them the like; so, as the Tail of every uppermost Bone, runs within two of the Bones below it. By which *Artifice*, they have not only a moveable coherence, but also make a more multiplied sound, each Bone hitting against two others at the same time.

By this Rattle, those that travel through the Fields, or along the High-ways, are warned to avoid coming near so noxious a Creature. For those that are bitten with him, sometimes die miserably in 24 hours; their whole body cleaving into chops. (*a*) They commonly bury the Limb that is bitten, and so keep it, till the pain wears off. (*b*) By thrusting the end of his Tail, saith *Piso*, up into a Mans Fundament, he kills him immediately. But he seems here falsly to attribute that to this Serpent, which he doth much more probably to the BOIGUACU. For this is but a lesser sort, seldom exceeding a yard and ¼, and therefore cannot do it by girding a Man about. And for there being any Venime in the Rattle, it was, I believe, hardly ever imagin'd by any other man. Their progressive motion, saith *Joh. Lerius*, is so swift, that they seem to fly. Which makes the Rattle to be so much the more useful, in giving timely notice of their approach. Some of the largest are in *Panuco*, a Province of *Mexico*. 'Tis said, that the smell of *Dittany* kills him. (*c*)

(*a*) Franc. Ximenez *quoted by* Joh. de Laet. l. 5. c. 15.
(*b*) Bontius.
(*c*) *See the* Phil. Trans. N. 3. & N. 4.

It is affirmed by *Marggrarius* and others, that as many years old as the Serpent is, the Rattle hath so many joynts. Which if it be true, then they will live at least sixteen years, some Rattles (as this here) consisting of sixteen joynts. Which makes the Tradition very suspicious.

About fourteen more SKINS of the RATTLE-SNAKE. Some of them are all over of a dark-brown. Others chequer'd with a brown, upon ash-colour.

Several RATTLES of the same Serpent; most of them composed of above ten joynts.

A POWDER said to be taken out of a Serpents

Head. 'Tis as white as Starch, and taſtleſs. Makes a noiſe between the Teeth, like that Mineral called *Agaricus Mineralis*. Acid, and eſpecially Nitrous Spirits dropped upon it, produceth a conſiderable effervescence.

The SERPENT-STONE. Said by ſome, to be factitious, By others, to be a Natural Animal Stone. Particularly by Sir *Philiberto Vernatti*, an obſerving Perſon, to be taken out of the Head of a Serpent in *Java*, from whence it was ſent by him hither. It ſeems to be that called *Bulgolda*, which *Boetius*, out of *Ferdinando Lopez*, ſaies is taken out of the Head of an Animal, which the *Indians* call *Bulgoldalf*. Whether it be natural or artificial, I ſhall here deſcribe it.

'Tis about ¾ of an inch long, above ½ over, and ¼ thick; flat and almoſt orbicular, like a Cowſlip-Cake, or other like Confection. All round about very ſmooth, and ſhining, for the greater part, black; but with ſome aſh-colour intermixed; ſo as to look like a River-pebble. But of a ſubſtance ſoft and friable, like the Oriental *Bezoar*. And in like manner, as the ſame Stone, is eaſily diſſolved with any Nitrous Spirit dropped upon it, but not with other Acids. Which is to me an argument that it grows within ſome Animal: it being the nature of moſt Animal-Stones, to be diſſoluble only by Nitrous Spirits.

(a) Philoſoph. Tranſ. N. 6.

Sir *Philiberto* (*a*) amongſt other paſſages of this Stone, ſaith, That if it be laid to a Wound, made by any Venimous Creature, it is ſaid to ſtick to it, and ſo to draw away all the Venime. And the like I have heard affirmed of the ſame Stone by a Phyſitian of Note in this City.

SECT.

SECT. IV.

OF BIRDS.

CHAP. I.

Of Land-Fowls, and of their Parts.

A Great BAT or FLITTER-MOUSE of the WEST-INDIES. *Veſpertilio Americ.* The Bat ſtands in the Rear of Beaſts, and in the Front of Birds. I meet with no full Deſcription of this kind. From his Noſe-end to his *Anus* almoſt a foot. His Body almoſt three inches over. His Head two inches and ½ long, one and ½ over. His Noſe like a Dogs, the end about ½ inch broad. His Ears extream thin, about ¼ of an inch long, and as broad; an inch and ½ aſunder. His Eyes ½ of an inch long. He hath ſix and thirty Teeth. In each Chap before, are four little ones, roundiſh, blunt, and almoſt flat-ended; rather *Tunſores*, than *Inciſores*. The next are large, ſhaped like the Tusks of a Dog, two in each Chap. Next to theſe, two more of the firſt kind in each Chap. And laſt of all twenty Grinders.

The Wings ſtretched out, are two or three inches above a yard wide from end to end. The upper part of the Arm that governs them, about four inches long, and fleſhy, *ſc.* an inch over. The next, or the *Cubitus* alſo four inches long, tendinous, and ſlender, not above ¼ of an inch thick. The Fingers are five, or four and a Thumb. Each hath three Bones. The firſt Bone of the fore-Finger or Thumb, is above ½ an inch long; the middlemoſt, an inch and ½; the laſt very ſhort, ſheathed within a ſharp and crooked Claw, ¼ of an inch long, almoſt like that of a Hawk. The firſt Bone of the next Finger, is above three inches long; the middlemoſt, but ¼ of an inch; the laſt, about ½ an inch; having a very little Claw. The firſt Bone of the third or middle Finger, is four inches long; the middlemoſt,

moſt, three; the laſt, three and ½. The firſt of the fourth, is alſo four inches long; the middlemoſt, two and ½; the laſt, as much. The firſt of the fifth or utmoſt Finger, is alſo four inches long; the middlemoſt, two; the laſt, as many.

His Thigh an inch and ½ long, and fleſhy, yet not much above ½ inch over. His Leg two inches long, tendinous, and about ½ of an inch thick. The *Pedium*, above ½ inch long. The Toes, five; each of them about an inch and ½ long; and each having a Claw, like that on his Thumb. The two inmoſt, have each two Bones; the other have three.

The Membrane which makes the Wings, excepting only his Head, Neck, two joynts of his Thumb and the bottom of his Feet, is ſpread from the top of his Back, over all his Parts.

He hath no Tail.

The ſhape and number of his Teeth, ſhew him to be a Voracious Creature. The Claws of his Thumb and Feet, that he is alſo Rapacious. The ſtructure of his Wings is admirable. For were they to be always ſtretched out, they were (as to the length of the Bones) the moſt irregular and ill contrived of any thing that ever was ſeen. But being made to open and ſhut, ſhew the greater *Artifice*, in having the Bones of ſuch a length, as might ſerve for all the Poſitions betwixt being quite open and quite cloſe. The particular explication whereof, notwithſtanding, cannot be made, without examining the ſeveral Muſcules, by which all the ſaid poſitions are determin'd.

Another WEST-INDIAN BAT of the ſame kind. There are many of them in *Braſile*. The *Chineſes* eſteem of them as a delicate ſort of meat. (*a*) *Barlæus* mentions a Water-Bat, which the Natives of *Braſile* call *Guacucua*. (*b*) In the ſame Iſland, there is a ſort of great Bat, that as Men lie aſleep with their Legs naked, will ſuck their blood at a Wound ſo gently made, as not to awake them: whereby they are oftentimes in danger of bleeding to death. (*c*)

(*a*) Kirch. Chin. Illuſtr.

(*b*) Res Braſil. p. 224.

(*c*) Piſo's Hiſt. N.

The HEAD of an OSTRICH. *Caput Struthiocameli.* He is accurately deſcribed in Mr. *Willughby's Ornithologia.* His Head, like that of a Gooſe; he hath great

great thick black Hairs on his upper Eye-lid, as in *Quadrupedes*; his Tail ſtanding in a Bunch, and not expanded, as in other Birds; his Wings very ſhort and little; and his Foot not divided into three or four Toes, as in other Birds, but into two only; which are his principal Characters.

The *Oſtrich* is the greateſt of Birds; when he holds up his Head and Neck, near two Ells high. (*a*) In the Kingdom of *Abaſia*, they are as big as Aſſes. (*b*) The *American*, are leſſer than thoſe of *Africa*. (*c*)

(*a*) Willugh. Orn.
(*b*) Geſner *out of* Paulus Ven.
(*c*) Barl. 223.

He flys not, becauſe his Wings are ſhort. But with their help, is able to out-run a Horſe. (*d*) He is a gregarious Bird. His Feathers are made uſe of for the adorning of Hats, Caps, &c. for making of Womens Fans, and the like. (*e*) The Stomach of an *Oſtrich*, ſaith *Schroder*, *taken in power, wonderfully diſſolves the Stone*.. (*f*) 'Tis probable it may bring away Gravel.

(*d*) Geſner *out of* Pliny.
(*e*) Willugh Ornithol.
(*f*) Pharmac.

The Leg of an OSTRICH. 'Tis near half a yard long without the Foot. The Foot, no leſs than ten inches, as long as of moſt men. The Leg-Bone in the ſmalleſt part four inches about, and in the Joynt nine inches: which is thicker than in moſt men. It hath but one triangular Claw; of that ſubſtance, as to look liker a little Hoof, and ſeems rather harder than that of a Horſe.

The CASSOWARY. *Emen.* Accurately deſcribed by *Cluſius*, and pictur'd in *Willughby's Ornithologia*. His Bill, almoſt like that of a Gooſes, but not ſo broad. Next to the *Oſtrich*, he is the greateſt of Birds; and in Bulk little inferior, but not near ſo tall. On the top of his Head, hath a horny Crown, which falls off when he moulters, and grows again with the Feathers. His Wings extream ſmall. The plumage of his Feathers ſo little, that he ſeems at a diſtance to be hairy. Hath three Toes without a Heel, as the *Buſtard*. Hath no Tail: which are his chief Marques. He is brought from *Tabrobana*, the *Molucca* Iſlands, and others of the *Eaſt-Indies*.

The HEAD of a CASSOWARY. The Bill is longer, but not ſo broad, and ſo the mouth not ſo wide, as of an *Oſtrich*.

The LEG of a CASSOWARY. 'Tis almoſt as long, and as thick, as that of an *Oſtrich*.

The

The HEAD of the SEA-EAGLE or OSPREY. *Caput Haljaêti.*

The CLAWS of the ſame BIRD. See the full Deſcription of the Bird in *Willughby's Ornithologia.*

The Eagle breeds abundantly on the Mountains *Taurus* and *Caucaſus.* Not only comes into *England,* (*a*) but is ſaid to build yearly on the Rocks of *Snowdon* in *North-Wales.* In (*b*) the Year 1668. on the *Peke* in *Darbyſhire,* was found an *Eagles* Neſt, flat or level, and about two Ells ſquare; together with a young one in it.

(*a*) Willugh. Ornithol.
(*b*) Ibid.

The BIRD of PARADISE. By the Natives of the *Molucca* Iſlands (where they breed, and by whom they are worſhipped,) called MANUCODIATA, *i. e.* The Bird of God. Becauſe they know not from whence they come; and for their beauty. From his ſwift flight to and again, the *Indians,* in their Language, call him a Swallow. *Marggravius* reckons up ſeveral ſorts of them, and deſcribes them all. The leaſt kind, *Cluſius* calls the King. Becauſe (as he ſaith, from the report of the *Dutch* Mariners) as they fly together, about 30 or 40 in a flock, he always keeps higher than the reſt.) Beſides the ſmallneſs of his Body, in reſpect to what his copious Plumes ſhew him; the long Feathers which grow upon his ſides under his Wings, and are extended thence a great way beyond his Tail; and the two long Strings or Quills which grow upon his Rump, do moſt remarkably diſtinguiſh him from all other Birds. He is elegantly figur'd in *Calceolarius's Muſæum,* with the Title of *Chamæleon aereus.*

Antonius Pigafeta was the firſt that brought this Bird, or any certain knowledge of him into *Europe.* (*c*) Before which, he was believed, not only by the Vulgar, but by Naturaliſts, (amongſt whom *Scaliger* (*d*) was one) that they had no Legs, but always flew up and down ſuſpended in the Air, by the help of their Wings and Tail ſpread all abroad. According to which ſilly fancy, he is alſo pictur'd in *Geſner.*

(*c*) Cluſius.
(*d*) *See* Exerc. 228. S. 2.

Agreeable to this conceit, it is likewiſe commonly thought, and by *Georgius de ſepibus,* who deſcribes the *Muſæum Romanum,* is affirmed, that thoſe two long Quills that grow upon the top of this Birds Rump, being at his pleaſure twined or wrapped round about the boughs of Trees,

Trees, ſerve quietly to ſuſpend him. Whereas, as Mr. *Wray* hath alſo rightly obſerved, (*a*) not being Muſcular, it is impoſſible they ſhould be of any ſuch uſe. His hooked Claws ſhew him to be a Bird of Prey; and he ordinarily flys at *Green-Finches*, and other little Birds, and feeds on them. (*b*) The *Tarnacenſes* ſhoot them down with Darts. (*c*)

(*a*) Willoughb. Ornith.
(*b*) Bont. H N. l. 5.
(*c*) Ibid.

Two more MANUCODIATA'S of the ſame Species.

The GREAT RED and BLEW PARROT. *Pſittacus Erythrocyaneus.* All the great kind called alſo MACCAW and *Cockatoone*. It was ſent hither from *Java*. See his Deſcription in *Willoughby's Ornithologia*. There are of theſe greater, the middlemoſt called *Popinjayes*, and the leſſer called *Perroqueets*, in all above twenty ſorts. Their more remarkable Parts, are their hooked Bills, whereby they catch hold of Boughs, and help to raiſe themſelves up in the climbing of Trees. Their broad, thick, and muſcular Tongues, for which they are called ἀνθρωποόγλωσσοι, and by which they are the better enabled to ſpeak, and to rowl their meat from ſide to ſide under the edges of their Bills: and their Feet, which, like thoſe of the *Woodpecker*, have two Toes before and two behind, with which they bring their meat to their mouths; and that after an odd way, *ſc.* by turning their foot outward. (*d*)

(*d*) Willoughb. Ornith.

The *Parret* only, ſaith *Scaliger*, (*e*) with the *Crocodile*, moves the upper Jaw: Yet the ſame is affirmed of the *Hippopotamus*, by *Columna*; of the *Lizard*, by *Wormius*; and of the *Phœnicopter*, by *Cardan*. Which confirms what I have ſaid under the Deſcription of the *Skeleton* of a *Crocodile*, and in what ſenſe it is abſurdly ſaid of them all. In their Cheeks, ſaith *Piſo*, (*f*) in each Noſtril, and on the top of their Heads, in a certain Tumor, there lies, about *Auguſt*, a thick Worm; all which, in a little time, fall out of their own accord, without any ſign left of their ever being there. They are a gregarious ſort of Birds. (*g*) They breed very numerouſly in both the *Indies*. In *Barbados*, fly in flocks like Clouds. In *Calechut* they are forced to ſet people to watch their Rice-Fields, leaſt they ſhould ſpoil them. (*h*) The fleſh of their Chickens eats juſt like a Pigeon. (*i*)

(*e*) Exercit. 236. S. 1.
(*f*) Hiſt. N. I. Occid.
(*g*) Bart. 118.
(*h*) Geſner out of Ludov. Romanus.
(*i*) Piſo.

The BILL of a BIRD, by the people of *Braſile*, called COA. It is of a blackiſh-brown mixed with aſh-colour. In ſhape, and bigneſs, very like that of the leaſt ſort of *Parret* called *Perroqueets*. He is ſaid to feed upon all manner of venimous things: and to be himſelf a Cordial. Which, if true, yet is it not to be much admir'd. For if by venimous things, be meant Animals that have a venimous bite; Do we not know that the fleſh of ſuch Animals, as of *Vipers*, is eſteemed a Cordial? Or is it underſtood of things that are *Tota ſubſtantiâ* Venimous, or at leaſt malignant to humane Bodies, do not *Ducks* feed on living *Toads*? Again, what is a Cordial? are not many things ſo call'd meerly from their collateral effect? *Carduus Benedictus* it ſelf, and other things given as ſuch, Nature doth certainly abhor: but being able to caſt them off, by Vomit or Sweat, and ſo perhaps ſomething elſe that offends her together with them, they are therefore called Cordials.

A young LINET which being firſt embowel'd, hath been preſerved ſound and entire, in rectified Spirit of Wine, for the ſpace of 17 years. Given by the Honourable Mr. *Boyl*. Who, ſo far as I know, was the firſt that made trial of preſerving Animals this way. An Experiment of much uſe. As for the preſerving of all ſorts of Worms, Caterpillars, and other ſoft Inſects in their natural bulk and ſhape, which otherwiſe ſhrink up, ſo as nothing can be obſerved of their parts after they are dead. So alſo to keep the Guts, or other ſoft parts of Animals, fit for often repeated Inſpections. And had the Kings or Phyſitians of *Egypt* thought on't, in my Opinion, it had been a much better way of making an everlaſting Mummy.

A young CHICKEN emboweled and put into rectified Oil of Turpentine, at the ſame time, with the *Linet*, and preſerved ſound; Only there is a little ſedement at the bottom of the Glaſs.

The HEAD of the HUMGUM, or Horned-Crow; called RHINOCEROS *Avis*. It was brought from the *Eaſt Indies*. 'Tis of kin to that deſcribed by *Bontius*. Mr. *Willoughby* gives the Picture, but no Deſcription. It hath a Crown on the top of the Bill, of the ſame colour and ſubſtance therewith, and prolonged in the ſhape of a

Horn,

Horn, to the length of ¼ of a foot. Yet not bended upward, as in that of *Bontius*, but ſtanding horizontal. It is ſpongy behind, and hollow before; ſo that it is very light, although ſo big. The Bird deſcribed by *Bontius*, and probably this alſo, breeds in *Bantam* and *Molucca*.

The nether BEAK of the RHINOCEROS Bird. If we believe, ſaith *Georg. de Sepibus*, (*a*) the Reverend Fathers, which are us'd to go to the *Indies*; the Bill of this Bird is a moſt precious Antidote againſt all manner of Poiſons. For which cauſe alſo, the *Indian* Kings preſerve it as a great Treaſure, and account it a Royal Preſent. (*a*) Muſæum Romanum.

The HEAD of the CROWNED CROW Mr. *Willughby* pictures it. But I meet with the Deſcription hereof no where. 'Tis almoſt a foot long. The Skull not above two inches and ½ long, above two broad, and as high. The Bill likewiſe as broad. The nether Beak an inch and ¼ high, one forked Bone, in the ſhape of the *Os Hyoides* in a Bird, hooked or bended downward, the edges indented like a Saw; but with the points of the Teeth directed forward. The upper Beak an inch and ½ high, conſiſteth of one concamerated Bone, bended downwards, and Toothed as the other. To this and the Skull, grows a ſquare horny-Crown, about ſix inches long, three and ½ over, and one and ½ high, ſpongy behind, and hollow before. The Noſtrils, which are about ¼ of an inch wide, open between the Eye and the top of the Bill.

The Teeth of the Bill, not being made to point inward, but forward or outward, plainly ſhews, that they ſerve not, as they do in ſome other Birds, to hold faſt the Prey; but rather, for ſome purpoſe or other, to perform the uſe of a Saw.

The HEAD of the TOUCAN, ſo called by the *Indians*. From the noiſe he makes, *Aracari*. (*b*) And *Pica Braſilienſis*, for the likeneſs of both their Tails. (*c*) In the *Muſæum Romanum*, this and the *Rhinoceros Avis*, are confounded. They breed not only in *Braſile*, but alſo in *Guajana*, and other places. This Bill was ſent from *Peru*. See the Deſcription of the Bird in Mr. *Willughby*'s *Ornithologia*. That which is moſt remarkable of him, is, that his Bill is almoſt as big as his Body, which is not much bigger than (*b*) Piſo. (*c*) Will. Orn.

that of a *Black-Bird*. The Bill and Head I ſhall deſcribe more fully.

They are in length eight inches. The Skull but a little above an inch and ½ ſquare. The upper Beak, which is prominent above the Skull near ½ an inch, is almoſt two inches high, and an inch and ½ over; conſiſting of one not hollow, but very ſpongy Bone, as the Crown of the *Indian* Crow, or rather more; with a ridge all along the top, which is blunt behind, and very ſharp before; the end or point hooked down like that of an *Eagle*; and both the edges Toothed, as in the *Indian Crow*. The nether Beak near an inch and ½ over, one and ½ high, hollowed, ridged underneath, and Toothed as the upper.

The Noſtrils ſtand ſtrangely, in a place altogether unuſual, *ſc.* on the top of the Head, behind the top of the Bill. The Teeth ſerve, doubtleſs, for the ſame purpoſe, as in the *Humgum*, and the *Indian Crow*.

(*a*) Lib. 3. Sect. 2. Within his Bill, ſaith *Piſo*, (*a*) in the place of the Tongue, is contained a moveable Feather or black Quill. Were it really ſuch, it were moſt abſurd to think it any other, than one there by chance. But if a Tongue, or natural Part, it might have ſome ſuch odd figure, as to have ſome reſemblance to the ſtump of a Feather.

The BILL of the FLEMING of *Suranam*. Very like to that of a *Toucan*, ſaving, that it is not ſo ſharp-ridged; neither is it ſpongy within, but perfectly hollow. So that the Bird ſeems to be an other *Species* of the *Toucan* kind.

The LEG of a DODO. Called *Cygnus Cucullatus*, by *Nierembergius*; by *Cluſius*, *Gallus Gallinaceus Peregrinus*; by *Bontius* called *Dronte*; who ſaith, That by ſome it is called (in *Dutch*) *Dod-aers*. Largely deſcribed in Mr. *Willughby's Ornithol.* out of *Cluſius* and others. He is more eſpecially diſtinguiſhed from other Birds by the Membranous Hood on his Head, the greatneſs and ſtrength of his Bill, the littleneſs of his Wings, his bunchy Tail, and the ſhortneſs of his Legs. Abating his Head and Legs, he ſeems to be much like an *Oſtrich*; to which alſo he comes near, as to the bigneſs of his Body. He breeds in *Mauris's* Iſland. The Leg here preſerved is cover'd with

with a reddiſh yellow Scale. Not much above four inches long; yet above five in thickneſs, or round about the Joynts: wherein, though it be inferior to that of an *Oſtrich* or a *Caſſoary*, yet joyned with its ſhortneſs, may render it of almoſt equal ſtrength.

The LEG, as it ſeems, of a certain MONSTROUS BIRD. 'Tis half a foot long. Two inches and ½ about. Hath five Toes. The ſecond from the inmoſt, the longeſt. The fourth, the ſhorteſt. The fifth or utmoſt the thickeſt. It hath a very great black Spur, yet not crooked as a *Cocks*, but ſtrait, and ſharp-pointed, two inches long, and next the Leg an inch and ½ about.

A KING-FISHER, *Iſpida*. Deſcribed by Mr. *Willughby* and others.

Two HEADS of the GROSSBEAK called *Coccothrauſtes*. See the Deſcription of the Bird in Mr. *Willughby*'s *Ornith*. There is a moſt curious Picture hereof in Dr. *Charlton*'s *Onomaſticon Zoic*. They breed in *Germany* and *Italy*: but rarely, and not except in Winter, ſeen in *England*. They will crack Cherry-ſtones, and Olive-ſtones too (which are as hard again) very eaſily; (*a*) his Bill and Temporal Muſcules are ſo ſtrong.

(*a*) Willughb. Ornith.

The HUMING BIRD. By the *Braſilians*, called *Guanumbi*. By *Cluſius*, *Ouriſſia*, *i. e.* a Sun-beam; becauſe of his radiant-colours. By the *Spaniards*, *Tomineius*; becauſe (*b*) one of them with its Neaſt, weighs but two *Tomino's*, a weight ſo called by the *Spaniards*, conſiſting of 12 Grains. *Marggravius* reckons up and deſcribes nine ſorts of them.

(*b*) J. de Laet, l. 15. c. 7. *out of* J. Lerius, *at he from* Oviedus.

Yet whether he hath taken in this amongſt them, ſeems doubtful. It is of the greater kind. From the point of his Bill to the end of his Tail, above four inches and ½ long; His Bill black, almoſt an inch and ½ long, as thick as a *Shoomakers* waxed Thread; ſharp-pointed, and crooked all along like a Sithe, or exactly as the Bill of the *Guara* or *Indian Curlew*. His Head the third of an inch long, and as broad. His Neck two thirds. His Trunk an inch. His Tail an inch and ½. In which there are ten black Rudder-Quills ¼ of an inch broad. Each Wing is two inches and ½ long. Wherein there are ſixteen Oar-Quills, of a blackiſh-brown or *Eagle*-colour, a little more than ¼ of an inch broad.

Of

Of which colour are the reſt of the Feathers, and no where radiant, as of the other Species. His Thigh, ¼ inch long. His Leg, ¼. On which are four Toes, above ¼ of an inch long, and thick as a *Taylors* Stitching-Thread. His Claws near ¼ of an inch long.

The Leſſer HUMING BIRD. His Head is loſt. From the top of his Breaſt, to the end of his Tail he is two inches long. But his Trunk or Body alone, is not above ¾ of an inch in length. The other Parts are anſwerable. His colour various: on his Wings and Tail, a dark-brown; on his Belly, a yellowiſh-Red; on his Breaſt, White; on his Back, Green, mixed with glorious golden Rays.

The Huming-Bird is every where ill pictur'd: even in Mr. *Willughby*, for want of the Bird it ſelf. But all thoſe Birds, at leaſt, whereof he had the ſight, are moſt curiouſly and exactly repreſented. He is ſaid to have a loud, or ſhrill and ſweet Note, emulous of that of a *Nightingale*. (*a*) He moves his Wings ſwiftly and continually, whether flying, or ſitting on a Flower. (*b*) He feeds, by thruſting his Bill into a Flower, like a Bee. (*c*) For which purpoſe *Joh. de Laet*, deſcribing this Bird, (whether out of *Oviedus* or *Lerius* is not plain) ſaith, That his Tongue is twice as long as his Bill. Which *Cluſius* hath omitted; becauſe he took his Deſcription from the Picture only. *Gulielmus Piſo* obſerveth alſo the ſame. And it is very likely to be ſo, as a Part more apt, by its length, and flexibility, to thruſt and wind it ſelf to the bottoms of the deepeſt, and moſt crooked Flowers: in which, and not the upper and open parts of Flowers, it is, that the Honey-*Dew* which theſe Birds, as well as Bees, do ſuck, is uſually lodg'd.

(*a*) Thevetus Gallus & Linſchot. l. 2. p. 249.
(*b*) Lig. Hiſt. Barb.
(*c*) Ibid.

His Feathers are ſet in Gold by [illegible], and ſold at a great rate. (*d*) The *Indians* make of them very artificial Images. (*e*) They take them by mazing them with Sand ſhot at them out of a Gun. (*f*)

(*d*) Charlt. On. Zoic.
(*e*) Will. Orn.
(*f*) Lig. Hiſt. of Barb.

Piſo relates, (*g*) as a thing known to himſelf, and many curious and credible men with him in *Braſile*, That there are there a ſort both of *Caterpillars* and of *Butterflys*, which are transform'd into this Bird: and that in the time of Transformation, there is plainly to be ſeen half a *Caterpillar* or half a *Butterfly*, and half a Bird, both together.

(*g*) Hiſt. N. lib. 5.

Yet

Yet the same Author saith, That this Bird buildeth her Nest of Cotton-Wooll, and layeth Eggs. That a *Caterpiller* should produce a Bird; and a *Butterfly* too, the like; and yet this Bird lay Eggs to produce its own kind, are three greater wonders than any thing that hath been said of the *Barnacle*. But we will rather suppose these men were themselves deceived, than that they designed to deceive others.

CHAP. II.

Of WATER-FOWLES, particularly, of the Cloven-Footed.

THE HEAD of the JABIRU. The Bird is described by *Marggravius*, *Piso*, and *Willoughby*. He is bigger than a *Swan*. I will take leave to describe the Bill a little more fully.

'Tis above a foot and ½ long; The Skull about three inches, and two broad. The Bill black, 13 inches long, an inch and ½ broad underneath. Both the Beaks are bended upwards and crooked all along. The upper, an inch and ½ high, consisting of one triangular Bone, having a sharp Ridge on the top, and is sharp-pointed. Its hinder edges are carved with oblique Furrows or Grooves. The Nostrils ½ an inch long, an inch and ½ before the eyes. The nether Beak an inch high, and concave, but one Bone, or if you please, two joyned together for the length of half a foot from the point.

The *oblique Furrows* in the Margins of the upper Beak, are a singular Contrivance of Nature, not only here, but in many other Birds, for the more safe reception of the nether Beak; *vidt.* least it should go awry either within or without the upper, as often as it is forceably pull'd to it, and so cause a dislocation, or a strain.

Another HEAD of the same kind and bigness.

The HEAD of an INDIAN HERON. I meet neither with the Animal nor with the Head any where described, or figur'd. The Skull is about three inches square.

The

The Bill above ¼ of a foot long. The upper Beak from edge to edge near two inches over. Consists of one Bone, Triangular or Ridged at the top, a little crooked downward, Concave, and sharp-pointed. Its hinder *Margins* are obliquely furrow'd, as in the *Jabiru*. The nether Beak underneath two inches and ⅓ over. Consisteth of two Bones, joyned together for the length of not above an inch and ⅓ from the point, which is not above a fourth part of the length of Conjunction in the *Jabiru*. The edges of both the Beaks run along in a strait line.

Of the use of the oblique Furrows, before. According to the length of the said Conjuction of the bones of the nether Beak from the point, the Bird may be conjectur'd more or less voraceous. For by how much this is the shorter, by so much more may the Skin of the Beak be dilated for the comprehending of the greater Prey: as is more remarkable in the *Pelecan*.

The HEAD of an INDIAN STORK. I find not the Bird, nor the Head, any where describ'd, or figur'd. The Skull is four inches high, and almost square. The Skin of the Neck, as it is stuff'd up and stretched out with Wooll, is a foot about; standing out with a bunch in the usual place of the Crop. The Bill it self is above a foot long: and three inches and ⅓ high. The upper Beak, from edge to edge, two inches over; is one triangular, and sharp-pointed Bone, ridged at the top, and a little crooked downward; but with strait *Margins*, and obliquely furrow'd behind, as in the *Jabiru*. The Nostrils ¼ of an inch long, and two inches before the Eyes. The nether Beak consisteth of two Bones joyned together for the length of three inches from the point; the edges whereof are a little crooked upwards. Underneath, above two inches over. The edges of both the Beaks are made rough, like a Saw, with numerous small and oblique Incisions directed backward, or looking towards the Throat.

The same oblique and small Incisions are visible in the Bills of divers other Birds of the Rapacious kind; in all made for the more secure retention of the Prey.

Of our *Europæan Storks*, several of the Parts are used in Medicine, at least put into the *Materia Medica*; as the Stomach, Gall, Fat, and Dung. Of the same also are

pre-

prepared *Oleum Stillatitium, Sal volatile, Aqua Antepileptica, &c. Vulgus, ſi decipi vult, decipiatur.*

They ſometimes (ſaith Mr. *Willughby* (*a*) of the *Storke*) devour Snakes and other Serpents: which when they begin to creep out at their Breeches, they will preſently clap them cloſe to a Wall to keep them in. (*a*) Ornith.

A BUNCH of black FEATHERS, of the Creſt that grows on the Head of the leſſer aſh-colour'd or grey *Heron*. The length of thoſe whereof Mr. *Willughby* makes mention, was five inches; but of theſe, above eight. The *Turks* value theſe Feathers at a great Rate. It is reported, ſaies *Wormius*, That in *England* it is death, to kill a *Heron*. But our Lawyers know of no ſuch Law.

The BALEARICK CRANE. He differs, as to his outward ſhape, but little from the *European*: ſaving that on his Head he hath a Crown of thick Hairs or Briſtles very full and ſpreading. See the Deſcription and Picture of the Bird in *Willughby's Ornithologia*.

I once diſſected this Bird, but found not the ſame kind of Windpipe (with curious *flexures*) as is deſcribed by *Barthol.* (*b*) and Mr. *Willughby*, and by them obſerved in the *European Crane*. They are therefore ſo far two different *Species*. (*b*) Hiſt. Cent. 4.

The HORN of the UNICORNE BIRD; In *Braſile* called ANHIMA. Deſcribed by *Marggravius*, and *Willughby*, out of him. His principal marks are theſe; Headed and Footed like the *Dunghill Cock*, Tail'd like a *Gooſe*, Horned on his Forehead (with ſome likeneſs) as the *Unicorne* is pictur'd; Spurd on his Wings; Bigger than a *Swan*. The Male, ſay *Marggravius* and *Piſo*, as big again.

The HORN was given by Father *Hieronymus Lobus*. In the Bird which *Marggravius* deſcribes, the Horn was but a little above two inches long. But this is above three, and about as thick as a Bodkin. The top alſo of this is not ſharp, as figur'd (and I doubt feigned) by the ſame Author, but blunt; and, contrary to what is ſeen in Horns, rather thicker than toward the bottom. It is but of a ſoftiſh and brittle ſubſtance, inferior to the ſofteſt ſort of Horns. Conſidering which, and the bluntneſs of it, as well as ſmallneſs, compared with the Bird, it cannot be

thought to be defenſive or offenſive, as a true Horn, but muſt have ſome other uſe.

Being taken in any convenient Liquor, ſaith *Piſo*, to the quantity of about ʒij, it is often ſucceſsful in Malignant Fevers, and againſt Poyſon, by provoking ſweat.

The SPUR of the UNICORNE BIRD. It grows as is above ſaid, on the fore-Joynt of the Wings. Triangular, ſharp-pointed, and an inch and ½ long. Said by *Marggravius*, miſtakingly, to be ſtrait; it being crooked (a little upwards) as a *Cocks* Spur; and thereby fit more effectually to wound.

The HEAD of the SHOVLER or SPOONBILL. The former Name the more proper, the end of the Bill being broad like a Shovel, but not Concave like a Spoon, but perfectly flat. The extremity of each Beak is a little hooked downward. And they are both made very rough within with numerous and crooked *Striæ*. A device of Nature, for the better holding of the Prey.

This Bird is of affinity with the *Heron*-kind, from which he ſcarce differs in any Part, ſaving the Bill. He feeds on Shell-fiſh. Wherewith having fill'd his Crop, he lets them lie there, till the heat of it makes them open: whereupon diſgorging them, he picks the meat out of the Shells. Related by *Geſner* out of *Ariſtotle*, *Ælian*, and *Cicero*. (*a*)

(*a*) Lib. 2. de Nat. Deorum.

The SEA-CURLEW. By the people of *Braſile*, called *Guara*. By *Cluſius* and other *Latin* Authors, *Numenius Indicus*, and *Arcuata Coccinea*. Given by Dr. *Walter Charlton*. See the Deſcription hereof in *Willughby's Ornithologia*. About as big as a *Shoveler*, long Leg'd, ſhort Tail'd, with a Bill ſlender, long, and crooked like a Sithe. But that which is moſt remarkable, is the alteration of his colours, being at firſt black, then aſh-colour'd; next white, after that ſcarlet, and laſt of all crimſon, which grows the richer die, the longer he lives. (*b*)

(*b*) Joh. de Laet lib. 15. c. 13. & Wil. Ornith.

The BRASILIAN MOOR-HEN, called *Jacana*. Given by Dr. *Richard Lower*. See *Marggravius's* Deſcription hereof. The Colours not the ſame in all parts, as in that of *Marggravius*; the hinder part of the Back and Tail being here of a bright Bay or Cheſtnut, inclining to red: in his, only black and green mixed. Perhaps depending

depending on the difference of Ages as in the *Guara*. The Membrane wherewith he ſaith the Head is cover'd, in this, growing on the Bill, is extended only over the Forehead like an inverted Peak. He ſaith, that on all the four Toes there grows a Claw, ¼ an inch long: whereas the Claw of the hinder Toe or Heel is at leaſt an inch and ¼ long. On the fore Joynt of each Wing, grows a Spur, as in the *Anhima*; but not above ⅛d of an inch long, round, and exceeding ſharp. Which is omitted alſo by *Marggravius*, but mention'd by *Piſo*. She is remarkably diſtinguiſhed from all other Birds, by the ſlenderneſs of her Legs and Toes.

CHAP. III.

Of PALMIPEDE'S, or WEBFOOTED FOWLES.

THE PHÆNICOPTER; So called from the ſcarlet-colour of his Wings. By the *French*, *Flammant*, for the ſame reaſon. Given by *Thomas Povey* Eſq; There are an abundance of them in *Peru*. (*a*) In Winter they feed in *France*. See *Willughby's* Deſcription. His Neck and Legs are exceeding long. When *Scaliger* therefore ſaith, (*b*) That he hath the ſhorteſt Legs of any Animal yet known; he would have ſaid, the longeſt. But that wherein he is moſt remarkable, is his Bill. Which I ſhall deſcribe more particularly.

(*a*) Joh. de Laet.

(*b*) Exercit. 233. §. 2.

The Figure of each Beak, is truly Hyperbolical. The upper is ridged behind; before, plain or flat, pointed like a Sword, and with the extremity bended a little down. Within, it hath an Angle or ſharp Ridge which runs all along the middle. At the top of the Hyperbole, not above ¼ of an inch high. The lower Beak, in the ſame place, above an inch high; hollow, and the *Margins* ſtrangely expanded inward for the breadth of above ¼ of an inch, and ſomewhat convexly. They are both furniſhed with black Teeth (as I call them from their uſe)

of an unuſual figure, *ſc.* ſlender, numerous and parallel, as in Ivory-Combs; but alſo very ſhort, ſcarce the eighth of an inch deep. An admirable invention of Nature, by the help of which, and of the ſharp Ridge above mention'd, this Bird holds his ſlippery Prey the faſter.

What *Cardane* affirmeth of the *Phænicopter*, That he moves the upper Jaw or Beak, I have obſerved, ſaith *Wormius*, to be true. *Menippus* the Philoſopher alſo, (*a*) cited by *Rondeletius*, ſaith the ſame. But *Wormius* adds, That the cauſe is not ſo manifeſt, as in the *Crocodile*: yet ſhews not, in what reſpect. Hereof ſee *Sect.* 2. *Chap.* 3.

(*a*) Lib. de Homine.

As for the *Phænicopter*, it muſt needs be ſaid, That the ſhape and bigneſs of the upper Beak (which here, contrary to what it is in all other Birds that I have ſeen, is thinner and far leſs than the nether) ſpeaks it to be the more fit for motion, or to make the appulſe, and the nether to receive it. But there can be no determination of theſe matters, without Inſpection into the Muſcules and the Articulation of the Bones.

Another PHÆNICOPTER. The Tongue of this Bird, as *Apicius* ſaith, was a delicious Morſel amongſt the *Romans*.

The GREATEST LOON. *Colymbus maximus ſive Arcticus Cluſii.* Given by Mr. *Houghton* an *Apothecary* in *London*. Deſcribed by Mr. *Willughby*. (*b*) This is as big as a *Gooſe*: of a dark colour, dapled with white Spots on the Neck, Back, and Wings; each Feather marked near the point with two Spots. They breed in *Farr Iſland*.

(*b*) Ornithologiæ, p. 259.

The GREAT SPECKLED LOON of NORWAY. By the people there called LUMME. Deſcribed by *Wormius*, and out of him by Mr. *Willughby*. In the former, the Spots are fewer on the Neck, more on the Back: In this, more on the Neck, and fewer on the Back. There, each Feather hath two Spots; here, but one, near the point.

The Legs, both of theſe and the other *Species* of the *Loon* kind, are broad and flat, by which they are diſtinguiſhed from all other Birds. (*c*) Their Claws are alſo broad, in ſhape almoſt like a mans Nail; as Mr. *Willughby* alſo obſerves. (*d*) They are called *Colymbi*, becauſe they are great

(*c*) Willughb. Ornith. p. 256.
(*d*) Ibid.

great Divers. Their Legs are joyned to the Loins near their Rump; That they may both ſwim and dive with the greateſt ſwiftneſs and eaſe. (*a*) And their Bodies being hereby extended ſo much the farther from the centre of gravity, it becomes the more laborious to them to walk, and ſo inclines them to keep more on the water, as their fitteſt place; (*b*) as the ſame Author much to this purpoſe.

(*a*) Ibid.

(*b*) P. 258. & 259.

The Skin of this Bird is ſometimes worn on the Head and Breaſt to keep them warm; and preferred before the *Swans*.

The BILL of the GREATEST LOON. It belongs to the firſt *Species*, but the Bird was of leſſer growth.

The two FEET of the GREAT NORWEGIAN LOON. (*c*)

(*c*) Will. Orn.

The FOOT of the LESSER LOON, called the DIDAPPER or DOBCHICK. See the Deſcription of the Bird in Mr. *Willughby*. All the *Loons* breed in *Mona*, *Farra*, and other *Scotiſh* Iſlands.

The FOOT of the SHAG, called *Graculus Palmipes*. See the Bird in Mr. *Willughby*. He is a little bigger than a Tame *Drake*. His Foot ſtands more ſloaping than in the *Loon*; the inmoſt Toe being the longeſt. It is obſervable, that of all Web-footed Fowl or *Palmipede's*, only the *Shag* and the *Cormorant*, are known to ſit and build their Neſts in Trees. (*d*)

(*d*) Willugh. Ornith. p. 248.

The PELECANE. *Onocrotalus*, from the noiſe he makes like an *Aſs*. See the Deſcription hereof in *Aldrovandus*, *Willughby*, and others. I add, That the ſhortneſs of his Trunk or Body, in reſpect to the other Parts, is obſervable; not being a foot long: whereas from the end of his Bill to his Rump, he's near an Eln long: and to the end of his Toes, he's above a yard and half. I ſhall deſcribe his Bill a little more particularly.

The upper Beak, from the bottom of his Forehead, is fourteen inches long; behind an inch over, and convex or ridged; before, an inch and half over, and almoſt flat. It is compoſed of three Bones; the end of the middlemoſt is hooked like a *Hawks* Bill; the edges of the two utmoſt are ſharp, and bended downwards; all made rough within with five or ſix edged-lines running through the length of the Beak: thus well contriv'd for the holding the moſt ſlippery Prey. The end of the nether Beak, is almoſt like the

the Poop of a Ship. 'Tis in length ſixteen inches, being extended (I think further than in all other Birds) an inch beyond the Eye: whereas the uſual Picture, makes it to end as much before, or on this ſide it. Partly by this unuſual production; the ſwallow is the greater, as fit for ſo voraceous a Bird. It conſiſteth of two Bones, united together only at the end. To which, and part of his Neck, is ſubjoyned a Membrane vaſtly expanſible; as appears in the Bird here preſerv'd, capable of above two gallons of Water, and which *Franciſcus Stellutus*, quoted by Mr. *Willughby* out of *Joh. Faber*, ſaith, he lets hang down and contracts again at his pleaſure. It may not be improperly called the Crop, which in other Birds lies under the Neck, but in this is extended to the very end of his Bill.

'Tis probable, that the uſe of this Bag is not only for the reception, but alſo the maceration of his Meat. And that having taken his opportunity to fill it, by contracting it, preſſes the meat down into his Ventricle and Guts, by degrees, as they are able to ſubdue it. Beſides the luxury of the Taſt, which perhaps he enjoys all the while it lies in his Throat. 'Tis alſo probable, that the meat being herein warm'd, and made a little tenderer, the Female doth diſgorge part of it, wherewith to feed her Young. And might occaſion the Fiction, of this Birds feeding her Young, with her own Blood.

The HEAD of a PELECANE. Another of the ſame. Alſo the nether Beak of another.

The SOLUND GOOSE. *Anſer Baſſanus.* See the Deſcription hereof in *Geſner* and *Willughby*. He is in bigneſs and Feather very like a tame *Gooſe*. But his Bill longer, and ſomewhat pointed, more like that of the *Guilemot*. His Wings alſo much longer, being two yards over. Near *Colſhill* in *Warwick-ſhire* there was one found, *Nov.* 1669. (by ſome means fall'n on the ground) alive, not able to raiſe her ſelf up again for the length of her Wings. (*a*) But they ſcarce breed any where except on the Rocks of the Iſland *Baſs* in *Scotland*, (*b*) from whence the Name.

(*a*) Will. Orn.
(*b*) Ibid.

She hath this ſtrange property, that ſhe will ſwallow and diſgorge again a great many Fiſhes, one after another; and at laſt, return with one (in her Crop) to her young

young Ones: related by *Geſner* from an obſerving *Scot.* It ſeems probable, that ſhe trys which, of many will beſt agree with her own ſtomach, and when ſhe finds one more delicate than the reſt, ſhe carries that to her Young. When they come to build, they bring ſo great a quantity of broken Wood with them, that the People there ſupply themſelves from thence with as much as ſerves them for firing all the year. (*a*)

(*a*) Geſner *out of* H. Boethius.

They are extraordinary fat. Out of their Fat the *Scots* make a moſt excellent Oil to be uſed in the *Gout*, and other Caſes: Not inferior to that *Oleum Comagenum*, ſo much celebrated by *Pliny*. (*b*) The young *Goſlins* are by them alſo accounted a great Dainty. (*c*)

(*b*) Geſner *out of* H. B. *and* Turner.
(*c*) Wil. Orn.

The PENGUIN. So called from his extraordinary fatneſs. For though he be no higher than a large *Gooſe*, yet he weighs ſometimes, ſaith *Cluſius*, ſixteen pounds. His Wings are extream ſhort and little, altogether unuſeful for flight, but by the help whereof he ſwims very ſwiftly. See his Deſcription at large in the ſame Author; as alſo in *Wormius*, and *Willughby* out of both. I ſhall give a more full Deſcription of the Bill.

'Tis black; from the corners of his Mouth four inches and ½ long. But the Horns, or horny portions, whereof it chiefly conſiſts, are ſhorter; in the upper Beak, a little more than three inches long; in the nether, two. Again, in the upper, it is obliquely prolonged from the Margins to the Forehead; contrariwiſe, in the nether, it is obliquely ſhorten'd from the Margins to that part under the Tongue. The upper Beak is an inch high, between the corners of the Mouth as wide, but preſently riſes up into a ſharp Ridge. Its Edges about the middle, a little convex; about the end, concave and ſharp. They are double Grooved, *ſc.* before and behind. In the end, 'tis crooked. The nether Beak behind as much over, as the upper; towards the end, more compreſſed. Hollow like a Trough. Its edges ſharp, and convex before; behind, they are groov'd. In the middle, it bunches out underneath. The upper Beak, is cut with ſeven or eight oblique and crooked Notches; the nether, with as many ſtrait ones.

The height of the upper Beak; the ſharpneſs, and the extuberance of the lower; together with the grooved Edges

Edges of both, do all give the Bill a ſure hold, and wonderful ſtrength. The three Grooves, as ſo many Joynts, keep the Beaks from diſtortion, when in caſe of miſſing the Prey, they are ſwifty and forceably clapt together. The ſharp Edges of the nether Beak, ſerve inſtead of Teeth. The Bunch underneath, anſwers in ſome meaſure, to the ſtrength of an Arch. The hight of the upper Beak, to that of a Board, when ſet upon its Edge.

The *Penguin* breeds in *Canada*, in the Iſland called *Newland*, in thoſe of *Fero*, and of the *Magellanick*-Sea, and is therefore by *Cluſius* called the *Magellanick-Gooſe*. They work themſelves, as the *Coney*, deep Buries by the Sea-ſide. (*a*)

(*a*) Wormius.

The AUK, RASOR-BILL, or MURRE. *Alka Hoiari.* See the Deſcription in the forementioned Authors. She breeds on the Rocks of the Iſland *Mona* in *Scotland*. As alſo in thoſe of *Fero*. Scarce ſo big as a tame *Duck*. His Bill is like that of the *Penguin*. But the upper Beak is ſharper Ridg'd: and the Horny part of it ſhorter. The nether hath a leſſer Bunch. The Notches alſo on both are fewer; whereof one or more of them are white, as Mr. *Willughby* rightly obſerves.

The HEAD of an AUK.

The GUILLEMOT, ſo called eſpecially in *Northumberland*; in *Wales*, the *Guillem*; in *York-ſhire*, the *Skout*; in *Cornwall*, the *Kiddaw*. (*b*) LOMWIA HOIARI. He's like the *Auk*, but bigger. See the Deſcription hereof in *Willughby*; as alſo in *Wormius*. They build in *Norway* and *Iſland*. As alſo in *Farra* an Iſland in *Scotland*.

(*b*) Willugh. Ornithol.

The HEAD of the GUILLEMOT.

The PUFFIN; called alſo *Bottlenoſe*, *Coulterneb*, *Mullet*, and *Pope*. *Anas Arctica Cluſii*. Hereof ſee *Cluſius*, *Wormius*, and *Willughby*. They are leſs than a tame *Duck*. Their Bill is much like to that of a *Penguin*, ſaving that the Horn of the nether Beak is not ſhorten'd, as there, but contrariwiſe obliquely prolonged from the Margins. 'Tis alſo ſhorter, and anſwerably higher, and therefore rather ſtronger. When they fight, they will hold by their Bills ſo hard, as ſometimes to break one anothers necks, before they'l part. Whatever (*c*) they eat in the day, they diſgorge a good part of it in the night into the mouths of

(*c*) Willugh. Orn.

of their Pullen. They breed in *Island*, in the Isle of *Mona* in *Scotland*, in those of *Fero* and the *Syllies*; also in *Ireland*, and other places; laying their Eggs under ground.

The *Puffin*, *Penguin*, and *Guillemot*, all want the Heel or hinder Toe. Have all black Backs, but their Bellies, which are much under water, are White. All lay but one Egg at a sitting: proper perhaps to other Birds of this kind. (*a*)

(*a*) Willugh. Ornith.

The HEAD of a PUFFIN.

The HEAD of the MAN of WAR; called also *Albitrosse*. Supposed by some to be the Head of a *Dodo*. But it seems doubtful. That there is a Bird called *The Man of War*, is commonly known to our Sea-men; and several of them who have seen the Head here preserved, do affirm it to be the Head of that Bird; which they describe to be a very great one, the Wings whereof are eight feet over. And *Ligon*, (*b*) speaking of him, saith, That he will commonly fly out to Sea, to see what Ships are coming to Land, and so return. Whereas the *Dodo* is hardly a Volatile Bird, having little or no Wings, except such as those of the *Cassoary* and the *Ostrich*. Besides, although the upper Beak of this Bill, doth much resemble that of the *Dodo*; yet the nether is of a quite different shape. So that either this is not the Head of a *Dodo*, or else we have no where a true figure of it. I shall describe it as follows.

(*b*) *Hist. of* Barbad. p. 61.

The SKULL is four inches long; the Bill, seven; two and ½ high; one and ½ broad. The upper Beak is hollow. Is composed of six Bones. The uppermost whereof is four inches and ½ long, above ½ inch high, and convex. The middlemost on each side, also four inches long, and about ½ of an inch high or thick. The lowermost, above five inches long, and ½ high. Their Edges are furrow'd with oblique and deep Grooves both before and behind. All these five Bones are resimated or bended upward, with some resemblance to a Saddle. The sixth, at the end of the Beak, is a wonderful strong Bone, crooked exactly like the Bill of a *Parret*, and hollow; by the bow, almost three inches, and near an inch over. Its Edges are very keen, and standing out with two sharp or pointed Angles. The Nostrils are ½ of an inch long, and almost two inches

before the Eyes. The nether Beak is compoſed of three Bones. The two hinder, four inches long, near an inch high, and bended anſwerably to thoſe of the upper Beak. Their Edges are cut with deep Furrows. The third, at the end of the Beak, is hollow, above an inch long, near as high. Its Edges very ſharp, and hard, and exceedingly convex or bended downward. Underneath, a round and ſharp Pin grows out from it in a level towards the Skull, near an inch and ½ long. It was brought from the *Indies*.

The ſhape of this Bill ſhews it to belong to a Bird of Prey, and as is moſt likely, ſome great Sea-Fowl; which I will venture to call *The Great Indian Gull*. The ſtrength of the end of the upper Beak is remarkable: as alſo are the ſharp and hard Edges of the nether; and the Grooved Edges of both; the uſe whereof ſee in the Deſcription of ſome other Birds, as of the *Jabiru* and the *Penguin*. The upper Beak ſeemeth to be compoſed of ſo many Bones, partly, that if a Fracture ſhould happen to one, it might there terminate, and the reſt be ſecur'd.

The GREAT GREY GULL, or the *Herring-Gull*. *Larus griſeus maximus*. Perſpicuouſly deſcribed by Mr. *Willughby*. Who only omits to ſay, that the upper Beak is bended upwards, as in the Bill above deſcribed; and (which is obſervable) that the Edges of the nether are not ſharp, as is uſual, but broad or expanded inward (and almoſt contiguous) as in the *Phænicopter*. They (*a*) are very numerous near *Graveſend*.

(*a*) Will. Orn.

Another GREY GULL, whereof the Rump, Tail, and upper part of the Wings are very white. Given by *Henry Whiſtler* Eſq;.

The TROPICK BIRD. So called, becauſe ſaid never to be ſeen but between the *Tropicks*. *Avis Tropicorum*. Well deſcribed by Mr. *Willughby*. He only omits the Denticulation of the edges of his Bill, or thoſe ſmall oblique Inciſions, which, from their inward reſpect, are plainly made for the better retention of the Prey. Beſides ſome very ſhort Feathers on his Tail, he hath two Quills above half a yard long.

Another TROPICK BIRD like the former.

Another all over WHITE, except the fore part of

of the Wings. Both given by the forementioned Person.

The HEAD of the TROPICK BIRD.

The two Tail-Quills of the same.

CHAP. IV.

Of the EGGS and NESTS of BIRDS.

OF EGGS, there is here a considerable number: which therefore I thought fit to put altogether in this Chapter. Their Figures, as they stand together, appear the more various. For some are almost Sphærical or Round as a Ball: others, as the most, are more oblong. Of these, some few are perfectly Oval, *i. e.* with both the ends defined with two equal *Ellipses*: but most are Conical, or with one end sharper than the other. Of these again, most have their smaller end but Blunt; some few, very sharp. Lastly, almost all both Blunt and Sharp are Convexly Conical, *i. e.* they are all along Convex, not only *per ambitum*, but between both ends: whereas some few are Plano-Conical, whose Superfice is in part level between both ends.

Their Colours are also various; as White, Pale, Livid, Ash-colour, Blew, Brown, Green. Their Spots, and Speckles, are also Iron-colour'd, Red, Bay, Musk-colour, Black, &c. the Causes of all which, both Figures and Colours, were no unfit subject of enquiry. But here I can do little more than shew, to what Eggs in particular any of them do belong.

The EGG of an OSTRICH. 'Tis very smooth, and white; all over prict as it were with extream small brown Specks. Almost of a Sphærical Figure. About half a foot, by its *Axis*, from end to end. Round about, by the breadth, sixteen inches, *i. e.* near five inches and ½ strait over. Both the ends of an equal Convexity. Sometimes so big, saith Mr. *Willughby*, as to weigh fifteen pounds. The Shell is of answerable thickness, in regard to its bigness, to that of other Birds Eggs. They are sometimes set in Silver, and used as Cups.

Another white EGG, almoſt Sphærical. 'Tis ſcarce ſo long as a Hens Egg, yet is as thick, as that of a Gooſe.

A third white EGG, almoſt Sphærical. 'Tis ſcarce bigger than a little Nutmeg.

The EGG of a CASSOARY. The Shell underneath or within is white: without, it is all over rough-caſt with a Teſtaceous Cruſt of a pale Green colour. It is of an exact Oval Figure, or with both ends equally Convex. In length, by its *Axis*, five inches, round about the breadth, eleven; *i. e.* a little above three and ½ ſtrait over.

Another EGG of a CASSOWARY, like the former.

Another EGG perfectly Oval, or with both ends equally Convex. Exceeding white, as big as a *Pigeons* Egg.

Another EGG perfectly Oval, but ſomewhat leſſer, and of a light Aſh-colour.

Another EGG exactly Oval, and alſo of a light Aſh-colour, but no bigger than a Nutmeg.

The EGG, as I take it, of the leſſer DIVER or LOON. In bigneſs equal to a Hens. Of a pale wan colour. Obtuſely Conical, ſo as to come very near to an exact Oval.

The EGG, I think, of the WIGEON. It is of the ſame Colour and Figure as the laſt deſcribed: but ſomewhat leſſer.

Another EGG like the two former, but a little leſſer. Inſcribed, *Arts:* perhaps of the *Anas Arctica* or *Puffin.*

The Egg, as it ſeems, of the AUK or RAZOR-BILL. Of a pale and livid colour, with Iron-colour'd Spots ſprinkled all over it. Obtuſely Conical. In bigneſs, between thoſe of a *Turkey* and a *Hen.*

The EGG, perhaps, of the biggeſt Arctick *Loon.* It is of a dark Green colour, beſprinkled all over with Spots of a ſad Bay. Both in figure, and bigneſs, like that of a *Gooſe.*

The EGG of a CROW. Of a Blew colour, beſprinkled all over very full with dark brown Spots. Obtuſely Conical. As big as a *Pigeons.*

The EGG of a GOLDFINCH. Of a whitiſh Aſh-colour, beſprinkled with dark brown ſpots. Yet not every where, but only on the thicker end. It comes near to an exact Oval.

The

The EGG, I ſuppoſe, of a HOOP. It is longer than a large *Damaſcene Plum.* Obtuſely Conical. Of an Aſh-colour, ſtained with ſpots of a ſad or deep Bay, and of a dark Brown.

The EGG of the KITTY. In Colour, Figure, and Bigneſs, not much unlike the laſt deſcribed: yet ſomewhat leſſer, and almoſt exactly Oval.

The EGG of the CADEY. Perhaps the *Jackdaw*, by ſome alſo called the *Caddo.* It is of a pale Blew, beſprinkled with dark Spots.

An aſh-colour'd EGG, ſpeckled with Spots of a ſad Red. Obtuſely Conical; and as big as that of a *Pigeon.*

The EGG of the SEA-MOIT. In colour, almoſt like the laſt deſcribed. In bigneſs like to that of the Hoop.

An EGG in ſhape and bigneſs, like a *Damaſcene Plum.* Dyed with a full Blew, and ſprinkled here and there with a few ſpots of a ſad Bay.

The EGG of a REDSTART. Of a whitiſh Aſh-colour. Speckled on the thicker end only, with a few ſpots of a ſad Bay. In figure and bigneſs almoſt like an ordinary *Acorne.*

A pale wan coloured EGG, in bigneſs not much unlike the former.

The EGG of a WAGTAILE. Of the ſame bigneſs with the laſt, but more Conical. Of a white colour beſprinkled with very ſmall and numerous ſpecks of a blackiſh tincture.

An EGG of the ſame colour with that of the *Redſtart*, but more Conical.

The EGG of a THROSTLE. Of a pale Blew, and ſpeckled with a few ſpots of a ſad Bay. As big as a leſſer *Damaſcene Plum.* But with one end ſharp.

The EGG of a STONERUNNER. Of an Aſh-colour, beſprinkled with ſad Bay ſpots. Conical, and ſharp. Of the bigneſs of a little Walnut. Here arē four of them.

The EGG of a ROOK. Painted all over with Green and dark Brown ſpots. Conical, and ſharp. Somewhat leſs than a *Crow's.*

An Aſh-colour'd EGG, beſprinkled with ſad Bay ſpots. Conical, and ſharp. Almoſt as big as a *Pullets.*

The EGG of the SEAMEW; perhaps, of the leſſer GULL.

GULL. Of an Ash-colour tinged with blackish spots. In bigness equal to that of a *Hen*. But acutely Conical.

An EGG of a kind of Greenish Ash-colour. In bigness, and in shape like that of a *Stonerunner*. Here are two of these.

The EGG of the HORNPIE; perhaps, the SEAPIE. Of an Ash-colour mixed with a kind of *Citrine*, and stained with blackish spots. Almost as big as that of a *Hen*.

The EGG of a RED-SHANK. Of a kind of Straw colour, tinged with sad Bay spots. Most acutely Conical, or with one very sharp end. In bigness like to that of a *Rook*; but a little shorter.

The EGG, as I take it of the GUILLEMOT. Of a Green colour, stained with Black spots. Acutely Conical; and also, in part, level between both ends or Plano-conical. Somewhat bigger than that of a *Turkey*.

The EGG of a LAPWING. Of a kind of Citrine colour, stained with large black spots. Sharp, and Plano-conical. A little bigger than that of a *Redshank*.

The EGG of the SEACOB; a kind of GULL. Of an Ash-colour, besprinkled with little black specks. In shape very like to that of a *Lapwing*. But not above half as big.

The EGG of a HEN, with a thick knob so growing on its greater end, as to appear to have been originally liquid.

The EGG of a SWAN with another within it. Given by Sir *Thomas Brown* of *Norwich*. Who hath also observed the like both in *Hens* and *Turkeys*. The utmost seemeth to be a little bigger than ordinary, *sc.* near five inches long by its *Axis*, and ten round about, or three and ½ strait over. In shape like a *Turkeys*. The other which is included sticks fast to the side of the greater; whether it did so originally, as also whether both of them contained White and Yelk, is uncertain. It is of the same figure, about four inches long, bigger than the biggest *Hens* Egg. The Shell of the same hardness and thickness as that of the greater.

'Tis plain, that the lesser Egg was first perfectly form'd.

But

But not being big enough to provoke the *Uterus* to exclusion, new matter gather'd round about it for another Egg: and was the more easily supplied, because so little spent upon the former. And it may be noted, That Nature is so intent upon finishing her Work, that she may be observ'd much oftener to over do, than under do: you shall find twenty Eggs with two Yelks, or hear of twenty Animals with two Heads, for one that hath none.

From the Egg with the Lump at the greater end, it seems also plain, That the Shells of Eggs, although as hard as any Animal Stones, yet are not bred, as those, out of stony Parts visibly præexistent in liquor, and so cluster'd together: but out of a liquid substance, not much unlike to that which is separated by the Reins of Birds.

Of the figure of the Egg, it is observable, That it usually answers to that of the Body or Trunk of the Bird to which it belongs: as the Fruit is longer or broader, answerable to a tall or spreading Tree. And as it is a Transcript from the Original; so it self an Original for the next Copy. So those Birds that have a Rump and hinder Parts more Oval and spreading, as the *Duck*; or more Conical, as the *Dunghill-Hen*; breed, and are bred of Eggs alike shaped, *viz.* That so there may be sufficient, yet no superfluous Room, or Matter, for the *Chick*.

Of the Number of Eggs laid at one Breed, it is also worth the noting, That Land-Fowl, and of these especially, such as are Domestick, and whereof there is continually great destruction made, for the most part lay a considerable number of Eggs for one sitting. Whereas some Sea-Fowls, (as Mr. *Willughby* observes of the *Penguin*, and some others) lay but one. Because building upon the Rocks, where they are seldomer destroy'd, were they greater Breeders, there would not be room enough for the reception of the hundredth part of them.

The NEST of a little Bird of CHINA. Almost of a Semilunar Figure, and about two inches and ½ broad. Of a white substance, becoming soft, being moistened, and transparent like a Gelly; whereinto it seems to be convertible, in part, being boiled: and by the Gentry of *China* is esteemed a delicate sort of meat; although, like that of *Harts-Horn*, it hath no Taste. Outwardly, it is more

more close and solid; within, consisting of parts loosly Netted together, as those in the middle of *Harts-Horns*, or some spongy Bones. See also a short Description hereof in *Wormius*.

The Birds breed in *Coromandel*, and build their Nests (as is supposed of the Sperm of Fishes) (*a*) on the sides of the high Rocks; from whence the Natives fetch them, and sell them to the *Chineses* at a great rate. (*b*)

(*a*) Gulielm. Piso.

(*b*) Mus. Worm.

The TREBLE NEST of an *Indian* Bird, made to hang down from the Bough of a Tree, with three *Venters* or Bellies, and three Necks all open one into another. See the Picture of such a like one in *Willughby's Ornithologia*.

The NEST of another *East-Indian* Bird, which, to avoid the rapine of *Apes* and *Monkey's*, she hangs down from the Bough of a Tree, by a very long Neck. See the figure hereof also in Mr. *Willughby*.

The NEST of a little BIRD of BRASILE, which she hangs also on a Tree out of the reach of *Serpents*. About ten inches in length. The Structure admirable. The upper part by which it hangs to the Tree is a flat Label, about four inches long, and three over. To this the other two Parts, *sc.* the Neck and Belly of the Nest, are suspended. The Neck is five inches long; below, an inch and ½ over; above, a little straiter. The Belly is likewise about the same length as the Neck, of an Oval figure, in the middle two inches and ½ over. The Neck is open, not above, but below, at the very end: for this and the Belly hang at the Label, as you would imagine a Sack of Corn hung up by the middle, quite double. So that the Bird first ascends by the Neck, and then descends into the Belly of the Nest. It is composed of Reeds and other parts of Plants curiously woven together, like a piece of Hair-Cloath.

A GREAT NEST of an other *West-Indian* Bird. Above three quarters of a yard long, besides part of it broken off. Where broadest, near a foot over, and almost flat. Narrowed from the bottom all the way to the top. It hath two Apertures. Above, about a foot from the top of the intire Nest, one larger and longer; below, *sc.* ½ a foot above the bottom, another perfectly round, and three inches over. It consisteth of the parts of Plants somewhat loosely woven together. The Invention seemeth very

very subtile. The entry above, for the Bird her self; her Eggs and Chicks hanging safe at so great a depth; the lower, till these are fleg'd, being in the mean time stop'd up with Feathers, Moss, or other like materials: but afterwards laid open for them, that cannot reach the top, to fly out at below.

SECT. V.

OF FISHES.

CHAP. I.

OF VIVIPEROUS FISHES.

THE RIB of a TRITON or MAREMAN. About the same length with that of a Mans, but thicker and stronger; and nothing near so much bended. The Fish to which it belonged, was taken near *Brasile*. Of this kind, *Wormius*, in his *Musæum*, gives us divers Relations, together with the Descriptions of several *Species*. See also *Joh. de Laet.* (*a*) of the same. And *Barlæus*, who saith, That in *Brasile* he is called *Ypupiapra*. (*a*) L. 15. c. 12.

A BONE said to be taken out of a MAREMAIDS HEAD. It is in bigness and shape not much unlike that called *Lapis Manati*; but the knobs and hollows thereof are somewhat different.

One JOYNT of the BACK-BONE of a WHALE. By *Anatomists* called a *Vertebra*. [illegible] one of those Parts or Joynts which answers to one single Rib on each side. It weigheth Thirty pounds *Haverdupois*. In length, *i. e.* by the length of the Back-Bone, near ½ of a foot; above a foot high; and three quarters of a yard broad, *i. e.* by the bredth of the *Whale*. The Hole in the middle of it, which the Marrow of the Back passeth through, near half a foot over. All its Knobs, are much alike those in *Quadrupedes*.

The PISLE of a WHALE. In length, above a yard. Near the Root ½ a foot round about; notwithſtanding its being now dry and much ſhrunk. From thence it tapers to the very end, which is ſcarce one inch about. 'Tis now as hard as a Horn.

Part of the EAR-BONE of a WHALE. 'Tis as hard, and heavy for its bulk, as any Bone whatſoever. As big as a labouring mans Fiſt: The ſame Bone which in an Ox, is little bigger than a Nutmeg.

Part of a BONE ſaid to be taken out of the Brain of a *Whale*, taken near the *Bermudas*. Given by Dr. *John Wilkins*, the late Biſhop of *Cheſter*, to whom it was ſent from thence. It ſeems to be part of the Brain-Pan, that was broken off and ſtruck into the Brain, when the *Whale* was taken.

A ROUND BONE of a WHALE. Given by Dr. *Walter Pope*. 'Tis almoſt a foot Diametre, and in the middle about five inches thick. 'Tis rounded on the Edges, and thinner than at the middle, reſembling a thick *Holland* Cheeſe.

Three more Round BONES of a WHALE; all of them leſſer, and one ratably thicker than the former; the other thinner, like a white penny Loaf. The third the thinneſt, almoſt like a Tanſey.

(*a*) Muſæum.

Wormius (*a*) makes mention of a *Manuſcript*, entituled, *Speculum Regale:* but written in the ancient *Daniſh*-Tongue, as he ſaith is ſuppoſed, by King *Suerron*; in which are reckon'd up two and twenty kinds of *Whales:* of all which he gives a brief account in his *Muſæum*. Of which, the laſt ſave one, is ſaid to be ſometimes almoſt an hundred and thirty Elns long. The laſt of all, liker a little Iſland, than an Animal.

(*b*) Hiſt. Cent. 4.

Bartholine (*b*) alſo reckons up the ſame number; but with ſome different Names, and a different Account; which he gives from a Manuſcript Hiſtory of the Fiſhes of *Iceland:* which, ſaith he, a curious and obſerving Shepherd of *Iceland* ſent to *Wormius* ſome years before his death, with all their Figures. But how theſe two accounts agree, I ſee not. I would not think, That *Wormius* did here put in the King, and leave out the Shepherd, to make the ſtory better.

On

On the Snout of one of theſe *Whales*, called *Hoddunefur*, grow about five hundred horny flat pieces, which *Taylors* in *Denmark* uſe in making of Cloaths. (*a*) The ſame in ſubſtance, with that we call *Whale-Bone*, belonging to the Finns. In *Iſland* they are ſo commonly taken, That the hard Bones are there uſed for the impaling of Houſes and Gardens. (*b*)

(*a*) Ibid.

(*b*) Muſ. Rom.

The HORN of the SEA-UNICORNE. Given by Sir *Joſeph Williamſon* now Preſident of the *Royal-Society*. It is an entire one, eight feet long, or about two yards and three quarters. Very beautiful in length, ſtraitneſs, whiteneſs, and its ſpiral Furrows bigger and leſs, making about ſeven Rounds from the bottom to the top, or point. At the *Baſis* or bottom, about ſeven inches round. From thence, for about a foot, it ſwells a little, and then again grows ſlenderer, all the way, and ſo ends in a ſharp point. 'Tis alſo conically hollow at the *Baſis*, for near three quarters of a foot deep.

The ſame Horn (together with the Fiſh it ſelf, ſometimes above 30 Elns long,) is deſcribed by *Wormius*. (*c*) But I cannot, with him, call it a Tooth. In that, it performeth not the office of a Tooth, but of a Horn. Neither doth it ſtand as a Tooth, but horizontally. Nor is it fixed in the Mouth, where all Teeth ſtand, but in the Snout. The reaſon why he calls it ſo, is, becauſe it is faſtened in the Snout, as Teeth are in the Jaw. See alſo the Deſcription hereof in *Bartholine*. (*d*) But in that he makes it to be *Gyris Intortum*, is not (at leaſt as to this Horn) ſo clearly expreſſed: the Horn it ſelf being ſtrait, and not writhen, but only ſurrounded with ſpiral Furrows. The ſame is alſo tranſcribed by *Terzagi* out of *Wormius*, into *Septalius*'s *Muſæum*.

(*c*) Muſæum Wor.

(*d*) Hiſt. Cent. 4.

Of the Virtue hereof, *Wormius* mentions two Experiments. The one, upon its being given to a Dog, after a Doſe of *Arſenick:* but he expreſſeth the quantity of neither. The other, upon twelve Grains hereof given after a Drachm of *Nux Vomica*. Both the Dogs lived; whereas two other Dogs having the ſame Doſes, without the Horn, died. Both experiments are atteſted by ſeveral Phyſitians of Note.

The credit of theſe Perſons is not doubted. But the

queſtion is, Whether theſe Dogs might not have liv'd without the Horn. As ſome Dogs that have been bitten by an *Adder*, have been obſerv'd to get over their Convulſions, and recover. It is alſo ſaid in one of the Experiments, that the Dog which liv'd, vomited: and in the other, there is nothing ſaid to the contrary. The queſtion therefore is, Whether many other things, which will cauſe vomiting, may not do as well, as this ſo much celebrated Horn?

Whatever it may perform againſt Poiſon, it hath, ſaith *Bartholine*, been very ſucceſsfully uſed by Phyſitians in Malignant Fevers. As in that, which at *Coppenhagen* in the years 1652, and 1653. was very brief: and which it carr'd off with very great Sweats. (*a*) It was uſed alſo by *Albertus Kyperus* at *Leyden* in the Year 1655. in the like Caſe, and with the like ſucceſs. (*b*) And that the ſweating proceeded not meerly from Natures own ſtrength over the Diſeaſe, but as ſhe was helped by the uſe of the Horn; ſeems probable from what *Bartholine* further ſaith, (*c*) That a ſcruple or ℈ß hereof being given in *Carduus-Water*, or other convenient Liquor, cauſeth a free and copious ſweating, even in thoſe that are not uſed to ſweat, except with much difficulty.

(*a*) Barthol. Hiſt. Cent. 4.

(*b*) Ibid.

(*c*) Ibid.

Heretofore, the chief Biſhops in *Denmark*, uſed to make their *Epiſcopal* Staffs of theſe Horns. (*d*) The Natives of *Groenland*, and other Places where the *Sea-Unicorne* is taken, arm the ſharp ends of the thickeſt and longeſt of theſe Horns with Iron Beards, and ſo uſe them for the wounding and taking of *Whales*.

(*d*) Ibid.

The *Sea-Unicorne* is it ſelf a leſſer *Whale*, and is that *Species* which the People of *Iſland*, where there are many, call *Narwhal*. The figure which *Olaus Magnus* gives of the Head, is fictitious.

A PIECE of the SEA-UNICORNS HORN.

The SAW-FISH. *Priſtis*. *Johnſton* hath given a good figure (*e*) hereof, but without either Name or Deſcription. And that of *Wormius* is defective, and in ſome particulars, out.

(*e*) Tab. 4. N. 1.

This here is a young One; from the end of the Saw to the end of the Tail, four feet. The Saw it ſelf above a foot; near its *Baſis*, two inches broad; at the fore-end, one

one. Armed, on each side, with seven and twenty Spikes, each ½ an inch long, bended a little backward, and with two sharp edges behind, as the Spur of the *Unicorne* Bird hath above.

His Head very flat, about three inches long; behind, almost four inches broad; before, two. His Eyes an inch long, as much behind the Snout, two inches distant. Above ½ an inch behind his Eyes he hath two Spouts, about ¼ of an inch wide, by both which (as some Fishes by a single one) he casts out the Water, which in taking the Prey, or otherwise, he receives into his mouth. Beneath, close by the Root of the Saw, are two oblique Nostrils, an inch distant, figur'd like the letter S. An inch behind these, his Mouth, two inches and ½ over. His Lips are rugged with extream small round knobs. He hath no Teeth.

The Apertures of his Gills are five; placed obliquely, not on his sides, but his Breast, about four inches behind his Mouth.

His Trunk or Body presently behind his Head, becomes fives inches broad, and about three high; from whence it is again extenuated all the way to the end of his Tail.

He hath seven triangular Finns. On the bottom of his sides, two Gill-Finns, not behind the Gills, as in most Fishes, but for a good part before them; near eight inches long, above three broad, and almost horizontal. Three inches behind these, two Belly-Finns, two inches broad, five long, and as much distant. Directly over these, on the Back a fifth, four inches long, above three high. On the Back also, but near the Tail, a sixth, four inches long, and as high. The Tail-Finn, as it were half a Finn, being ½ a foot high, but underneath level with the Tail.

Cover'd all over with a tough and dark-colour'd Skin, somewhat rough, as you draw your hand forward: from the Belly-Finns to the end of the Tail, as it were pinched together into a little Ridge on each side. There are many of them in the *Indian*-Sea.

The reason why he hath two Spouts, seemeth to be the flatness and breadth of his Head or Mouth; in which the Water lying more spread, could not so expeditely be carri'd off by a single one in the middle, as by one on each side.

He

He is ſaid to defend himſelf from the *Whale* with his Saw. Wherewith, by its ſtructure, 'tis plain, that he fetches his ſtroak backward or ſide-ways, the Spikes being bended, pointed, and edged, and ſo made to prick and cut, that way.

The SAW or SPIKED SNOUT of the SAWFISH. 'Tis a very large one, four feet long, or above an El'n by three inches. Its *Baſis*, excluding the Spikes, ſeven inches broad. On each ſide are ſeventeen Spikes, moſt of them two inches and ½ long, and figur'd as above deſcribed.

The length of the Fiſh before deſcribed, from end to end, if compar'd with the Saw is as four to one. Therefore the Fiſh, to which this Saw belong'd, was near five yards and half long. Again, the number of Spikes in the Saw of the Fiſh now deſcrib'd, compared with thoſe in this great Saw, is ſomewhat more than as three to two. Therefore had the ſaid Fiſh liv'd to the Age of this to which the great Saw belonged, it would have been eight yards in length.

Five more ſuch like SAWS, ſomewhat leſs.

The HEAD of the RAPIER-FISH; called *Xiphias*. By the *Braſilians*, *Araguagua*. He is pretty well deſcribed by *Rondeletius*. Grows ſometimes to the length of five yards. The Sword, which grows level from the Snout of the Fiſh, is here about a yard long, at the *Baſis* four inches over, two edged, and pointed exactly like a Rapier. He preys on Fiſhes, having firſt ſtab'd them with this Sword. (*a*) The *Whale*, ſaith *Ligon*, to ſhake off the Sword-Fiſh and *Theſhall*, his two mortal enemies, leaps ſometimes more than his own length above water. (*b*) He is taken frequently in the *German* Ocean; as alſo in the *Black-Sea*; and ſometimes in the *Danuby*.

(*a*) Charl. Onom. Zoic.

(*b*) *Hiſt. of* Barb. p. 6.

The HEAD of the TUCK-FISH. Of the Sword-fiſh kind, but a different *Species* from the former. Whether it be any where deſcrib'd, ſeems doubtful. The hinder parts of the Head are here broken off. The Snout is not ſo flat as in the Rapier-fiſh, but thicker and rounder, more like a *Tuck*, from whence I take leave to name it. 'Tis half a yard long; near the Head, two inches over; about the middle, one. Not with a flat point, but one perfectly round. The upper part hereof is ſmooth, the nether rough,

rough, the smooth and rough parts continu'd obliquely from the Point to the Root. Both the Chaps are also rough in the same manner, in the place of the Teeth, which this Fish hath not. The nether Chap hath also a different shape from that of the Rapier-Fish: this being not above four inches over, that half a foot; yet both are a foot long. It is composed of two Bones, so joyned together, for the space only of an inch and half, as to make a sharp point.

Marggravius and *Piso* (and out of these *Johnston*) describe an *American*-Fish by the name of GUEBUCU, of kin to this, the Head whereof is here describ'd. But cannot be the same, unless both the Pictures which they give, and *Marggravius*'s Description (who particularly saith, That the Snout is sixteen inches long, the nether Chap, ten) be false. For in this Head, the nether Chap is broader, and comparatively not near so long.

The HEAD of the UNDER-SWORD-FISH. It is described by no Author that I have perus'd. The Fish seems to be a smaller kind. The Head is of a triangular figure, having one acute Angle below, and a blunt one on each side. An inch and quarter high; the Forehead an inch over, flat, and scaly. In length 'tis about two inches and a quarter. The Eyes, proportionably, exceeding great, *sc.* three quarters of an inch over. The Snout half an inch broad, not above ¾ of an inch long, a little ridged in the middle. The Chaps, instead of Teeth, are rough with many little Asperities, almost as the skin of a *Scate*.

The Sword grows in a level, not from the upper but the under Jaw, from whence we may give the Fish his Name. In length three inches; near the Jaw half an inch over, from whence growing narrow all the way, it endeth in a Point like that of a Sword. It is not round, but flat, as that of the Rapier-Fish, and in like manner two-edged. It seemeth to be composed of two Bones, but very firmly coherent edge to edge all the way. Whether this Fish be Viviperous, is uncertain; yet being of the Sworded-kind, I have ventur'd here to describe the Head.

A pair of the MANATEE-STONE'S. Taken out of the Head of the SEA-COW, by the *Indians* called *Manati*. Bigger than the biggest sort of Walnuts; with several knobs

knobs and hollows, like as in the Ear-Bone, but much greater. It is ſaid by *Joh. de Laet* to be much commended againſt the Stone. There are two of them in every Head.

The Head of the *Manati* is like that of an Ox or Cow, from whence the *Engliſh* Name; his Eyes little; his Body long, like that of an *Otter*; his two Feet like an *Elephants*. Sometimes he is about thirty five feet or twelve yards long, and four broad. (*a*) He feeds not on Fiſhes, but the Graſs on the banks of the Creeks and Bays. (*b*) Calves and ſuckles her Young (as ſome other Fiſhes) with two Duggs. (*c*) A certain *Indian* King kept and fed one of them with Bread ſix and twenty years in a Lake near his Houſe, which grew tame, beyond all that the Antients have written of *Dolphins:* He would ſometimes carry ten people on his Back, with eaſe, a croſs the Lake. (*d*) They breed in *Hiſpaniola*, *Jamaica*, *Braſile*, and other places.

(*a*) Charl. Onom. Zoic. *out of* Hieron. Benzon. Hiſt. N. Orb. l. 2. c. 14.
(*b*) Traph. Diſc. *of* Jam.
(*c*) Ibid.
(*d*) Charl. On. Zoic. *out of* Petr. Martyr.

The BALANCE-FISH. *Zygæna Libella.* Curiouſly pictur'd in *Salvian.* Where alſo ſee the Deſcription. He hath his Name not unaptly from the ſhape of his Head, very different from that of all other Fiſhes, being ſpread out horizontally, like the Beam of a Balance; his eyes ſtanding at the two extremes, as the iron Hooks do at the end of the Beam. He grows ſometimes to the length of four or five yards: but this is a young one. They breed in the *Mediterranian*, eſpecially, ſaith *Bellonius*, near *Smyrna.*

The HEAD of a great BALANCE-FISH. It is two feet ½ over, or from eye to eye. The Head of the leſſer now mention'd, is five inches over, the Fiſh, 20 inches long. That therefore to which this great Head belong'd, was ten foot long.

The SKULL of the MORSE: ſo called by the *Muſcovites*; by the *Danes*, *Roſmarus.* He hath four feet, and his Body ſhapen not much unlike the SEA-CALF. But groweth ſometimes to be bigger than an Ox. In his upper Jaw, he hath two remarquakble TUSKS, bended a little inward. In this Skull, the exerted part is five inches long, and four round about at the Root. His other Teeth are undeſcrib'd. They are ſixteen, eight on each Jaw. Not Grinders but Punchers, or ſomewhat anſwer-

able

able in ſhape to the Tusks of a Dog. In the upper Jaw, the longeſt; ſtanding on each ſide, two or three of them, within ſide of the Tusks. They have a ſmall flat on their inſides, againſt which the Teeth of the under Jaw work; which are much ſmaller, and flat-ſided. The ſhape of theſe Teeth ſeems no way fitted, and their ſtrength very ſuperfluous, for the eating of green Leaves at the bottom of the Sea, as this Animal is ſuppoſed to do.

The Figure which *Olaus Magnus* gives of this Animal, is fictitious. But that in *Joh. de Laet* (as to the Head at leaſt) is a very good one: from whom *Wormius* borrows his. One of the Cubs is accurately deſcribed by *Everh. Vorſtius*, quoted by *John de Laet*, by *Wormius*, and by *Terzagi* in *Septalius*'s *Muſæum*. This Animal, when he goes, drags his hinder part after him, as the Seal. They always, ſaith *Scaliger*, (*a*) come on Land in Companies; and when they ſleep, one of them, as among *Cranes*, is ſet to watch. They climb upon the Rocks on the Sea-ſide by the help of their great Tusks, wherewith, as with two Hooks, they hold themſelves from ſliping. They breed numerouſly near St. *Lawrence* Iſle.

(*a*) Exer. 218. S. 4.

Their Tusks are uſed by the *Turks* and *Tartars* for the making of Sword-Handles. (*b*) I have a Girdle, ſaith *Wormius*, (*c*) compoſed of Plates made of theſe Tusks; which being worn, is an infallible Remedy againſt the Cramp: *à Spaſmo proculdubio immunes reddit.*

(*b*) Muſæum Wormianum.
(*c*) Ibid.

A piece of a MORSE-HIDE. Than which, ſaith *Wormius*, I believe there is no Animal hath one more cloſe and ſolid. I add, nor perhaps any that hath a thicker, being above half an inch thick.

A PISLE, ſaid to be that of the MORSE. 'Tis above a foot long, and ſeems to be only the exerted Part. At the Glans, half a foot about, now it is dry. The *Muſcovites*, ſaith *Vorſtius*, (*d*) take the Powder hereof to bring away the Stone.

(*d*) Quoted by Laet, l. 2.

The MALE or WHITE SHARK. *Canis Carcharias mas.* See the Deſcription hereof in *Rondeletius*. This is about two yards long, and near ⅓ of a yard over, where thickeſt. But they are found ſometimes ſeven or eight yards in length, and more. One hath been taken, ſaith *Geſner*, from an other perſon, near four thouſand pounds

weight. The ſharpneſs and multitude of his Teeth eſpecially, and the widneſs of his Mouth, are remarkable. They will often bite off the Legs or Arms of thoſe that venture into the Sea in a Calm; and ſometimes ſwallow them up whole. (*a*)

(*a*) Ligon's *Hiſt. of* Barb. p. 5.

Their Teeth generally ſtand in a ſix-fold Row; but *Bellonius* obſerves one with four Rows only. There are ſome other Fiſhes which have as many, and the Scate hath more: but take their Number and Bigneſs together, and they are more conſiderable. In *Septalius*'s *Muſæum*, there is one, ſaith *Terzagi*, (in words at length) with a thouſand and two hundred Teeth. But neither hath this here, nor had any other that I ever read of, near half ſo many.

Of his Optique Nerves, *Rondeletius* obſerves, That they are not, as in other Animals, but plainly *Cartilaginous.*

The *Goldſmiths* in *France*, ſaith the ſame Author, ſet the Teeth of the *Shark* (which there they call *Serpents* Teeth) in ſilver-Caſes; and the Women hang them about their Childrens Necks, to make them breed their Teeth the better. The Brain of the *Shark*, ſaith *Wormius*, (*b*) is highly commended by ſome for the Stone. The people of *Iſland*, ſaith the ſame Authour, boil them for Lamp-Oil. They are found ſometimes upon our own Coaſt, near *Cornwall.*

(*b*) *Out of* Lact.

The LONG-SNOUTED SHARK. So I call it, becauſe it is much longer, than in the above-mentioned; ſo as to be as it were the beginning of a Horn. The Body of this likewiſe, in proportion, is much ſhorter and thicker. *Rondeletius* ſeems to give the Figure of this particular *Species.*

There is no ſort of Animal, ſaith *Ariſtotle*, (*c*) about us, which hath a double Row of Teeth. So that he never ſaw a *Shark*, nor divers other Fiſhes that are commonly known, and ſuch as are not unlikely to breed about *Greece.* That he includes Fiſhes, is plain by the Context.

(*c*) Hiſt. An. l. 2. c. 1. *near the end.*

The GILL-FIN of the long-ſnouted *Shark.*

The JAWS of a SHARK. There are ſix or ſeven pair of theſe here preſerved. *Terzagi* mentions one pair in

in *Septalius's Muſæum*, that were wide enough to have ſwallowed any Man.

Two great TEETH of a SHARK. They are both curiouſly indented, like a Saw, on each edge: as alſo the Teeth are in younger *Sharks*, but not ſo viſibly. One of theſe is above an inch and half long. But one of thoſe in a *Shark* of above two yards in length, is not half an inch. The *Shark* therefore, to which This belonged, was about eight yards long.

What the Teeth of a *Shark* wants in thickneſs, they have in breadth, whereby they are the more terrible; both pricking with their Points, and cutting with their Edges at the ſame ſtroak.

Part of the BACK-BONE of a SHARK.

The TOOTH of a PICKED-DOG. Not much unlike that of a *Shark*. The difference is, That the exerted part of this is bended, not inwards, but ſide-ways.

The SPOTED HOUNDFISH or SEA-PANTHER; *Galeus Aſterias*; becauſe of the Stars or Spots upon his Skin. But the radiation of the Spots in the Figure commonly given, is fictitious. See *Rondeletius's* Deſcription. He hath a rough Skin, as have all of this kind. Yet this Author ſaith, he hath a ſmoother Skin, than the *Galeus lævis:* which, however comparatively taken, it may be true, is not well expreſſed of either. The ſaid Roughneſs is cauſed by an infinite number of moſt hard and ſharp Prickles, compoſed in the ſame manner as the Scales of Fiſhes.

The Female brings forth often times twice in one month, and ſo is ſaid to *Superfœtate:* which, ſaith *Ariſtotle*, (*a*) ſeems rather to be, becauſe her Eggs are hatched (in her Womb) one after another. (*a*) Hiſt. An. lib. 6. c. 11. & l. 5. c. 10.

The PICKED-DOG. *Galeus Acanthias.* Becauſe he hath two ſtrong and ſharp Spikes growing on his Back, behind the two Finns, and pointing towards his Tail. See the Deſcription in *Salvianus* and *Rondeletius*. Beſides the two Finns which grow on each ſide the *Anus*, the Males, ſaith *Salvian*, (*b*) have alſo two Appendices, one on each ſide the *Anus*. But betwixt the *Anus* and the Tail there is no under-Finn; by which he differs from the reſt of the Dog-kind. He is ſaid ſcarce to grow ſo big, as to exceed twenty pounds in weight. His Skin is rough with the like Prickles, (*b*) Hiſt. 42.

as in the former; ſo ſmall, as ſcarcely viſible without a *Microſcope*. But eaſily felt by drawing your hand towards the head. The ſhape alſo of the Teeth is odd and unuſual, being armed with little ſharp Hooks on each edge. They are taken ſometimes upon our *Engliſh* Coaſt.

The Anatomy of the *Galeus* (the Male) is given us by Sir *George Ent*, in Dr. *Charleton*'s *Onomaſtic. Zoic.* Some of the moſt obſervable Remarks, are the peculiar ſhape of the *Pancreas*, and eſpecially the Spleen, having a Label produced from one ſide, above twice its own length. Likewiſe the Purſe at the farther end of the *Duodenum*, into which it opens only by a very ſmall round Hole, not ſo wide as to receive the end of ones little finger: all which are deſcribed and figur'd. He hath alſo growing on the lower Eye-lid, a thick and firm Membrane, wherewith he often winkles or covers his whole Eye: the ſame with that called the *Periophthalmium*, common to very many Birds.

The Deſcription of the Viviparous Eggs in the Female; which are not unlike to thoſe of the *Raya*, is given by *Rondeletius*. *Bellonius* hath ſeen an indifferent One, to bring forth thirteen young ones at a Birth. So ſoon as ever ſhe hath brought them forth, they ſwim along with her, and if any of them are afraid of any thing, it runs immediately into the Mouth, ſay ſome, into the Womb of the Dam: when the fear is over, returns again, as if by a ſecond Birth.

The Skin is uſed for the poliſhing of Wooden and Ivory Works.

The HEAD of a DOLPHIN, about a foot and ½ long. The *Dolphin* therefore to which it belong'd, was above two yards and half long. In the Skin, 'tis hard to find any paſſage of ſound for Hearing. And *Ariſtotle* denies that the *Dolphin* hears. But *Rondeletius* truly ſaith, that he doth, and that the whole ſtructure of the Internal Ear may be ſeen in the Skull. See *Bellonius*'s Deſcription and Figure of the Dam and her *Fœtus*.

The HEAD of a DOLPHIN, leſſer than the former.

The TAIL of the DOLPHIN. It is expanded (as alſo in the *Porpeſs*) in a way peculiar, not uprightly, as in other Fiſhes, but horizontally: by the help of which, he makes his Gamboles above the Water. And at the ſame time

time takes his Breath: as Mr. *Ray* hath well obſerved of the ſame uſe in the *Porpeſs.* It is alſo of uſe to caſt him forward by ſtrong and repeated jirks, whereby he is ſo admirably ſwift, as it's ſaid, above all other Fiſhes. (*a*) There is alſo another *Dolphins* Tail here preſerved of the ſame bigneſs.

(*a*) Phil. Tranſ. N. 76. p. 2275.

The SKELETON of a PORPESS, or Sea-Hog. (*b*) The Deſcription and Anatomy of the Animal is given us by *Bartholine* (*Hiſt. Cent.* 2.) By Mr. *Ray* (*Phil. Tranſ. N.* 76.) By *Dan. Major* (*Miſcel. Curioſ. German. An.* 4.) And lately more largely by Dr. *Edward Tyſon.* Some of the particulars more remarkable are, That the Fat, which is an inch thick, encompaſſeth the whole Body, as in a Hog. That the *Fibers* which run through the Fat from the *Membrana Carnoſa* to the Skin, do obliquely decuſſate one another like a Lattice. And I may here obſerve, That the like Decuſſation is made betwixt the white and red *Fibers* of all *Muſcules.*

(*b*) Turſio Plinii. Phocæna Rondeletii.

'Tis further noted, That the Fat is nothing elſe but Oil contained in a great number of little Bladders. I add, That all theſe Bladders are the continuation of the *Fibers* which decuſſate, in a finer Work. And that there is no difference betwixt the ſaid *Fibers* and thoſe of the *Membrana Carnoſa,* ſaving their Relaxation, (as when a Spung ſwells with water) by the interpoſition of Oil.

The Stomach remarkable, conſiſting of three Bags. The Guts eleven times the length of the Fiſh. The Glands of the Kidneys ſo diſtinct, that each having a white ſubſtance in its centre, and out of that its *Papilla,* ſeemed to be another little Kidney, about the bigneſs of a large Peas. And I ſhall here take notice, That the whitiſh ſubſtance within every Gland, and the ſame which is in the Kidneys of other Animals, is truly Carneous or *Muſcular*, by which the conveyance of the Urinous parts of the Blood into the *Pelvis* is promoted.

The Paps are placed one on each ſide the *Pudendum.* The *Ovaria* (it being a young Fiſh) not above an inch long, and thick as a Gooſe-Quill. The Diaphragme, without the uſual Tendon in the centre. The Heart, with two Ventricles and two Auricles. The Foramen Ovale, cloſed. The Lungs conſiſting of two great Lobes. The *Larnyx*

very

very prominent, oddly ſhaped, like an old faſhion'd Ewer. The Spout with ſtrong Muſcules; and *Papillæ* for the iſſuing of Snot. The Eye with the *Muſculus Suſpenſorius*, as in Bruits. The Brain large, weighed above ℔j *averdupois*, the Fiſh ℔xcvj. The *Muſculus Pſoas*, and two others on the Back, very large and ſtrong.

The Teeth (96 in all) ſo placed, that thoſe of one Jaw, are received into the diſtances of the other. Stand not in diſtinct Sockets, but all in one common Furrow. The Ear-Bone is oddly ſeated in a hollow, and encompaſſed with Muſcules. The *Drum* well braced, but no *Incus ſtapes & Malleolus* to be ſeen. The Brain-Pan five inches broad, and but three long; the Brain anſwerable. The Back-Bone is compoſed of ſixty *Vertebræ*. *The ſame number, as is before obſerved to be in that of a Crocodile.* The Bones of the Fore-Finns, reſemble thoſe of an Arm with Hand and Fingers. Of the Tail, like thoſe of two feet joyned together.

From the Noſe to the Tail-end about an Ell long, and roundiſh, the Eyes and the Gape of the Mouth ſmall, the Back and upper parts black, the Belly white, the Tail horizontal: much like a *Dolphin*, ſaving that ſhe is ſhorter ſnouted.

The SEA-CALF or SEAL. *Phoca. Vitulus Marinus*; From the noiſe he makes like a Calf. See *Rondeletius*'s Deſcription. His Head comparatively not big; ſhaped rather like an *Otters*; with Teeth like a *Dogs*; and Muſtaches like thoſe of a *Cat*. His Body long, and all over hairy. His fore-Feet, with Fingers clawd, but not divided; yet fit for going. His hinder Feet, more properly Finns, and fitter for ſwimming, as being an Amphibious Animal. The Female gives ſuck, as the *Porpeſs* and other Vivipa-rous Fiſhes. This here is about a yard long. But ſometimes they are as big, ſaith Mr. *Ray*, as a Heifer of two years.

The Skin of this Fiſh is commonly uſed for the covering of Trunks. They are innumerable in the *Atlantick*-Sea; eſpecially the Bay there called *The Seal-Bay*. (*a*) Our Mariners and Fiſhermen often take them in the *Iſle of Wight*, as they lie aſleep upon the Shore. (*b*) As alſo about *Cornwall*.

(*a*) Laet. l. 13.

(*b*) Charl. Onomaſt. Zoic.

Another SEAL like the former, only ſomewhat thicker. Given by Mr. *J. Houghton, Ph. L.* The

The LONG-NECK'D SEAL. I find him no where diſtinctly mention'd. He is much ſlenderer than either of the former. But that wherein he principally differs, is the length of his Neck. For from his Noſe-end to his fore-Feet, and from thence to his Tail, are the ſame meaſure. As alſo in that inſtead of fore-Feet, he hath rather Finns; not having any Claws thereon, as have the other kinds.

The SKULL of a SEAL. Given by *Henry Whiſtler* Eſq;. The Teeth are ſhaped ſomewhat like a *Dogs*. The tops of them all are flat, being doubtleſs filed off. The *proceſſus* of the *Os Frontis* which makes up the Orbit of the Eye in Land-Animals, is here wanting; and the ſaid Bone pinched up much more narrowly: Both to make room, as it ſhould ſeem, for a very large Eye. The paſſage into the Ears ſtands very oddly. In *Dogs*, *Cats*, and moſt other Land-Animals, forward and outwardly. But here it ſtands juſt oppoſitely, *ſc.* behind and inwardly.

The FORE-FOOT of a very great SEAL.

The VIVIPAROUS EEL-POUT. *Muſtela marina vivipara.* (the Male, *Lupus marinus Schonfeldii.*) 'Tis well pictur'd by *Adam Oleareus*, (*a*) who calls it a *Sea-Wolf* (*Ein See-Wolf*). As alſo by *Johnſton*; but not deſcribed. But in *Geſner's Paralypomena* 'tis both figur'd and deſcribed by *Ge. Fabritius* under the Name of *Klipfiſch* (*i.e.* Rock-Fiſh,) ſo called by the people near the *Baltick* (where he breeds.) *Fabritius* is particular only as to the Teeth, and is alſo miſtaken in ſome things. I ſhall therefore add the Deſcription I drew up before I met with his.

(*a*) Tab. 27. f. 2.

'Tis a yard long. The Head ½ a foot long, and almoſt as high; being compreſſed on the ſides, three inches and ½ over underneath, her Forehead but a little above two. Her Snout a little Convex. The Eyes very high, an inch long. The Noſtrils before the Eyes ½ of an inch. Both the Chaps blunt-angled before, from the Corners of the Mouth three inches long, between the Corners, as much.

The Teeth all very thick, like thoſe of *Quadrupedes*; both in figure and ſcituation, very unuſual. In the upper Jaw, five before; not Inciſors, or Cutters, but thick Punchers. To the Roots of which, within ſide, grow as it were nine little Teeth. Behind, are three Grinders; one of

of which, on each ſide, is faſten'd obliquely inwards, half an inch broad, and above an inch long. The third, and the greateſt, ſtands betwixt them in the middle of the Palate. Each of theſe having deep Inciſions, ſeem, as it were, eight or ten Teeth. In the under Jaw, are two Punchers or Claviculars, each of them having two ſharp Proceſſes within ſide. Behind, there ſeems to be only one Grinder on each ſide, half an inch broad, and above two inches long, arched inward, and with ſixteen or eighteen Inciſions looking like ſo many Teeth.

Her Gills open almoſt from the top of her Head to her Throat. The Fins are four. The Gill-Fins about five inches long, and as broad, placed ſo low, as to meet in the Breaſt, and ſo to ſupply the Breaſt-Fins. The Back-Fin is extended from Head to Tail; before, an inch high; behind, above two. The Belly-Fin reaches from the *Anus* (which opens a foot behind the Head) to the Tail, about an inch deep. The Body, where higheſt, above ½ a foot, the Back a little convex, grows ſlender all the way to the Tail, the extremity whereof is here wanting. She is cover'd with a tough Skin, now of an Iron-colour, beſprinkled all over with round ſpots.

That which is moſt remarkable in this Fiſh, are his Teeth: which are ſo made, as to be fit either for Ravine, or for the eating of Graſs and other Herbs on the Rocks, and under Water. They ſeem alſo to be made for the Cracking of Shell-Fiſh. As likewiſe for Rumination: which may as well be aſcrib'd to this Fiſh, as to the *Scarus*.

This Fiſh is one, amongſt divers other inſtances of *Ariſtotle's* error, where he ſaith, Οἱ δὲ ἰχθύες πάντες εἰσὶ χαρχαρόδοντες, πλὴν τοῦ ἑνὸς τοῦ καλουμένου Σκάρου. (*a*)

(*a*) De Part. Anim. l. 3. c. 1.

The tops of this Fiſhes Grinders are commonly ſold for *Toadſtones*. As Dr. *Chriſtopher Merret* hath alſo obſerved in his *Pinax*.

The SCATE, or Angel-Fiſh. *Squatina, ſive Angelus Marinus*. The figure in *Johnſton* is tollerable. But the Deſcription very ſhort and imperfect. That of *Rondeletius* is better, yet not full. And either the Fiſh he deſcribes is a different Species, or his Deſcription of the Teeth is not true.

This is above an Ell long. His Head about ¼ of a yard long,

long, and near as much over, (here) with ſeveral Angles or Ridges: His Mouth five inches over, his Lips almoſt Semilunar.

Each of his Jaws are armed with about ſix and thirty Rows of moſt ſharp Teeth, and in every Row there are four Teeth. So that in all they are about two hundred four-ſcore and eight, all couched a little inward.

About three inches behind his Noſe-end ſtand his Eyes, as it were on the top of his Head, and three inches and ½ diſtant. Proportionably very ſmall, *ſc.* not above ½ an inch over. About an inch and quarter behind his Eyes, and a little lower, he hath two Spouts, one on each ſide, above an inch long, and convex before. His Neck ½ a foot over. His Back before, three inches above a foot, expanded (here) on both ſides, as if it were ſhoulder'd. His Middle or Waſt about eight inches. The lower part of his Back, ten inches, ſpread like a pair of Buttocks. From his Shoulders to the bottom of his Buttocks about a foot and ½. The length of his Tail, as much: the forepart whereof above four inches over, growing ſlenderer all the way to the end.

He hath ſeven Fins. His Shoulder-Fins with Cartilaginous Rays, expanded ½ a foot out like a pair of Wings, and almoſt ſquare. His Buttock-Fins prolonged hinderly ½ a foot, ſtand continguous to the Tail on both ſides. On the top of his Tail, two leſſer; three inches high, and couched backward. At the end a forked one ½ a foot long, and almoſt as high. From hence half a foot forward, the Skin is as it were pinched up into a little Ridge or Doublet on each ſide.

Above he is very rough with innumerable ſmall Prickles, eſpecially felt upon drawing your hand forward. And the edges of the four ſide-Fins are all thorny. But underneath the Skin is ſo thick or cloſely cover'd with little hard round knobs, as it ſeems almoſt ſmooth.

This Fiſh hath two Spouts, like the Saw-Fiſh, becauſe of the breadth of his Head. His Teeth admirable for taking ſure hold of the moſt ſlippery Prey. Thoſe Doublets on the ſides of his Tail, ſeem to add ſtrength to the *Muſcules* which move the Tail-Fins. And ſo in ſome other Fiſhes. By the poſture of the Fins he ſeems to make at the Prey, not by a forward ſtroke, but by aſcending as a Dog to his

Meat, or deſcending as a Hawk when ſhe ſtoops. With the broad Fore-Fins, ſaith *Oppian*, the Female ſhelters her Young, as a Hen her Chickens with her Wings. But *Ariſtotle* affirms, That ſhe gives them protection as doth the Dogfiſh, by receiving them into her mouth. He alſo ſaith, That of the Cartilaginous kind the *Scate* only beareth twice in a year, *ſc.* Spring and Fall.

(a) Hiſtor. 50. *Salvianus* (*a*) ſaith, That the Skin of his Back is ſmooth; deceived by the Authorities of *Ariſtotle*, *Epicarmus*, *Athenæus*, and *Pliny:* witneſſes enough to prove an Error. The Skin of this Fiſh is uſed for the poliſhing of Wooden and Ivory Works. He is taken, ſaith Mr. *Ray*, ſometimes near *Cornwall.*

Another SCATE. 'Tis a young one, but in ſhape altogether like the former, ſaving that the Shoulder-Fins are here produced, more like a Wing, into a ſharp Angle before.

The HEAD of a SCATE, about the bigneſs of that above deſcribed. Sometimes they grow to the weight of a hundred and ſixty pounds.

The HEAD of the GREAT MAID. *Caput Rajæ Oxyrrhynchæ majoris.* See the Deſcription of this and the other Kinds in *Rondeletius*, and *Bellonius.* They all differ from other Fiſhes, in having a broad and ſquat Body, with a long ſlender Tail appendent, but not ſo ſlender, as in the *Cat-Fiſh.* The end of the Snout in this, is all beſet with little ſharp Hooks pointing backward. And with the ſame Hooks, both the Jaws: but far bigger, and ſtanding in ſeveral Rows, eight, ten, or twelve in a Row.

The Skin of the *Raja*, being artificially reduced to a monſtrous ſhape, is by ſome ſhewed, and is commonly taken, for a *Baſiliſk.*

The EGG of a THORNBACK. *Ovum Rajæ Clavatæ.* Or rather the Bag or Caſe of the Egg. Hereof ſee *Rondeletius.* 'Tis very ſmooth, and (now) black and horny. Seven inches long, and four over. From each of the four Corners is ſtretched a ſharpe ended Membrane two inches long. In the middle it ſwelleth up on both ſides: ſo that in ſhape 'tis juſt like a Pulpit-Cuſhion. There are ſome other leſſer ones of the ſame ſhape and colour.

In the upper part of the Womb, ſaith *Rondeletius*, are a great number of Eggs of ſeveral ſizes, conſiſting only of

of a Yelk, as in the *Ovary* of a Hen. These successively ripening, are found in the lower part, consisting of Yelk and White, and cover'd with the said horny Case. Out of every one of these mature Eggs, another *Fœtus* is also successively generated. Whereby it is intelligible, How this Fish produceth but one at once, and yet so numerous a breed.

The SKREW-GUT of the RAJA, described by *Steno's* Son. Sent by Dr. *Swammerdam* with some other particulars mention'd in the first Section. It winds between parallel lines like a Screw or Stair-case.

The knobed TAIL of a THORNBACK. Of an ash-colour, and about a yard long.

The spiked TAIL of a THORNBACK, almost black. The knobs of both are so hard, that they will file Iron or Brass. The Skin of this Fish is used for Knife-hafts, &c.

The smooth CAT-Fish. *Pastinaca marina lævis. Fabius Columna*, (a) hath described two Species of this kind: but both of them seem to be different from the Fish here. It is somewhat phantastically stuffed; yet I shall give the Description as well as it will admit.

(a) Lib. de Aq. & Terrest.

From the tip of his Snout, to his Tail, a foot and three inches, about a foot over, and ½ a foot (being, I suppose, thrust out somewhat more than the natural dimension by the stuffing) in height. His Eyes ½ an inch long, two and ½ inches distant, three and ½ behind his Nose-end. Just behind his Eyes, and a little more distant, he hath two Spouts, one way, an inch and ¼ over. His Snout prolonged forward an inch and ½ with an Obtuse Angle; and extended towards the side-Fins, wherewith it is also joyned by the mediation of a Skiny-Border ½ an inch broad. His Mouth very little, not an inch and ½ over; curiously rough-cast like a file, underneath, and behind his Snout-end two inches and ½. Over his upper Chap hang two little Labels above ½ inch long.

His Gills are five on each side, but towards the middle of his Belly. He hath four side-Fins. His fore-Fins are stretched out two inches in breadth, extended in length towards the Tail, almost a foot. The hinder-Fins are almost two inches broad, and above an inch and ½ long.

The Tail a foot and two inches long, at the Root about an inch and ½ over, the extremity very ſmall like a *Shoomakers* Thread. The Skin not very thick, nor ſtubborn, (now) of a yellow colour on the back, on the Belly ſtraw-colour'd: every where very ſmooth, excepting on his Tail, where there are ſome few very ſhort prickles.

Whether this be not a young Fiſh, and upon that account only wanteth the *Radius* (as the ſharp Saw upon the Tail is called) to me is uncertain. With this *Radius* he is ſaid to ſtrike and kill his Prey, for which he lies as it were dormant, till it ſwims within his reach. *Ælian*, cited by *Rondeletius*, ſaith, That he ſometimes flies. Which that he may do a little above the water, as the flying Fiſhes, ſeems poſſible by the horizontal production of all his Fins, and their extenſion all along his ſides.

The *Chineſes* and *Moors* eat this Fiſh greedily.

The nether LIP of the ſmooth CAT-FISH, two inches long.

The BRASILIAN FROG-FISH. *Rana Piſcatrix minor.* In *Braſile*, GUACUACUYA. The figure which *Johnſton* gives is tolerable; but his Deſcription very defective. The length of this is eight inches. His Mouth open makes a Circle ¼ of an inch over. His Lips, in the uſual place of Teeth, are rough; as alſo is his Tongue. He hath a black Horn on his Forehead, ſtooped forwards, round, an inch and ½ long, one third over at the bottom, pointed, and having little Spikes round about it. What *Johnſton* means by the *Cuteus Nervus*, appears not. At the top of his Head, juſt under the Horn, ſtand his Eyes a ¼ of an inch over, and (here) no more diſtant. The Noſtrils a little before the Horn.

His Body two inches and ½ long, and four broad; before, *Semilunar*. His Back convex, his Belly flat; with a Border or Fin all along each ſide ½ an inch broad. Behind are ſubjoyned a pair of Fins almoſt two inches long, and an inch and ½ wide. In the middle of his Belly are two other leſſer cloſe together, above an inch long, but not more than ½ broad.

The length of the Tail four inches and ½. At the root 'tis round, and an inch over; at the end, with the ſides compreſſed, and ½ an inch high. The Tail-Fins three, one above,

above, another juſt under it, the third at the end much bigger. The Skin of his Belly and Tail underneath, whitiſh, thin, and rough. Of his Backſide, Fins, and Tail above, black, thick and ſet with ſhort ſpikes ariſing from a round Baſe radiated like a Star. He ſeems, by his ſhape, to be near of kin to the *Thornback*; and therefore to be leſs appoſitely Nam'd.

A leſſer *Braſilian* Frogfiſh of the ſame kind.

The TRUMPET-FISH. So called from the figure of his Bill, which is an entire Pipe, ſhaped almoſt like that of the *Snipe-Fiſh*. *Acus Ariſtotelis*. Well deſcribed by *Rondeletius*; ſaving, that he deſcribes the Body to be *Sexangular* all along. Whereas from the Head to the *Anus* it is *Septangular*. The Scales are alſo engraven with ſmall lines almoſt of an Elliptick figure. *Salvianus* errs in ſaying he is not ſcaly. Another alſo of the ſame *Species*.

The Female, ſaith *Rondeletius*, hath a *Canale* extended from her *Anus*, in which the Eggs are hatched into young Ones. Of the uſe of the Bill, ſee the *Snip-Fiſh*.

The leſſer TRUMPET-FISH, or Viviparous Needle-Fiſh.

The HORSE-FISH. *Hippocampus*. A ſmall Fiſh. So called, becauſe his Head is ſhaped like a Horſes, and his Tail divided by ſeveral Inciſures, ſomewhat like thoſe of *Caterpillars*, called κάμπαι. Given by Mr. *Scotto* a *London* Merchant. It hath the ſame number of Fins, and in the ſame place, the ſame kind of Bill, the fore-Body *Septangular*, and the Tail ſquare, as the *Trumpet-Fiſh*. And is, therefore probably, alſo Viviparous: and ſo I have ventur'd to place it here.

Another HIPPOCAMPUS taken in the *Mediterranean*.

A STURGEON. *Acipenſer*. *Sturio*, becauſe one of the greateſt of edible Fiſhes; for *Stur*, in the *Daniſh*-Tongue, ſignifies Great. (*a*) See *Wormius* his Deſcription. Eſpecially that of *Salvianus*, with his curious figure. The like in *Beſler*. The parts by which he is beſt diſtinguiſhed, are his very long and ſharp Snout, his little Mouth, to be ſeen only when he lies on his back, and his thick and bony Scales; which ſtand in Rows ſo, as to make the Fiſh almoſt *Pentangular*. The figure of moſt of the ſide Scales

(*a*) Wormius.

is

(a) L. de Re Cibaria.

is *Rhomboidal.* It is affirmed by *Mouſet*, (*a*) That the Scales of a *Sturgeon* turn towards the Head; borrowing his Error herein of *Pliny.*

Lately, a piece of a *Sturgeons* Gut was ſhewed me by Dr. *Edward Tyſon*, which he had cut off of a great One ſent to my Lord Major. It is very thick, ſtrong and *Muſcular.* And the inner Coat made of *Fibers*, ſo looſely woven together, as to look like a Net; and that above the eighth of an inch in thickneſs. In which a plenteous Chyle is conveniently lodged, and thence gradually tranſmitted to the Lacteal Veins.

(b) Exerc. 182. S. 2.

Scaliger ſaith (*b*) of the Guts of a *Sturgeon*, that being taken out and cut all to pieces, thoſe pieces will ſtill move. Which may partly depend upon their great thickneſs and muſcularity; the like being obſervable in cutting the Heart and other *Muſcular* parts of divers Animals.

The *Sturgeon* is taken in moſt great Rivers, as well as in the Sea. He hath ſometimes been ſeen, ſaith *Bellonius*, ſix yards long. The bigger he is, as all other Fiſh, the

(c) Salvian.

better meat. The *Italians* (*c*) prefer the Belly before the *Jole.* His Liver very delicate. At *Hamburge* and *Dantſick* they eat (or did in *Mouſet*'s time, who reports it, eat) *Sturgeon* roaſted. In the ſame Author, ſee a moſt excellent Pickle for this Fiſh. The Eggs being ſalted and made up into a Maſs, were firſt brought from *Conſtantinople* by the *Italians*, and called *Caveare.* Of the way of making it, ſee *Geſner.* The pickled pieces made of the *Chine*, are by

(d) Salvian.

ſome called *Schinalia.* Of the long Bag (*d*) which grows next the *Chine*, the people that live near *Tanais* make Glew.

The HEAD of a great STURGEON.

MOON-FISH. *Mola Salviani Luna*; Becauſe the Tail-Fin is ſhaped like a *Half-Moon*, By which, and his odd truſſed ſhape, looking as if he were only the Head of ſome great Fiſh cut off from his Trunk, he is ſufficiently diſtinguiſhed from all others. Well deſcribed by *Rondeletius* and *Salvian*; and by this latter, very curiouſly pictur'd. The Gill-Fins, as he obſerves, are ſo poſtur'd, as not to move from Head to Tail, or *vice verſa*, but from Back to Belly,

Belly, *& è contra.* The use whereof seems to be, To enable him to make a more direct and sudden descent; that so when any Ravenous Fish makes full speed at him, he may in an instant strike himself under his way, and so escape him. It may also be noted, That being a tall Fish, and with his sides much compressed, he hath a long Fin upon his Back, and another answering to it on his Belly: by which he is the better kept upright, or from swaging on his sides.

Another MOON-FISH of the same Species, but somewhat lesser. Neither of these is above ½ a yard long. But that which *Salvian* describes, was above an hundred pounds weight. They are taken, as Mr. *Ray* saith, about St. *Ives* and *Pensans* in *Cornwall.*

CHAP. II.

OF OVIPEROUS FISHES, particularly such as are NOT-SCALED.

THE HEAD of the RIVER-WHALE. *Caput Siluri. Johnston* gives the figure of this Fish, but without a Description. That of *Rondeletius* is not full. This Head is ½ a foot long, as broad, and half as high. The Snout flat. Both the Chaps before of a *Semilunar* figure. Armed with an innumerable company of prickly Teeth, standing like those in a *Card* wherewith Women Comb Wooll. The nether Chap stands out above an inch before the upper. The Eyes round, and for such a Head, very small, scarce the third of an inch over. Distant three inches and ½. An inch above the corners of his Mouth, he hath two strings, smooth and round, here (for they are broken) ½ a foot long, about the thickness of an *Earth-Worm*, taper'd and bended backward; outwardly nervous, inwardly Cartilaginous or Grisly. His Gills descending almost from the top of his Head, meet under his Throat.

What may be the use of these strings is uncertain, and to be collected only from observing their communication with other parts, and the manners of the Fish. But the intent

intent of their ſtructure is leſs obſcure; the Nervous part ſerving to draw it too and fro; the Cartilage, as the ſpring in a *Pendulum* Watch, to ſtint the motion and make it more ſteady. And being flexible, it does the ſame as a joynted Series of many little Bones.

The little SEA-UNICORNE. *Monoceros minor.* It was ſent from *Braſile*, I find it not deſcribed nor pictur'd in any Author. Nor is it certain whether it be Oviparous. Yet I have ventur'd to place, and ſhall deſcribe it here.

'Tis ½ a yard long, almoſt ¼ high, with its ſides very much compreſſed, being not above two inches and a ½ over. High-Bac'd, like a *Perch.* And alſo (which is unuſual) bow-Belli'd. His Head hath ſome reſemblance to that of a *Baboone*; from the top to the bottom four inches and ½. His Mouth, which ſtands below, not much above an inch over. His Teeth, in both Chaps, the thickneſs of a midling Needle, the eight of an inch long. His Gills ſubtended to his Eyes and Mouth like the ſegment of a Circle. His Eyes ſtand near the top of his Head; and are an inch over.

From the top is prolonged a ſmooth (now) blackiſh, round, taper'd, ſtrait Horn, couched a little down below the level, two inches round about the Root, and three inches long. It ſeemeth not to have any Bone within it; nor is it inſerted into any, as in the *Unicorne* of the Cetaceous kind before deſcribed; but is the Skin it ſelf prolonged and hardened (as the *Cuticula* turns to *Cornes*) into a kind of horn.

The Fins are ſeven. The Gill-Fins two inches long, and one broad. The Back-Fin is extended from Head to Tail, above an inch and ½ high. The Breaſt-Fins ¼ of an inch before the *Anus*, near two inches long. The Belly-Fin, like that of the Back, and extended from the *Anus* to the end of the Tail. That at the end of the Tail *triangular*, two inches and ½ long, three high. The *Anus*, if you meaſure by a perpendicular from the Gills, opens, oddly, not above an inch and ½ behind them. He is cover'd with a (now) blackiſh, thick and tough Skin, and when you draw your hand forward, alſo rough.

The SHIPHALTER. *Echeneis. Remora. Johnſton* hath given

given an indifferent figure of it. But I meet with no tolerable Description any where.

'Tis about ¾ of a yard long. His Body before, three inches and ½ over; thence tapering to the Tail-end. His Mouth two inches and ½ over. His Chaps ending somewhat angularly. The nether a little broader, and produced forward near an inch more than the upper. His Lips rough with a great number of little prickles. His Eyes round, ¼ of an inch over, an inch behind his Mouth.

His Head squat, adorned with a kind of Oval *Coronet*, somewhat Concave, five inches and ½ long, above two broad, cut traversly with three and twenty Incisions or long Apertures, making so many distinct Membranes, with rough edges, joyned altogether with a Ligament running through the middle of the *Coronet*, and perforated on each side the Ligament.

The Gills wind from an inch and ½ behind the Eyes down to the Throat. The Fins seven. The Gill-Fins above four inches long; The Breast-Fins as long. About a ¼ of a yard behind the *Coronet* a fifth extended on the Back above ¼ of a yard. A sixth like it on the Belly. The Tail-end, like a Spear, a little compressed. The Tail-Fin three inches and ½ long. The *Anus* open about the middle of the Fish. His Skin is (now) brown, smooth, and tough, or like tan'd Leather.

Perhaps the same Fish, which *Ligon* (*a*) saith, always swims along with the *Shark*, and frequently sticks to some part about his Head. At least, it is very probable, that this Fish is able to fasten himself to any great Fish, Boat, or Ship, with the help of the *Coronet* or *Sucker* on his Head; which seems to be most fitly contrived for that purpose. In some sort answerable to the Tail of a *Leech*, whereby she sticks her self fast to the smoothest Glass. Or to those round Leathers, wherewith Boys are us'd to play, called *Suckers*, one of which, not above an inch and ½ diametre, being well soaked in water, will stick so fast to a Stone, as to pluck one of twelve or fourteen pounds up from the ground.

(*a*) *Hist. of* Barbadoes.

Of the stupendious power which this Fish is supposed to have, there are many concur in the story; as that he is able to stop a Ship in its career under full Sail: and what not?

and great pains is taken to aſſign the Cauſe; and to prove, That though the *Moon* be made of a *Green Cheeſe*, yet is not the only Neſt of *Maggots*. *Rondeletius* alone, in aſcribing it to his eaſily altering the poſition of the Helm, and ſo the motion of the Ship, coming near to good ſenſe: eſpecially if he had proved, That the Name of the Fiſh, and the Story, were not Things much older than the Helm of a Ship.

'Tis plain, that the Tradition had a very early beginning, when little light Boats were the Ships which people us'd. To the ſide whereof, this Fiſh faſtening her ſelf, might eaſily make it ſwag, as the leaſt preponderance on either ſide will do, and ſo retard its Courſe. And the Story once begot upon a Boat, might ſtill, like the Fiſh it ſelf, ſtick to it, though turn'd to a Ship. Aſſigning as great a power to this *Neptune* in the Sea, as the Poets have done to *Apollo* the God of Life in the Heavens; who yet appears by the beſt accounts of him put together, to have been at firſt no better than a Crafty *Mountebank*.

The TOBACCOPIPE-FISH. By the People of *Braſile*, and by *Marggravius* who deſcribes it, called *Petimbuaba*. He hath only omitted the Line, which, like a very ſmall Chain, runs along both ſides, as in the *Sea-Scorpion*, from Head to Tail: Both the Body and Snout are long and ſlender, from whence its Name. 'Tis alſo pictur'd, and in ſome ſort deſcribed by *Piſo*.

The PRICKLED TURBUT. *Rhombus aculeatus*. So called from his figure and the prickles on his Back or brown ſide. Deſcribed by *Rondeletius*. The two ſtrings that hang at the nether Chap, are here wanting. He is ſaid, having hid himſelf in Mud, with theſe, to Prey upon little Fiſh, which ſeeing them rigle, make at them, ſuppoſing them to be Weeds.

The little GLOB-FISH. *Orbis minor*. So called from his Orbicular figure. Deſcribed in moſt *Muſæums*. Moſt curiouſly figur'd in that of *Calceolarius*. He is armed with long, round, hard, and ſharp Spikes or Needles all round about, almoſt like thoſe of a *Hedg-Hog*; and is a ſort of *Porcupine-Fiſh*.

'Tis probable, That the Fiſh ſwims with theſe Needles all cloſely couched down round about, for that otherwiſe they

they would hinder her swimming. But if at any time she is pursu'd, she immediately advances her Pikes, and bids the enemy come at his peril.

This and the other kinds are found, especially, in the River *Nile*.

The SEA-PORCUPINE. *Histrix Piscis. Johnston* hath figur'd it (*Tab.* 45.) but not well. Neither do I find any tolerable Description of it.

This here is above a foot long, near half a foot over, and as high, round, and almost of an Ovale figure. His Chaps about ½ an inch long, shaped somewhat like the Bill of a *Sparrow*, each of them one single Bone, without any Teeth, but sharp-edged; at the corners of the Mouth an inch over. His Eyes ½ an inch over, an inch behind his Mouth, and two and ½ distant.

The Gills but ¼ of an inch long, Convex before, very high, *viz.* in the same level with the Eye. As also the Gill-Fins, which are about two inches long, and three broad. Two inches and ½ before the end of the Tail, a third an inch and ¼ broad and two inches long. An inch and ½ before the end of the Tail underneath, a fourth somewhat less. The Tail-Fin above two inches long, an inch and ½ high, with its extream edge Convex.

He is cover'd with a Skin on the Back (now) of a browniſh yellow, on the Belly whitiſh. Armed all round about, excepting his Tail, with round, hard, and most sharp Needles, about an inch and ¼ long, ½ an inch distant one from another, each having three Roots (now) visibly spread under the Skin, one on each side, and a third before.

'Tis most probable, That to these Roots are fasten'd so many *Muscules*, whereby these little Pikes are govern'd in their motion, and kept steady in their posture of defence.

Another SEA-PORCUPINE like the former.

The FROG-GLOB-FISH. *Orbis Batrachoides.* Figur'd by *Johnston* under the Title of *Gestachelt meer Taube*, *Tab.* 24. But I find it not described to any purpose.

This is seven inches long, three broad, and as high. His Forehead above an inch and ½ over, by the eminency

of his Eye-Brows a little hollow. His Eyes round, above ½ an inch over. His Mouth very broad and ſemilunar, like that of a *Frog*; from whence I take leave for his Name. His nether Chap a little broad and more forward than the upper. Without any Teeth, but rough like a File. The Gills ½ an inch long, an inch and ½ behind the Eyes. The Fins are five. The Gill-Fins above an inch long, almoſt as broad. Before the end of the Tail, one above about an inch long, that underneath broken off. The Tail-Fin above ½ an inch long, near as high. The *Anus* opens an inch and quarter before the Tail-end.

He is cover'd all over with a very hard and tough Skin, (now) of a yellowiſh ſtraw-colour. Armed round about with ſtrong Spikes about ½ of an inch long, couched backward, and fixed with three Roots, as in the former. But not, as thoſe, round, but flat with two edges like the point of a Sword.

It may further be noted of theſe Spikes, That being fixed in the Skin, both here and in the other kinds, ſo as to couch and point backward, the fiſh needs not to tack about, but is at the ſame time in a poſture of defence, and of flight, for its ſurer eſcape.

The EGYPTIAN GLOB-FISH. It differs from the reſt, eſpecially by the ſmallneſs of its Prickles, which are rather like the little Thorns on a young *Rasperry-Buſh*. He is not armed with them, as *Rondeletius* ſaith, all over; the Skin behind the Gills for the length of ½ of an inch, and on the lower part of the Tail, being bald.

The HARE-GLOB-FISH. *Orbis Lagocephalus.* I find it not any where pictur'd or deſcrib'd. 'Tis above a foot long, ½ a foot high, almoſt five over. His Head almoſt like a *Hares*, from whence I have Nam'd him. His Forehead plain and almoſt ſquare, an inch and ½ broad. His Eyes round, above ½ of an inch over, and ſtand high. Three quarters of an inch before the Eyes, two holes like Noſtrils. From thence to the Noſe-end a little above an inch. The end above ½ an inch over, and round. His upper Lip ſtretched thence to the breadth of ½ an inch. Each Chap as it were divided into two great Teeth ½ of an inch broad.

The Gills an inch and ½ long, behind the Eyes an inch, below

below them ½ an inch. The Fins are five. The Gill-Fins stand obliquely between the Back and the Breast, an inch and ½ long, and three broad. Three inches before the Tail-end, a third almost two inches long and one broad. Underneath, a fourth somewhat less. This, which may be noted, being couched backward, the other foreward. The Tail-Fin two inches and ½ long, and as high, with its utmost edge Convex.

His Skin Membranous and limber, on the top of his Head, Back, upper Sides and Breast, and round about his Tail, smooth and bald. On his Belly and lower part of his Sides and Breast, armed with little short Prickles, about the third of an inch distant, and fixed with little Roots, as in the former.

From the Crown of his Head are drawn two Lines almost to those holes like Nostrils. From the hinder part of the Head, two more all along the Back and Tail, in the figure of the Letter *f*. And two others from the Gill-Fins towards the *Anus*, and from thence to the end of the Tail. By these Lines, were there no other marks, it is easie to distinguish him from all the other *Species*.

An OVAL COMPAGES of BONES, said to be the *Sceleton* of a *Globe-Fish*.

The RED-GOURNET. *Pavo Salviani. Cuculus*, from the noise he makes like a *Cuckow* when he is taken. Well described by *Rondeletius*. But his figure, especially in making him with a long Snout, answers not, unless it be of another *Species*. For the Forehead of this is square, and the Head almost cubical, like that of the *Scorpion-Fish*. From which this chiefly differs in not having the Fins of the Back prickly or spiked, and having a Line running from the top of the Back on each side the Back-Fin to the Tail, like a small linked Chain.

The LONG-SNOUTED GOURNET. *Cuculus Rondeletii*. By which Author 'tis well described. It differs from the former *Species*, chiefly, in having a much longer head, and a saddle-Nose.

The STAR-GAZER. *Uranoscopus*. Because he looks directly against the Sky: whereas, as *Rondeletius* observes, the *Ray* and several other fishes, although they have their Eyes standing on the top of their Heads, yet the Pupils of their

their Eyes are not directed upwards, but ſide-ways. The Fiſh is accurately deſcribed by the ſame Author. Saving, that he hath omitted the arching or bowing of his Body with the Head and Tail upwards: unleſs both the ſhape of the Fiſh here be forced, and his own figure thereof falſe.

This Fiſh, when alive, hath a ſlender Membranous ſtring, which he projects and draws in, at pleaſure, as a *Serpent* doth his Tongue. With this he duckoys little fiſhes, and then preys upon them. For plunging himſelf in Mud (*Rondeletius* ſaith, he hath ſeen him) and then lifting up his head a little, he caſts out the ſaid ſtring; which the little fiſhes taking for a Worm, and nibling at it, he immediately plucks them both in together.

The SQUAR-FISH. *Piſcis quadrangularis.* I think it is not deſcribed or figur'd by any. There are two ſquare fiſhes deſcribed by *Wormius*, the former of which he ſuppoſeth to be made ſo, not bred. But neither is this, as that is, ſpiked behind; nor as the other, horned before, beſides other differences: 'Twas ſent from the *Eaſt-Indies*.

'Tis about fifteen inches long, four high, in the middle three and ½ over. His Forehead ſquare, by the eminency of the Eye-brows, a little hollow; two inches and ½ over. His Eyes near an inch. His Noſe blunt, not very ſteep, an inch and ½ long. Two ſmall holes in the place of Noſtrils. His Mouth exceeding little, ½ an inch over. His Teeth alſo very ſmall.

The Gills are ſtrait, an inch and ½ long. His back a little Convex; towards his Tail, and on his ſides blunt angled. So alſo his Belly, but plain or flat; and conſiderably riſing up towards his Tail. He hath five Fins. The Gill-Fins are two inches in length, and two in breadth. They ſtand a little obliquely. Like theſe, a little before the Tail, one above, another under. The Tail-Fin three inches long, and three and ½ high.

Some part of both the Chaps and of the Tail are cover'd only with a Skin. The reſt of the fiſh with a kind of Cruſt: yet not altogether ſo hard as in the Cruſtaceous kind. This Cruſt is all over adorned with innumerable little round knobs reduced, for the moſt part, into hexagonal figures, ſubdivided into equilateral Triangles. *Wormius*

Wormius calls this Cruſt a Leathery Skin: but not rightly; as any one that compares it with the true Skin upon his Chaps and Tail, whereof he takes no notice, may eaſily judge. That it may be bent, proves it not a Skin; for ſo may the Cruſt of a *Lobſter*. To which this ſeemeth to ſtand in the next degree, as that doth to a ſhell. Or to ſpeak properly, it ſeems neither a Skin, nor a Cruſt alone, but a Medly of both together, or a Cruſt upon a Skin: Nature having here, as in many other examples, united two extreams by a third Thing in the middle.

Another SQUARE FISH ſtained with black Spots. Given by Mr. *John Short*.

The CONEY-FISH. *Piſcis Triangularis.* Deſcribed by *Marggravius*. *Wormius* alſo ſuppoſeth his firſt *Square-Fiſh* to be the ſame. But neither of them are particular enough.

'Tis above ½ a yard long, above ¼ a foot high, the Belly flat, and almoſt ¼ a foot over. From whence his ſides riſe up into a ſharp Angle. His Head ſomewhat like that of a *Coney*; from whence his Name. His Eyes great, *ſc.* an inch and ½ long; and ſtand high. His Forehead almoſt ſquare, and by the eminency of the Eye-brows a little hollow; an inch and ¼ broad. Half an inch before the Eyes two little holes like Noſtrils. His Noſe deſcending almoſt perpendicularly, three inches deep, and blunt-ended. His Mouth not above an inch over. The Teeth ⅛ of an inch long, and ſharp: ten in the lower Chap, in the upper twelve. His Back arched between the Head and Tail, and, as is ſaid, very ſharp. On each ſide his Belly he hath a ſtrong ſharp Spike ½ of an inch long, ſtanding near, and pointing toward his Tail.

His Gills are ſtrait, above an inch long, and parallel to his Noſe. The Fins five. The Gill-Fins here broken off. A little before his Tail, one above, another below, both two inches long, an inch and ¼ broad. The Tail-Fin three inches long, and two and ½ high. Excepting his Chaps and Tail, which are naked, he is cover'd all over with the like Cruſt, as the former. On the upper part of the Tail, alſo grows a diſtinct Cruſt, of an Oval figure.

The Chaps and Tail of this Fiſh, and the reſt of the kind, are both left naked, for the more eaſie and convenient motion

motion of the one in eating, and of the other in ſwimming. And for the ſame reaſon, the Gill-Fins do alſo ſtand upon a naked Membrane.

The Female-CONEY-FISH. The Noſe here deſcendeth not ſo ſteeply. The Belly not ſo broad. The Cruſt every where, except the middle of the Belly, ſtained with a great number of round black Spots. Hath not many of the triangular ſubdiviſions. Nor the Oval Cruſt upon the Tail.

Another of the ſame *Species*, with that now deſcribed.

The HORNED CONEY-FISH. *Piſcis triangularis cornutus. Johnſton* hath figur'd it. (*a*) But without either Deſcription or Name. It differs from the fiſh laſt deſcribed chiefly by its Horns, which he hath upon the top of his Forehead, ¼ an inch long, near an inch about the bottom, and pointed; almoſt like an Horſes Ears when he pricks them forward. His Teeth are alſo ſmaller, his Mouth leſſer, and more naked. His Belly narrower, and ſo his ſides more compreſſed. The Tail-Fin longer. And the Oval Cruſt on the Tail, not above but beneath.

(*a*) Tab. 45.

ANOTHER of the ſame *Species*, with two Oval-Cruſts, one on the top of the Tail, the other underneath.

A THIRD, without the ſaid Oval-Cruſt, and the triangular ſubdiviſions.

Two more HORNED CONEY-FISHES. All five of one unmixed aſh-colour.

CHAP. III.

OF SCALED-FISHES.

THE HEAD of the CUCUPU-GUACU; ſo called by the people of *Braſile*, where it breeds. Deſcribed by *Marggravius*. Who ſaith it is ſometimes two yards long, and a yard and half about. The Mouth of this Head ſtanding quite open, makes a circle of a yard in compaſs. So that, probably, 'tis the biggeſt of *Scaled-Fiſhes*, excepting

excepting the *Sturgeon*. Of all our *European* Fiſhes, it ſeems to come neareſt to the *Cole-Fiſh* or *Black-Cod*.

The SCALES (perhaps) of the ſame Fiſh. They are almoſt circular, above three inches in Diameter, and anſwerably thick. Like other Scales, they are horny, tranſparent, and elaſtick or ſpringy. That part of their edge which is inſerted into the Skin, bluntly Toothed. They have a great many exceeding ſmall *Striæ*, hardly viſible, but by holding them up againſt the light.

The FILE-FISH. CAPRISCUS. It was ſent from the *Bermudas*. Curiouſly pictur'd and deſcribed by *Salvian*. (*a*) I call it the *File-Fiſh*, from the likeneſs which the foremoſt Bone upon his Back hath to a file. There are three of them: which, ſaith *Salvian*, he raiſes and depreſſes at his pleaſure; yet ſo, as not one alone, but altogether. And although you preſs the foremoſt, and greateſt never ſo hard, it will not ſtir: but if you depreſs the laſt and leaſt of all never ſo ſoftly, the other two immediately fall down with it: juſt as when a *Croſs-Bow* is let off by pulling down the Tricker. For which reaſon alſo the fiſh is called, at *Rome*, *Peſce Baleſtra*.

(*a*) Hiſt. 71.

Another thing peculiar to this fiſh is, that his Scales (as *Salvian* calls them) are ſeparated by cancellated lines, or Lattice-wiſe. I add, and that they are all incruſtated, and rough-caſt with little round knobs. So that the cover of this fiſh, is near a kin to that of the *Square-Fiſh*; that being only *one entire Cruſt*, this divided into *many little ones*.

It may be noted, That where *Salvian* deſcribeth this fiſh to be *compreſſum & latum, atq; fere orbicularem*, he hath not properly expreſſed his ſhape. For he is not *Broad*, but *Tall*; and much nearer to a *Rhombus* or Diamond-ſquare.

This fiſh ſeems to be the ſame which the People of *Braſile* call GUAPERUA; deſcribed and pictur'd by *Marggravius* and *Piſo*, and out of them by *Johnſton*. (*b*)

(*b*) Tab. 34.

The TALLEST FILE-FISH. This ſeems to be that *Species* particularly deſcribed by *Salvianus*. It differs from the foregoing only in being taller and narrower: and in having the Tail-Fin with longer horns.

The PRICKLE or longeſt FILE-FISH. It is a young

One. Differs from that of *Salvian.* In that on the ſides hinderly, grows a little ſhort Prickle upon the centre of every Scale, pointing backward. It is alſo ratably much longer and lower, his Noſe a great deal ſhorter, and leſs ſteep, and his Tail-Fin leſs ſpread.

Another LONG-FILE-FISH of the ſame *Species*, and about a foot in length. But the Prickles above-ſaid are here worn off.

The STREAKED FILE-FISH. *Capriſcus ſtriatus.* This differs from the laſt, In that its Scales are not prickled, but ſtreaked with many ſmall Lines; forward, entire; but hinderly compoſed of many little knobs.

The SNIPE-FISH. *Scolopax.* It was taken in the *Baltick*-Sea. I find it no where well deſcribed.

It is a little fiſh, when at full growth, as *Rondeletius*, who had ſeen three of them all ſmall, and full of Eggs, well obſerves. This here, about three inches and ½ long, ¼ of an inch high, the ſides much compreſſed, being not ¼ of an inch thick. The *Orbits* of his Eyes very great, *ſc.* a ¼ of an inch over. His Forehead as much.

He hath a tubular or pipe-like Snout, reſembling that of the *Hippocampus*, or the *Horſe-Fiſh.* It conſiſteth of only one hollow Bone, ſtrait, and from his Eyes above an inch long, or one third of his whole length. At the root, above ¼ of an inch high; at the extremity, ⅛. Where he hath an exceeding little Mouth; which openeth not before, but above.

His Gills large, behind the Eyes ¼ of an inch, from whence carry'd to his Snout or Bill, they deſcribe ¼ of a circle. The Fins four. The Gill-Fins almoſt ¼ an inch long, in the ſame level with his Mouth and the bottom of the Eye. The Tail-Fin as long, ¼ of an inch high. Before and above the Tail a fourth, a ¼ of an inch long, ⅛ broad.

A little before this Fin, ſtands a white and very ſharp *Spike*, or *Saw*, above an inch long, couched a little backward, and armed with a double row of ſmall ſharp Teeth, all pointing upward. To this great One, are ſubjoyned two leſſer, by one common Membrane, as in the *File-Fiſh.*

His Skin grey with ſome few rays of red; poſſibly more

in

in the living fiſh. He is ſcaly, and rough with a ſingle Row of very ſmall Prickles near his Eyes, with a treble one on his Belly and Sides; hardly viſible without a Glaſs.

By the great length and ſtructure of this Fiſhes Bill, he ſhould ſeem, upon dilating his Throat at his pleaſure, to ſuck in his food, and ſo to uſe it as a *Sirynge*. Withall, his Mouth not being open before, but on the top of his Bill-end, like a Gutter-Trough, doth much promote the current, of all that comes in at it, to his Throat. And ſo in the *Trumpet-Fiſh*.

The three Spikes on his Back (whereof *Rondeletius* and others only obſerve the greateſt) being aſſociated in the ſame manner, and having the like mutual proportion, as in the *File-Fiſh*; it may reaſonably be ſuppoſed, that they have alſo the ſame Motions, depreſſions and erections, as, in ſpeaking of the ſaid fiſh, hath been deſcribed. And that therefore, while the fiſh ſwims ſecure, they are all couched down cloſe to his Back, that they may not hinder his courſe: but that when ever he is purſued, he ſtrait erects them all, and by the help of the leſſer, keeps the great one tite up againſt his Enemy.

The SQUARE ACARAUNA; by Mariners, *The Old Wife*. It hath ſome marks of kindred with the tall *Acarauna*, deſcribed and pictur'd in *Marggravius* and *Piſo*. But hath alſo divers others of diſtinction from it; as the different poſition of the *Spurs*, the different ſhape both of Head, Body and Tail, &c. as may be obſerved by comparing the Deſcriptions and Figures of both together. The tall *Acarauna* is figured alſo by *Johnſton*, (*a*) out of *Marggravius*; but without any Inſcription of Number or Title.

(*a*) Tab. 32.

This here was brought from *Suranam*. Eight inches long and ½, above three high, about one and ¼ over. His fore parts and Tail are (now) of a pale ſtraw-colour; all the reſt are of a blackiſh brown. He is cover'd all over with Scales engraven with ſmall parallel Lines: except on his Forehead and Chaps before, where his Skin is only ruged as you draw your Finger downward.

The Crown of his Head riſes up into a blunt Angle, his Forehead flat, above ½ an inch broad. His Eyes round, ½ an inch over, and ſtand high. A little before them, two ſmall holes like Noſtrils. His Mouth alſo ſtands high, and

is extreme ſmall, ſcarce ½ of an inch over. His Teeth contiguous, like ſmall Needles.

On his upper Jaw grow four little Prickles on each ſide. On each ſide his nether, two great *Spikes* or *Spurs*, hard, and very ſharp, about an inch long, pointing obliquely downward, and bended a little like a *Cocks* Spur. From the Root of theſe ſeveral little ſhort Prickles run in a ſtrait Row to the Eyes.

The Gills behind make a ſtrait Line, and an Angle, from whence they are produced forward. The Fins ſeven. The Gill-Fins hang under the *Spurs*, an inch and ½ long near an inch broad. The Breaſt-Fins alſo an inch and ½ long, ½ broad. The Back-Fin from the top of his Head, the Belly-Fin from his *Anus* are carry'd to the Tail-Fin, ſo as to ſtand betwixt two parallel lines, making the fiſh almoſt ſquare; from whence I have Nam'd it. They are both ſtretched out beyond their roots with two ſharp Angles. The Tail-Fin an inch and ½ long, and higher, with its utmoſt edge Convex.

The *Spur* above deſcrib'd, is a dangerous, and as it ſeems, a malicious Weapon; wherewith the fiſh ſtrikes ſide-ways, and as it were under-hand, not ſuffering, in its doged humor, any other fiſh to conſort with it.

The SWALLOW-FISH. So called from the length of his Gill-Fins, which reach to the end of his Tail, like a pair of very long Wings. By ſome, the *Flying-Herring*, from a likeneſs in the ſhape of their Body. Perhaps *Rondeletius*'s *Mugilis Alatus*. But by *Salvian* called *Hirundo*, by whom it is well deſcribed. (*a*) That Line (ſaith he) which in other fiſhes goes either from the Head or *Branchiæ* by the ſides to the Tail; here runs from the Belly-Fins along the Belly to the Tail. *Johnſton* alſo deſcribes it out of *Aldrovandus*, but omits the juſt number of ſeven Fins. In the figure alſo which he gives, the Belly-Fins are wanting. And the *Orbits* of the Eyes, which are extraordinary great, he repreſenteth little.

(*a*) Hiſtor. 62.

His Gill-Fins he uſeth as Wings, wherewith he flyeth, for eſcape, above the water, when purſu'd by another fiſh; eſpecially, as *Piſo* ſaith, by the *Dolphin*. But as they fly (as the ſame Author) they often become a prey to *Water-Fowl*. Hundreds of them are ſometimes ſeen above the Water

Water at once. When they fly, they make a kind of *Stridor*, as some Fowls with their Wings.

KITE-FISH. So called also from his Wings or Gill-Fins, which, what they want in length, they have in breadth and strength. Figur'd by *Rondeletius*, and accurately described. Saving, that he mentions but seven of his eight Fins.

This fish seems to be the same with that which *Marggravius* describes by the Name of PIRAPEBE.

Another KITE-FISH of the same *Species*. Figur'd by *Johnston*, *Tab.* 17. *N.* 9.

Of the GILL-FINS of the FLYING-FISH, it is further observable, That they are fastened very high near their Backs; that so at the same time their Bodies may be in some part sustained by the Water, and their Wings have a little scope to play above it, for their easier advance into the Air.

The BEARDED-LOACH or GROUNDLING. *Gobites Barbatula*. It is a small fish about five inches long, bearded with six small Threads, three on each side. Yet *Bellonius* mentions but four. Nor doth *Gesner* picture more in his corrected figure. See them both.

The MAILED-FISH. *Cataphractus Schonveldii*. It was brought from *Guiny*. But is also often taken in the Mouth of the *Elb*. It is well described by the Author of the Name. And by *Johnston* well figur'd, *Tab.* 46. But in *Tab.* 24. but scurvily, unless it be another *Species*. It is a small fish about five or six inches long, with a broad squat head, and thence taper'd to the end of the Tail. His Scales are as it were doubled, by which he becomes of an angular figure, with about eight Angles before, and six behind. His Nose-end armed with two Prickles standing together in a semilunar figure; supposed to be venemous.

The TAMOATA pictur'd and described by *Piso*, seems to be the same with this fish.

Another MAILED-FISH of the same *Species*.

The MAILED-FISH of *Brasile*. It hath a near resemblance to the former; from whence I have Nam'd it. I find it no where describ'd. 'Tis ½ a foot long. His Head an inch and ¼ long, and near as broad. On the hinder part of his Head he hath three Angles, one on each side, and

and a third in the middle. The Forehead almoſt flat. His upper Chap Elliptick. The *Orbits* of his Eyes round, ¼ of an inch over, an inch behind his Noſe-end, ¾ diſtant. A little before the Eyes, two large holes like Noſtrils. His Mouth a little prominent, near ½ an inch over. His Lips in the place of Teeth, only rough. His lower Jaw and Belly flat. His Body before, an inch and ½ broad, an inch and ¾ high, his Back round, the Sides ending in two Angles. His Tail taper'd, and with the Sides a little flat.

One half of the Gills opens on the ſides, the other underneath in the Breaſt. The Fins are eight. The Gill-Fins of an unuſual ſtructure, having their utmoſt Spine or Bone very rough, thick and ſtrong, above an inch and ½ long, flat and crooked, almoſt like a *Reaping-Hook*, ſeven or eight times as big as any of the reſt of the Fin-Bones. The Belly-Fins much leſs, and above an inch behind. Juſt over theſe the Back-Fin. On the Tail one above, underneath, and at the end: But the two firſt are here broken off.

His Head is cover'd with a brown and rough bony Helmet. His Back, Sides and Tail with Scales of the ſame colour, but a little lighter, rough, engraven with ſmall parallel Lines, and of a Rhomboidal figure. His Breaſt and Belly only with a thin limber Skin.

The BRASILIAN NEEDLE-FISH; by the People of *Braſile* called TIMUCU. *Acus Braſilienſis. Marggravius* hath deſcribed and figur'd it well. 'Tis a long ſlender fiſh, from whence its Name. It hath alſo a pair of Chaps like a long Bill. He only omits the two ſcaly Lines which run along the Belly and Tail of the Fiſh, which every where elſe hath a naked Skin.

The CHAPS (perhaps) of the GREENLAND NEEDLE-FISH. The Teeth which ſtand in ſingle Rows on the Edges of the Chaps are thick and ſtrong, yet very ſharp. In the lower Chap, near the two edges, are two furrows, into which the Teeth of the upper Chap ſtrike. The two Bones which compoſe the Chap, are joyned together by an indented Suture, moſt curious to look upon. The fiſh ſeems next a kin to the common great *Needle-Fiſh*, or the *Girrock*, which is deſcribed by *Rondeletius*, *Aldrovandus*, and others, and pictur'd by *Johnſton*, *Tab.* 15.

(a) Hiſt. Anim. lib. 2. c. 17.

It is an Obſervation of *Ariſtotles*, (a) That moſt fiſhes having

having no Gullet, but their Stomachs standing just behind their Mouths; it often comes to pass, that while the greater pursue the lesser, περιπίπτει ἡ κοιλία εἰς τὸ στόμα, their Stomachs come out into their very Mouths. Some resemblance whereof, in a low degree, may be felt by those that with an eager Appetite first begin to eat; the *Gula* rising up a little as it were to meet the meat half way; which, upon its retreat, it sucks in after it. Which hath happened in some with that violence, as to have endanger'd their being choaked.

CHAP. IV.

OF EXANGUIOUS FISHES.

THE Rough HORNED-LOBSTER. Given by Dr. *Thomas Allen.* I call it so, from the many pointed knobs which he hath all over his Back. *Squilla Crangone.* Described by *Rondeletius.* See also the figure hereof in *Gesner*, *p.* 1099.

This fish, instead of the Plates on the Tail of a common *Lobster*, hath so many Fins, which for the far greater part of them are naked, or without a Crust upon them.

All *Lobsters* use their Tails, as Fins, wherewith they commonly swim backward by Jirks or Springs; reaching sometimes ten yards at a Spring. For which purpose, whereas the Gill-Fins of other fishes, which are their Oars, are a little Concave backward; these have the Plates of their Tails when they bend them down, as they use to do, a little Concave forwards.

Another HORNED-LOBSTER with a smoother Back. These fishes are the most pleasant meat of all the Crustacious kind; except perhaps the Punger.

A CLAW of the GREAT LOBSTER. *Astacus Leo.* 'Tis above a foot long, and a foot and three inches round the middle. So that, ratably, the *Lobster* it self must have been about a yard in length.

TWO more of the same, a little lesser.

The CLAW perhaps of a rare sort of CAMARUS, with the inner Joynt forked.

The

The MOLUCCA-CRAB. *Cancer Molucenſis.* The beſt figure hereof is given by *Beſler*, who alone ſhews the Eyes; yet not ſo clearly as could be wiſhed. Not ill deſcribed by *Joh. de Laet.* That which *Cluſius* makes to be the fore part, he makes the hinder: and *Wormius* doth the like; and ſaith, it is plain, from the poſition of the Legs; With both whom I agree. And to what *Wormius* ſaith, I alſo add, the poſition of the Eyes; for from *Cluſius*'s Deſcription, it would follow, that they ſtood in the hinder part of the *Crab.* Here are eight or nine of them; the entireſt and largeſt, given by *Henry Whiſtler* Eſq;.

The Eye of this *Crab*, hath a horny Cover. But ſtands almoſt flat, or in the ſame plain with the reſt of the ſhell. 'Tis pleaſant to look on, being latticed like the Eye of a *Butterfly.* The latticed-work is diſcernable to a naked Eye, but much better through a Glaſs.

(a) J. de Laet. l. 2. The People (*a*) that live near the River *Chovacoël in Nova Francia*, pile their Shafts with the Tails of this *Crab*, which breeds there abundantly.

The CLAW of the PUNGER, or the VELVET-CRAB, called *Pagurus.* It is one of the biggeſt ſort; and the beſt meat of any. *Linſchoten* reports, That ſome (but he ſaith not of what kind) in *India*, have been found ſo big, that whenſoever they got any man with in their Claws, it coſt him his life.

The PRICKLED-CRAB. *Hippocarcinus*, or *Cancer aſper*, becauſe of the Spikes that grow upon his Back. They breed near *Norway.*

Another with a great number of Center-ſhells growing upon its Back.

(b) De Part. Anim. lib. 4. c. 8. It is noted by *Ariſtotle*, (*b*) That all *Lobſters* and *Crabs* have their Right Claw, the greater and ſtronger.

(c) Ibid. *Crabs* have no Tail, nor need it, ſaith the ſame Author, (*c*) as *Lobſters* do to ſwim with; becauſe they live much upon the Land.

CRABS-EYES. *Oculi Cancrorum.* A *Cruſtaceous-ſtone* ſo called, growing as is commonly (but I doubt falſly) ſaid, in River *Crabs.* Eſpecially, ſaith *Cerutus*, (*d*) in the Female, at that time, when the new ſhell begins to grow.

(d) Muſ. Calceol. Sect. 1.

Both the Powder and the Magiſtery of *Crabs-Eyes*; and the Claws, and Diſtilled-Water of *Crabs*, are all uſed in Medicine.

The

The NAKED-SHRIMP, commonly called *The Souldier-Crab. Cancellus.* Here are two of them housed; one in a *Sea-Snail-shell*; the other in that of a common *Wilk*. It is accurately described by *Aristotle*. (*a*) His fore part is armed with crustaceous Plates, as the *Lobster*, but rather resembles the *Shrimp*. His hinder part is naked, or without a Crust: from whence I take leave for the Name: Neither the usual *English* Name, nor the *Greek*, καρκίνον (according to which the *Latin*) being sutable to the shape of this Animal, a quite different kind from a *Crab*.

(*a*) Hist. An. lib. 4. c. 4.

Two NAKED-SHRIMPS unhoused, or without a shell.

This Animal, because his hinder part is naked, always houses himself in some empty shell, or other capable Body. When he hath filled one shell with Excrements, saith *Bellonius*, or grows too big for it, saith *Aristotle*, he transplants himself to another. Those that house themselves in the shell of the little long *Wilk*, or the *Purple-Wilk*, are called *Little Souldier-Crabs*, those in the great *Wilk-shell*, the *Great Souldier-Crab:* and so, if in other shells of like bigness.

The INMATE-CRAB. *Pinnophylax.* Because it is said to watch for the Prey, and to give notice to the *Pinna* when to apprehend it. 'Tis shaped like a *Crab*; but seldom grows bigger than a *Chesnut*. They are of a lovely white, and some with rays of a light Red or Pinck-colour. One difference betwixt the *Cancellus* and this, is, That *that* always chooses an empty shell, *this* hospitates with the living Animal in the same shell. He cohabits not only with the *Pinna*, but also the *Muscle*, *Oyster*, and *Scallop*.

The PREKE or POULPS. *Polypus.* See the Description in *Rondeletius* and others. 'Tis a *Naked-Fish*, having eight Fingers or Arms spread out almost like the Rays of a *Star-Fish*, and the Mouth in a manner in the middle of them. Their Arms serve them both to swim with, and to Attaque the Prey. When they are pursu'd by a fish, they presently cast forth a black Liquor, which they have always ready in a Bag, and wherewith they darken the water, and so make their escape. Being boiled with Wine and Spices, they are, saith *Mouset*, (*b*) a very excellent meat.

(*b*) Lib. de Re Cibariâ.

The SMOOTH STAR-FISH or SEA-PAD. *Stella marina*

marina lævior. It was ſent from the *Eaſt-Indies.* I find it not deſcribed. When alive, it is of a fleſh-colour. It hath five Arms or Rays, each an inch broad, and proportionably very long, *ſc.* above five inches; the Trunk being not above an inch and ½ Diameter. The upper or convex ſide is wrought all over with very little lenticular knobs, almoſt like a *Chamæleon*'s Skin; with ſmall Concavities interjected, like thoſe in *Poppy-ſeed.* Underneath, each Arm is furrow'd, the Margins of the Furrows being ſet with a kind of curious Fring. The Margins of the Arms wrought with Lenticular eminencies ſet in a ſtraight Row, and beſprinkled as it were with little *Century-ſeed.*

All *Stars* have their Mouths in the middle underneath, as the *Sea-Urchin.* They feed upon Shell-fiſh. And ſeem, ſaith *Rondeletius*, to have no other paſſage for their Excrements, but their Mouths. Whereof I much doubt. They take the Prey, as the *Polypus*, and ſwim very ſwiftly, by ſtretching out or contracting their Arms at their pleaſure.

The BRANCHED STAR-FISH. *Stella marina arboreſcens.* A rare kind. It was taken in the *Bay* of *Maſtachuſet* in *New-England.* See the Deſcriſption hereof in *Rondeletius*, and out of him in *Wormius.* As alſo in the Philoſophical *Tranſ.* (*a*) under the Title of *Piſcis Echinoſtellaris Viſciformis.* Before I had peruſed theſe, I had drawn up a Deſcription of my own, which I will take leave to ſubjoyn. It is above a foot Diametre. The Mouth, in the middle, is divided into five Lips. The figure both of this and of the Trunk or Body is pentangular. The Diametre of the Trunk almoſt three inches. The ſides grow thin from the Mouth to their Edges, which are ſo many exact *Hyperbola's.*

(*a*) Num. 57.

From the five Corners of the Trunk, as many Branches being produced, are preſently each divided into two others, about an inch in compaſs; round, but by a double Row of little knobs, ſeeming to be ſquare. Each of theſe, are again ſubdivided into leſſer and leſſer Branches. The laſt whereof, are ſcarce thicker than a Horſe-Hair. In number, by a moderate eſtimate, above a Thouſand.

As he ſwims, he ſpreads and ſtretches out all his Branches to their full length; but ſo ſoon as he perceives the Prey within

within his reach, he hooks them all in, and so takes it as it were in a Net.

The PRICKLED STAR-FISH. *Stella marina hirsuta:* Perhaps *Rondeletius's Pectinata prima.* It hath five Arms, each Arm pointed, and also slender or narrowed next the Trunk, but spread in the middle. Two inches and ¼ long; the Trunk it self not above ½ an inch Diametre. The upper part hath a rough shag of short Prickles; the other, of longer: where also the Arms are furrow'd. These innumerable Prickles upon their Arms, are all movable, as in the *Sea-Hedg-Hog.*

Three more PRICKLED STAR-FISHES; which indifferently answer the second, third, and fourth of *Rondeletius.*

The CROWN'D-STAR-FISH. *Stella marina Coronalis.* It was taken in the *Danish*-Sea. I meet not with the Description any where. 'Tis a little One. It hath five short Arms, bluntly pointed, about two inches long. The Trunk two inches and ½ over, the five Sides whereof are Hyperbolick. The upper part rises up like a Crown, adorned with round Knobs of the bigness of a green Peas, with other little ones, on both sides like Pins heads, ranged into five even Rows from the ends of the Arms to the top of the *Star*; in some sort, as precious Stones are set upon a Royal Crown: from whence I have named it. The spaces also between them are beset with little knobs. The edges of the Arms and Sides are in like manner set round about with lesser upon greater. Underneath, the furrows of the five Arms meet in the middle, paved with little Stones almost like Teeth; the broad Margins, with other round knobs or stones.

These *Stones*, are in colour, substance, and nature congenerous, with those which are commonly called *Crabs-Eyes.*

The HIGH-CROWN'D STAR-FISH. It differs from the former, in being much taller, and in having no Knobs, but only Spikes, the one half whereof are ranged into certain correspondent Orders.

A FLAT SPIKED STAR-FISH, taken in the *German* Ocean.

Little STAR-FISHES with five Arms, taken in the *British* Seas.

A STAR-FISH with ſix Rays or Arms. They are almoſt like thoſe of the ſmooth *Star-Fiſh*; excepting, that two of them are as ſhort again as the reſt. Whether a monſtrous Production, or a diſtinct *Species*, I cannot ſay.

A STAR-FISH with TWELVE RAYS; by ſome called *Sun-Fiſh*. 'Twas taken in the *Britiſh*-Sea. The *Baſis* of each Ray is much ſlenderer than by the figure in *Johnſton* is repreſented. Neither is it ſhag'd only on the edges, as in the ſame figure, but all over.

SECT. VI.

OF SHELLS.

CHAP. I.

Of whirled and ſingle SHELLS.

THere is a large Treaſure of Shells in this *Muſæum:* in all, great and ſmall, about ſix hundred. The Reduction of all which to the Order of Nature, whoever ſhall go about, will find to be no little Task. Nor can it be perfectly done here, becauſe as yet the Collection it ſelf is not perfect. According to the beſt Method I can at preſent think of, I ſhall here place them. And that it may be the better judged, how far it is natural, or not, I ſhall afterwards digeſt them into Schemes. Moſt of them are Strangers in *England* and the *Britiſh*-Seas, and therefore I muſt be allowed a little more than ordinary liberty for the *Engliſh* Names.

Note, That when I ſpeak of the Right or Left Lip of a Shell, I mean, as it is held with the Mouth downwards.

The FROG-WILK. *Murex Coracoides.* Deſcribed and pictur'd by *Johnſton* out of others. As are alſo moſt of thoſe that follow, which are only named. It hath three Appendices on each ſide, like fingers or feet, and one at the end.

The

The BROAD-LIPP'D WILK. *Aporrhais.* The Lips of this are pale and even. Of this kind, three great Ones are here preſerved, one of them above a foot in length.

The BROAD-LIP'D WILK, with wrinkled Lips, and dyed with a deep purple. See a curious figure of this in *Calceolarius*'s *Muſæum*, (*a*) under the Title of *Conchilium Muricatum.* This Shell, ſaith *Cerutus*, (*b*) the *Indians* uſe as a Trumpet, both in their Wars, and in Hunting.

(*a*) Sect. 1.

(*b*) Ibid.

The MARBLE WILK. *Murex marmoreus*, from its mixed colours, which make it look like ſpoted Marble. Of theſe, here are five.

The ORIENTAL WILK. *Murex Orientalis.* The right Lip of this is even. Here are four great Shells of this ſort, near a foot in length.

Another ORIENTAL WILK, with the right Lip undulated.

Betwixt the three ſorts of Shells above mentioned, there is this difference, That the right Lip of that commonly call'd *The Oriental*, is only expanded; that of the marbled, expanded or ſpread, and turned outward; of the *Broad-Lip'd*, ſpread outward, and as it were Finger'd.

A SHELL like the ORIENTAL, with a KNOBED Turban or Whirle.

Another of the ſame ſort with an EVEN Whirle. It is a ſmall ſhell, not above an inch and ¼ long. Forward, ſomewhat flat, and white as Milk. Hinderly, ſtained with tauny ſpots. The left Lip is turned or ſpread out. The right, at the bottom wrinkled, and ſtained with a light purple. Towards the Cone or fore Corner, is gather'd into an open Angle. The *Whirle* is ſmooth, not very high, maketh ſix Rounds.

The LONG-MOUTH'D WILK. *Murex Labris parallelis.* Both the Lips of this are plain or even on the Surface. I call it *Long-Mouth'd*, becauſe the Mouths of all that have been nam'd before, are very wide.

The LONG-MOUTH'D WILK, with oblique furrows on the left Lip. Here are four of this ſort: whereof one is near ¼ a foot long. Each of the inner Rounds of the *Whirle* or *Turban*, is one third part leſſer than that next without it.

The SPIKED-WILK. *Murex Aculeatus.* This, of all the

the reſt, hath the Name, *Murex*, moſt properly given it; from the ſpiked Inſtrument uſed in War, ſo called. The Spikes of this are round. Here are three of theſe Shells, one of which is ¼ of a foot long. Well figur'd by *Olearius*. (*a*) And better by *Beſler*.

(*a*) Tab. 32. f. 5.

The SPIKED-WILK, with doubled or PLAITED Spikes. Here are two of this ſort, one of them near ½ a foot long. Both the Lips are a little drawn outward, and ſo the Mouth almoſt Oval, both the corners thereof pretty long, the left Lip ſpread outward, the right wrinkled; the main Body ſomewhat Conical, the *Whirle* low, conſiſting of ſix Rounds; both ſtriated, and armed with plated Spikes ſtanding in a ſpiral Order.

The BOSSED or KNOBED-WILK. In the place of ſpikes it hath round knobs. Here are five or ſix, all leſſer ones, about the length of a *Katharine-Pear*; ſo that 'tis probable they grow not much bigger.

The CONICK SNAIL. *Cochlea Cylindrica*; ſo it is commonly called by *Zoographers*, but very improperly, the figure hereof being Conical. Here are about fourteen of this ſort. Whereof ſome have a plain, others a knobed *Turban*. Some are all over white, or yellowiſh, others are ſtained white and black, or blackiſh-bay, white and brown, or white and yellowiſh. In ſome the colours are laid in ſpots, in others undulated, and in ſome others Lattice-wiſe. *Rondeletius* ſaies, That this Shell ſeldom exceeds the thickneſs of the *Thumb*. Yet one of theſe is above ½ a foot long, and the Baſe above three inches over. The reſt are ſmall, all of them plain *Cylinders*. Not unelegantly expreſs'd in ſome variety of figures by *Olearius*, *Tab.* 31. *and Fig.* 3. *of Tab.* 32.

The *Whirle* maketh nine or ten Rounds: which hold the ſame proportion one to another, as in the *Long-Mouth'd Wilk*. In the Kingdom of *Congi*, and ſome other places in the *Eaſt-Indies*, theſe Shells go for Money.

The CONICK SNAIL a little convex, and with the Rounds of the *Turban* alſo convex.

Another Convex Conick Snail, with the Rounds of the *Turban* Concave.

The GREAT PERSIAN WILK. *Concha Perſica major.* Of this ſort there are four here preſerved, of which, two are above ½ a foot long. This

This *Wilk* yields a purple juyce, anciently uſed for deying. The Cover of this Shell is called *Onyx* or *Unguis*, becauſe in ſhape like the Claw of a Carniverous Bird. The beſt of theſe *Opercula* or Covers are found in and brought from the *Red-Sea*.

The leſſer PERSIAN WILK, with furrow'd Lips. Of this ſort there are five here preſerved of a middle ſize. The *Great Perſian Wilk* is knobed, and hath only one Series of wrinckles. This even, and with a double Series of wrinckles a croſs one to the other. Each of the outer Rounds of the *Whirle* is double the thickneſs of the next within it.

The leſſer PERSIAN WILK with even Lips. 'Tis a ſmall ſhell, ſcarce bigger than the Kernel of a *Filbert*. The Mouth is almoſt Oval, each Corner ending in a ſmall Channel. Both the Lips are turned outwards ſideways, and as far as the end of the *Turban*. The Back is ſpeckled with white, red, and blew. The *Turban* not high, nor hath more than three Rounds.

The PERSIAN WILK, with the Rounds of the *Whirle* plated and interrupted; ſo as the Plates of the ſeveral rounds do anticipate one another. Of theſe here are three.

The FLAT-LIP'D SNAIL. *Cochlea ſiniſtri Labri angulo duplici.* Not deſcribed. In a manner half a long Oval. The left Lip is flat, whereby it hath a double edge. Deep within, 'tis ſtained with a ſhining Bay. The left Lip near the *Turban* almoſt an inch broad; before, it ends ſharp. The *Turban* maketh but about two Rounds. Both this and the Body are beſet with knobs in a ſpiral order, and are cover'd over with a pale purple Cruſt.

The ſhort FLAT-LIP'D SNAIL. 'Tis white within; yet the left Lip is ſtained with two Bay ſpots. The Back of a light aſh-colour. The Knobs of this have no Incruſtation. The Rounds of the *Turban* are three.

The WRINKLED-SNAIL. *Cochlea rugoſa.* Here are two of theſe, whereof one is near ½ a foot long. Each of the outer Rounds of the *Turban* is twice as big as the next within it. One of theſe is curiouſly figur'd by *Beſler*.

The HOOK-NOS'D SNAIL. *Cochlea Roſtro recurvo.* So I call

I call it, though it is not properly the Nose or Beak of the *Snail*, but of its shell. The *Turban* is pretty high. Both this and the Body are wrought with knobs and lines in an oblique and spiral Order.

The SNAIL with the SPIKED TURBAN. *Cochlea Turbine aculeato.* This shell is described and figur'd by *Fabius Columna.* (*a*) Yet in some things he hardly reaches it. The Mouth is a kind of long Oval. The right Lip is spread, and as it were doubled outward. The Back faced with smooth Plates like so many more lips, carry'd obliquely from the left Lip to the *Turban*, and there set with short but very sharp Spikes. The spaces betwixt these are ¼ an inch broad, wrinkled with very small furrows, and curiously stained with pillars of white and brown lines meeting together in several Arches, as if it had been done by a *Painter.*

(*a*) *In his* Purpura. *But better in his Book* de Aquat. & Terrestr.

The SHORT-NOS'D SNAIL, with a low and plain or even *Turban.*

The DIPING-SNAIL. *Cochlea Immerso Turbine.* Not described. In other *Snails* the Rounds of the *Whirle* stand either in or else above a plain; here, they dip or run down within the shell. Here are divers of them; all very smooth, and of an Oval figure. One of a white colour, besprinkled with an innumerable company of small brown specks; about the bigness of a little *Horse-Plum.* The rest are smaller.

The LONG-MOUTH'D SNAIL. *Cochlea Labris parallelis, s. Cylindrovalis.* The figure hereof is betwixt Cylindrical and Oval. One half only of the left Lip is turned outward, and uneven with oblique furrows. The right Lip plain. The fore-angle of the Mouth crooked. The Rounds of the *Turban* furrow'd, not high, four or five in number. The Back is painted with a mixture of yellow, bay, blew and black specks. It is about two inches long. There are some more of the same *Species* that are less.

The NAVLE-SNAIL. *Cochlea Umbilicalis.* The *Turban* of this is smooth. The end of the inmost Round is produced like a *Navle*, whence its Name.

Another sort of NAVLE-SNAIL. The *Turban* of this is set with short doubled or plated Spikes. It is almost a foot in length.

The

The OVAL LONG-MOUTH'D SNAIL. Scarce bigger than a *Filbert Kernel.* The Lips are parallel. The right turned or doubled outward. The left uneven with three oblique furrows. The Back ſpeckled with white and red. The *Whirle* hath four Rounds pretty high.

The PURPLE-WILK with ſolid Spikes. *Purpura aculeis ſolidis.* This and the other kinds commonly found in the *Dead-Sea.*

The PURPLE-WILK with long plated Spikes. *Purpura Aculeis plicatis longiſſimis.* By *Ferranto Imperato*, called *Echinata. Olearius* gives a good Figure, (*a*) *Fab. Columna* the Deſcription, with the Title of *Purpura muricata ſive Murex Roſtratus parvus.* I will add my own a little fuller. The main Body is not much bigger than a good big *Nutmeg.* But hath a Horn no leſs than two inches and ½ long, near the Mouth ¼ of an inch over, and ſharp-pointed. Almoſt a Pipe, but a little open underneath by the length. Along the right Lip and the *Turban* it ſelf, in three Rows, ſtand ſeveral long ſharp plated or gutter'd Spikes triangularly. But on the *Turban* they a little anticipate each other. As alſo do the Plates of the ſeveral Rounds. The right Lip is in ſome ſort toothed, the left turned outward.

(*a*) Tab. 29. fig. 1.

The PURPLE with REDOUBLED SPIKES, *i. e.* with the greater doubled Spikes collaterally ſubdivided into leſſer. Of theſe there are four. Two of them white, deſcribed by *Columna* with the Name of *Purpura ſive Murex Pelagius marmoreus.* Another, aſh-colour'd; and a fourth, brown.

All *Purples* have a Canale or Gutter'd Horn long or ſhort, in which is lodged that part which is called the *Tongue*; but performs the ſame Office as the Gills in other Fiſhes. (*b*) The Animal creeps and directs its own way with its Horns, like a *Snail:* yet hath it not four, but two only. (*c*)

(*b*) Fab. Column. Purpura.

(*c*) Mart. Lyſter de Cochl.

The *Purple* Tincture it yields, is contained betwixt that part which is called the *Papaver* and the Neck. (*d*) It is of a different degree; in ſome, more upon the Red, like that of *Cochinele*; in others, more upon the Blew, like that of *Violets.* It was anciently (preſſed out of the living (*e*) Animal, and) uſed eſpecially for the deying of *Silks.* But is now grown out of uſe, as is likely, from the great

(*d*) Ariſtot. Hiſt. Anim. lib. 5. c. 15.

(*e*) Muſæum Worm.

abundance of a ſort of *Fucus*, which the *Italians* call *Roccella*, wherewith *Silk-Dyers* do now make very rich *Purples* of all varieties, with leſs labour and charge. (*a*)

(*a*) Fab. Columna. Purpura.

That little Shell called *Blatta Byzantia*, is the *Operculum* or Lid of the *Purple*.

The SQUARE-WILK. *Buccina Rhomboidea, i. e.* It hath in a ſort four equal ſides, with unequal Angles. I find it not deſcrib'd. The Mouth almoſt Oval, both the Corners a little gutter'd. The right Lip is firſt turned outward, and then doubled or returned back again inward; and the edge a little toothed. Juſt oppoſite to this Lip, is laid upon the ſhell a kind of *liſt*, and doubled down in the ſame manner. Upon every Round of the *Turban* alſo are certain edged pieces in two oppoſite Rows. By theſe and the *liſt* above ſaid the ſhell is made ſquare. Both the main Body and the *Turban* are wrought over with knobs great and ſmall ſtanding in oblique and ſpiral Orders.

All WILKS that have the Rounds of the *Turban* thus edged, are betwixt a *Purple* and a common *Wilk*.

The LONG SQUARE WILK. Neither do I find this deſcribed or figur'd. Both the doubling of the right Lip, and the oppoſite *Liſt*, are leſs cloſe, than in the former. Neither hath it any of the larger knobs.

The LONG THICK-LIP'D WILK. The right Lip of this is ſwoln or ſtands thick outwardly; and on the Rounds of the *Turban* are many edged pieces.

The ſame ſort of WILK, with few edged pieces on the *Turban*.

The THIN-LIP'D WILK. The fore Corner of this ends in a gutter'd-Horn. *Columna* deſcribes and pictures it with the Name of *Bucciunm Roſtratum*. (*b*)

(*b*) Lib. de Aquatil. & Terreſt.

The GREAT THIN-LIP'D WILK. *Strombus magnus.* This ſort hath edged pieces on the Rounds of the *Turban*. The biggeſt of turbinated-ſhells: this here is almoſt ½ a yard long, and above ½ a yard round about.

The TRIANGULAR WILK. No where deſcrib'd that I find. The Mouth almoſt Oval. The fore Corner hereof ends in a gutter'd-Horn bended a little upward. The left Lip only turned outward. The right is firſt bended outward, and then doubled or returned inward. From thence

at

at the distance of $\frac{1}{3}^{d}$ of the circuit of the shell, is laid a a List, in shape imitating the said right Lip. At the same distance, a pretty broad-pointed knob. By both these and the right Lip the shell is made Triangular. The knobs on the right Lip and List, are white, theother parts tawny, and as it were wrinkled. The *Turban*, which hath six rounds, is also a little angular.

The COMMON WILK. This sort is short-snouted, or hath no horn. Of this sort are several here preserv'd.

It is affirm'd by *Aristotle*, (*a*) That you may know how many years a *Wilk* is of, by the number of Rounds in the *Turban*. Of the manner of laying their Eggs, see *Bellonius*. They are desired by some, as a rare sort of Meat. The best are in clean Creeks. That which Mr. *Lyster* describes, (*b*) by the Name of *Buccinum maximum*, is fished out of the Sea at *Scarbrough*.

(*a*) Hist. An. lib. 5. c. 15.

(*b*) De Cochl. Mar. Tit. 1.

A *Wilk*, saith *Nicolaus Myrepsius*, being burnt, powdered, and mixed with old Oil to the consistence of Glew, and so the Head, first shaved and rub'd, anointed therewith, is an admirable Remedy against Baldness and Morph of long standing. 'Tis usual to give Drink to Children that have the *Chin-Cough*, out of a *Wilk-shell*; and it is observed, saith *Wormius*, (*c*) to do them good.

(*c*) Musæum.

The WILK-SNAIL. *Buccicochlea.* So I call it, because, in Figure, it approaches to the *Wilk*; to the *Common Snail*, in the thinness of its shell. *Columna* (*d*) describes and figures this with the Title of *Buccinum exoticum variegatum.*

(*d*) Lib. de Aquat. & Terrest.

The WILK-SNAIL winding, from the Mouth, towards the right Hand; whereas almost all other shells wind the contrary way. The Mouth is white as *Milk*, and almost Oval. The left Lip spread and turned outward. The Rounds are Convex, as in the *Wilk*. In number six, speckled with yellow Bay and blew spots. The shell is as thin as that of common *Land-Snails*. Of kin to that shell described by Mr. *Lyster* under *Tit.* 1. *lib. de Cochl. Mar.*

The BELLY'D-LONG WHIRLE. *Turbo Ventricosus.* This shell runs all into a *Whirle* or *Turban*. It is also belly'd, *i.e.* swells out a little betwixt the Mouth and the Cone. And the left Lip is uneven with oblique Furrows.

The WHIRLE-SNAIL. *Turbocochlea.* The rounds of this ſort wind from the Mouth to the right Hand, and that very obliquely, in number ſix, ſpeckled with *Cheſtnut* ſpots in Rows. The Mouth very long, and one Lip ridged. 'Tis thin like a common *Snail-ſhell.* *Columna* (*a*) deſcribes and figures one pretty like this by the Name of *Turbo alter minor.*

(*a*) Lib. de Aquat. & Terreſt.

The SMALL WHIRL-SNAIL, with numerous rounds, and alſo winding from the Mouth toward the right Hand. There are about fifty of them in a Bottle. They are of a brown colour; and thin as the ſhell of the common *Snail.* Their Mouth almoſt round. The right Lip hath a little Angle. It hath nine rounds with very ſmall *tranſvers Striæ.* *Columna* deſcribes and figures one like this with the Title of *Turbo Terreſtris non deſcriptus.* Mr. *Lyſter* (*b*) calls it *Buccinum pullum*; and very aptly compares it, both as to ſhape and bigneſs, to an *Oat.* He ſaith it is found in *England* in the Cracks of *old Trees,* and in *Garden-walls.*

(*b*) Lib. de Cochl.

The BELLY'D-LONG WHIRLE, with ſmall ſpiral Furrows.

Another BELLY'D-LONG WHIRLE, with little knobs in ſpiral Orders.

The LEVEL-WHIRLE, or the SPIRE. *Turbo planus ſive verè Conicus.* The rounds are all knobed, and the right Lip gather'd into ſmall wrinkles.

Another KNOBED SPIRE, with the right Lip plain or even. Here are ſeveral little Ones of this ſort.

The SMOOTH SPIRE, with high or ſwelling rounds. Here are two ſorts of theſe; one with oblique, the other with ſpiral ſmall Furrows. This ſhell is deſcribed by Mr. *Lyſter.* (*c*)

(*c*) Lib. de Cochl. Mar.

The SMOOTH SPIRE, with flat rounds. Here are alſo two ſorts of theſe; the one furrow'd, the other not, deſcribed and figur'd by *Columna* under the title of *Buccinum Perſicum eburneum nitidum maculoſum.* Of all theſe here are ſeveral ſmall Ones.

The Natives of *Braſile* make a ſort of Muſical Inſtruments with theſe kind of ſhells. (*d*)

(*d*) Joh. de Laet.

The LOOSE WHIRLE. *Penicillus.* The one half of it windeth looſely like a *Worme*; the other is a ſmall long *Turban.*

The

The SHORT WHIRLE. *Trochus.* This is somewhat more prolonged than some others of this kind, the *Base* broader, and the *Rounds* in a level. Of this sort here are two great Ones, curiously stained with Crimson waves from the *Base* (which is about four inches over) to the *Cone*. It is of kin to that which by *Columna* is called *Turbo Persicus maximus.*

Another level SHORT WHIRLE, also somewhat longer than the rest, and with the *Rounds* in a level, but the *Base* narrow.

A thin level SHORT WHIRLE, shorter than the former, and with flat rounds. Here are two sorts of this; the one with smooth, the other with ruged or knobed rounds.

A fourth WHIRLE of the same kind, with high rounds. Here are also two sorts of this; the one smooth, the other ruged.

The BELLY'D SHORT WHIRLE with spiked rounds. 'Tis no where described that I find. The *Base* two inches broad, the *Cone* as high. The Mouth almost round, and within of a *Pearl* colour. The whole shell without whitish. The *Base* all over wrought with round, and obliquely radiated wrinkles. The rounds are knobed, and the under edges of every round with flat doubled Spikes. Here are two more of the same sort, with the Spikes ground off.

Another BELLY'D SHORT WHIRLE, almost smooth, having only very small wrinkles, without any Spikes.

The CONCAVE SHORT WHIRLE. *Trochus centro latè concavo.* Hitherto undescrib'd. 'Tis two inches broad, an inch an ½ high, being Belly'd, and having the *Cone* much depressed. As also the Mouth, which is therefore a flattish square. Both the *Base* and the *Rounds* are wrought with small spiral and radiated wrinkles running across. It hath five or six rounds, somewhat swelling. Not, as in most other shells, contiguous in the centre, but thence receding, leave a wide space in the middle of the shell, representing in some sort a pair of Winding-Stairs. The ridges also of the rounds are wrought with *Tooth-Work*, answering to the Sculpture on the edges of a Stair-Case.

There are several sorts of short *Whirles* or *Trochi*, saies Mr. *Lyster*, (*a*) found in *England*, as at the Mouth of *Umber*, and in *Lincoln-shire* by the Sea-side. The

(*a*) Lib. de Cochl. Mar.

The LITTLE ROUGH WILK. *Nerites Turbine rugoso.*

The LITTLE KNOBED WILK. *Nerites Turbine tuberato.*

The GREAT ROUND-MOUTH'D SNAIL, with a Pearl colour. *Cochlea cælata.* Here are three of these; of which two, are each above ½ a foot wide. Their pearly gloss, on the outside is artificial; within, natural. The natural colour without is sometimes green, with white and bay spots.

One way whereby it receives a bright pearl colour, is by being steeped in *Vinegar*; which eats away the rough and duller surface.

The GREAT NAVLE-SHELL. *Umbilicus marinus Indicus major.* It is the lid of the *Cochlea Cælata*; and hath its Name from its shape. Very well described by *Wormius.*

The LITTLE NAVLE-SHELL, with wrinkled edges.

A SECOND, with the Convex side more plainly winding like a *Navle.*

A THIRD, with the same side besprinkled with a great company of small round knobs.

The little *Navle-Shell* is well expres'd by *Olearius, Tab.* 33. *Fig.* 7. Here are several of them kept in a Glass.

Not only this, but other turbinated shells have their lid. Which, as Mr. *Lyster* well observes, is as it were another *Valve.*

Spirit of *Nitre* droped upon this Shell, riseth up with a strong *efferrescence. The admirable Virtue of this Shell is experienced,* saith Wormius, (*a*) *by men of very good note, in stainching of Blood; the flat side hereof being only applied, with Spittle, to the Forehead.* 'Tis usual to lay a cold Key or Stone in the Neck. But if the same, especially a good big Pebble with one side flat, like a *Painters Mullet,* were apply'd to the Forehead, I should expect as good advantage from that, as from the application of this shell.

(*a*) Musæum

The Women in *France,* saith *Boetius,* (*b*) *nimio Mensium fluore laborantes,* commonly take this shell reduced to a fine powder, which they find to be a very good remedy, and keep it as a Secret.

(*b*) Lib. de Gem. & Lapid.

The LESSER ROUND-MOUTH'D SNAIL, with a shorter knobed *Turban.*

The

The SPIKED or TOOTHED SNAIL. *Cochlea Echinophera ſive Echinis plicatis.* Of an aſh-colour. The Mouth round. The *Turban* ſhort, having only three rounds almoſt flat. The *Baſe* wrought with circular wrinkles. The utmoſt round, as it were toothed with ſhort flat-doubled Spikes.

The FINGER'D SNAIL. *Cochlea Dactylata.* Not yet deſcribed. The Spikes of this are doubled and redoubled, yet not flat, but thick and round, ſo as to reſemble ſo many little Fingers. Without, it is of a ſad brown. Within, of a Pearl colour. The Mouth round. The *Turban* low, making only three rounds, which ſo recede from the centre, as to leave an empty ſpace in the middle of the ſhell. 'Tis all over rough with ſmall plated Spikes, and pointed wrinkles in a ſpiral Order.

The HIGH-CROWN'D SNAIL, with a ſemicircular Mouth.

The LOW-CROWN'D SNAIL, with a ſemicircular Mouth.

The HALF-LIP'D SNAIL. So I call it, becauſe one half of the inner Lip being ſpread outward, the other half ſeems as if it were clip'd off. Of this here are two ſorts; one with the upper, the other with the nether half deficient.

Another SNAIL like the former, ſaving that the inner Lip is whole, and the *Turban* ſomewhat higher.

Another SNAIL with the *Turban* ſomewhat lower. Of this here are two ſorts; one with the rounds of the *Turban* even or ſmooth; the other, wrinkled.

The SEMICIRCULAR MOUTH, TOOTHED on both ſides. The Teeth of the outer Lip are the leſſer; they ſtand not on the edge of the Lip, but deep in the Mouth, juſt over againſt the inner Lip: where the white parts of the ſhell on both ſides are defined or circumſcribed by a Circle, whoſe centre is at the edge of the inner Lip. Outwardly, the ſhell is ſpeckled with white, red, and black Spots, and ruged with ſpiral wrinkles. One like to this is deſcribed by *Columna* with the Name of *Cochlea marina marmorea.*

The BLOBBER-LIP'D SNAIL. *Cochlea Labroſa.* The Mouth of this is alſo Semicircular, the outer Lip being round

round and ſpread out a little; the inner ſtrait, like white *Marble*, its inner edge toothed, and ſpread outward almoſt as far as the *Navle* of the ſhell; from whence I have nam'd it. The *Turban* is low and almoſt flat. It maketh ſcarce more than two rounds, which therefore immediately run from great to ſmall. On the outſide 'tis ruged with tranſverſe wrinkles, and ſpeckled with red and black ſpots upon white.

The toothed Lips of both theſe laſt Shells, moſt probably, ſerve as Joynts to hold their lids, ſo much the more cloſe and ſteady.

The FORE-WHIRED SNAIL. *Cochlea Turbine antico.* This is no where deſcribed. 'Tis ſmooth, of an aſh-colour. The outer Lip is ſpread a little backward; and toothed within: as is alſo the edge of the inner Lip. Both the corners of the Mouth are placed on the circumference of the utmoſt round. Whereby, contrary to all other ſhells I ever yet ſaw, it hath the *Turban* or *Whirle* made before. 'Tis much depreſſed, conſiſting of five flat rounds. The aſſertion of *Ariſtotle*, (*a*) That the *Turban* always ſtands behind, is here proved falſe.

(*a*) Hiſt. Anim. lib. 4. c. 4.

The FLAT-WHIRLE. This *Snail* is a perfect *Helix*, all the ſhell lying as it were between two levels. Of this kind Mr. *Lyſter* (*b*) deſcribeth three ſorts. Of which he obſerves, That upon the ſprinkling a little Salt or Pepper, or the like, into their Mouths, they yield a Crimſon liquor.

(*b*) Lib. de Cochleis. Tit. 26.

(*c*) Ibid. p. 1. The ſame Author (*c*) hath obſerved ſome particulars of the parts of *Snails*; as their Horns, Eyes, (as he ſuppoſeth them) Teeth, *Anus*, Lungs, milkly Veins (which are all they have) parts of Generation, &c. Which laſt, ſaith he, are ſo like, as to make it ſeem very probable, That they are *Hermaphrodites*. In the time of Coition, they ſtrike a ſort of ſmall teſtaceous Needles (*Spicula teſtacea*) into one an others Necks. For what cauſe, or in what manner, he could not ſo well obſerve.

(*d*) Ibid. No Shell with a *Turban*, hath leſs than two rounds, nor hath any, ſaith the ſame Author, (*d*) of *Engliſh* Shells, above ten.

The ſlick SAILER. *Nautilus lævis.* This ſort is brown on the Back, and black on the Belly. Curiouſly figur'd both

in

in *Calceolarius*'s *Muſæum*, and by *Beſler*. Here are two of them, whereof one is near ¾ of a yard long.

One half of the ſame ſort of ſhell cut down the middle. By which it appears to be divided by about 40 oblique tranſverſe Partitions.

The Animal is of kin to the *Polypus*. Famous for the Art of Navigation. He riſes to the top of the Water with his Shell inverted; and being there, returns it. Then having a thin Membrance ſpread againſt the Wind for a Sail, two Feet for the Rudder, and two for the Helm, he ſails along. If any fear ariſes, he pulls all in, and filling his ſhell with Water, immediately ſinks himſelf to the bottom of the Sea. (*a*)

(*a*) Ariſt. Hiſt. Anim. l. 9. c. 37. Scal. exercit. Rondeletius *out of* Oppianus. Bellonius. *And out of him* Septalius's Muſæum.

The PEARLY SAILER, 'Tis both within and without of the colour of the beſt Oriental Pearl. This ſort is brought from *India* and the *Perſian*-Gulf. Hereof *Neck-laces* are ſometimes made. As alſo Images and Beads uſed at Devotions.

The SPIKED SAILER. The Back and Belly of this are flat with two ridges, and on each ridge grows a row of ſhort Spikes.

The MAILED SAILER. *Nauticlus Laminatus*. I meet with it no where. Both within, and eſpecially without, of the colour of the richeſt Pearl. It is compoſed of a conſiderable number of Plates, as if in Armor. Yet the Plates continuous; furrow'd along the middle, and produced with a blunt Angle, almoſt like a Widows-Peak. From under each of which, emergeth a kind of little Tongue, like that of a *Shoo-Buckle*.

VENUS-SHELL. *Concha Veneris*. Becauſe beautiful. Or elſe, ſaith *Terzagi*, *quòd partem Veneris Imperio ſubditam referat*. The firſt I ſhall name is that with Blobbed-lips, or having as it were a white thick Facing. They are alſo furrow'd, and ſtained with *Cheſtnut* Spots. But the Back with a *Purple*.

VENUS SHELL, with the right Lip furrow'd, but neither of them faced or turned out.

A SECOND of this kind with the left Lip furrow'd.

A THIRD, with both Lips furrow'd.

The HIGH-BACK'D VENUS-SHELL. Of this kind, here are three of a *Cheſtnut* or *Bay*-colour; one ſtained

with *Green*, another with *Brown*, a third with *white* ſpots. And a fourth, *white*, ſpeckled with *yellow*, *red*, and *purple*.

The NAVLED VENUS-SHELL. 'Tis alſo ſomewhat high-back'd, and with each Lip furrow'd. On the thicker end, it hath ſome reſemblance of a little *Turban* or *Navle*.

The LONG-VENUS-SHELL. Of this ſort here is one ſtained with white ſpots upon a Bay ground. The reſt of the ſame Figure, are ſomewhat rough, having, as 'tis likely, been ſteeped in *Vinegar*, or ſome other ways corroded.

The BUNCH-BACK'D VENUS-SHELL. Deſcribed and figur'd by *Columna* under the Name of *Concha utroq; latere ſe colligens*. It hath a tranſvers Angle or Ridge in the middle. Where alſo, there is a diſtinct piece, moſt cloſely inlaid into the Back of the Shell. The Lips alſo are both even.

The VENUS-SHEL with ſmooth or even Lips, and without any ridge on the Back. The little white Ones of this kind, are thoſe which are particularly called *ENTALIA*. With theſe, ſaith *Rondeletius*, the *French* adorn their Horſes Bridles, and other parts of Equipage. Of theſe and *Jet* mixed together, they alſo make *Bracelets*, and other Ornaments, for Widows in *Half-Mourning*. Many of this ſort, ſtriated, are found, ſaith Mr. *Lyſter*, near *Hartle-pool* in the County of *Durham*, where the People call them *Nuns*.

Divers other leſſer VENUS-SHELLS of ſeveral kinds, and ſtained with ſeveral colours, are here collected.

The *Italians* uſe this Shell for the poliſhing of Paper, and other things. (*a*) The people living near the *Red-Sea* gather them in abundance, and ſell them to thoſe that trade to *Memphis*; for with theſe the *Egyptians* ſmooth their Linnen Cloth. (*b*) *Goldſmiths* cut them in two, and make *Spoons* of them. They are commended againſt thoſe *Ulcers* in the great Corner of the Eye, which uſually turn to *Fiſtula's*, *becauſe of their admirable drying quality without heat*. (*c*) Yet we have no reaſon but to believe, that moſt other ſhells may be of equal Virtue. But if we obſerve, it is uſual for people to have a high eſteem of thoſe things, even as to their Medicinal Virtue, that look prettily, or that are rarely to be had. Whereas, it is plain,

(*a*) Wormius.

(*b*) Bellonius

(*c*) Rondeletius.

plain, that Nature generally ſupplyeth us with the greateſt plenty of thoſe things, which are the moſt uſeful.

The round SEA-URCHIN or BUTTON-FISH. *Echinus orbicularis.* Here are ſeveral *Species* hereof. The firſt I ſhall name is the *Edible Button-Fiſh.* Theſe have very great Prickles, with *Seats* or *Baſes* proportionable, in five double Orders. And the ſhells are orbicular. See the full Deſcription in *Rondeletius.*

They were anciently eaten raw before Supper, as *Oyſters* are now, and as much eſteemed.

The ROUND BUTTON-FISH, with ten Orders of midling Prickles. Of theſe Prickles it hath five Orders of bigger, and five of leſs, all Conical at each end, and bounded by ten more. Of this kind, here are ſome more, others leſs round. Some alſo that are *White*, and others *Rediſh.*

The ROUND BUTTON-FISH, with the leaſt ſort of Prickles, and diſpoſed into ten Orders. Of this ſort here are *White*, *Brown*, and *Green.* Theſe, Mr. *Lyſter* ſaith, are found in the *Engliſh-Seas.*

The GREAT OVAL SEA-URCHIN. *Echinometra Ariſtotelis.* See the Deſcription hereof in *Calceolarius*'s *Muſæum.* The greateſt, and ſo as it were the Mother of all the other kinds; from whence its Name. This here is near ½ a foot long. Its Figure is not orbicular, but comes near an oval or flatiſh Heart.

The MARE-MAIDS-HEAD, or leſſer Oval SEA-URCHIN. *Echinus Spatagus.* This differs from the former, only or principally in being much leſs; ſeldom exceeding the bigneſs of a *Hens Egg.* Theſe are ſhells rarely found.

The *Sea-Urchin* maketh its progreſſive motion with its Prickles which it uſeth inſtead of Feet. (*a*) And it is affirmed, by *Moufet*, particularly of the *Great Oval*, that it moveth in a ſpiral line.

(*a*) Ariſt. H. Anim. lib. 4. c. 5.

The SEA-EAR. *Auris marina.* It hath its Name from its Figure, ſomewhat like a Mans ear. The inſide is of a Pearl-colour, the outſide brown and ruged with many ſmall radiated and ſpiral wrinkles running acroſs. There are ſeveral Holes on one ſide it, through which the Animal admits and expels the water at pleaſure. Here are three

of them, whereof two, are each about five inches long. This shell is found in abundance near *Garnsey Island*. (a) The *Goldsmiths* in *France* (b) split them into thin Plates, wherewith they beautifie *Cabinets*, and other Works.

(a) Lyst. lib. de Cochl.
(b) Bellonius

The VAULTED-LIMPET. *Patella concamerata.* No where described, that I know off. It seems to be of the *Limpet*-kind, or to stand betwix this and the *Sea-Ear*. It is in a manner a half Oval split by the length, which is an inch and half. It hath a *Navle*, as the *Sea-Ear*, winding to one side. The Back is rough, and of a whitish ash-colour. Within, very smooth and of a pale purpleish white. The hinder half is vaulted with a most white Plate, joyned to the sides ¼ of an inch below the edges.

The EVEN OVAL LIMPET. See the figure hereof in *Johnston*. That part which may be called the *Navle*, stands a little above the convexity of the shell. The *Seat* of the Animal is shaped so, as in some sort to resemble the *Stag-Beetle*. The edges thereof curiously angul'd, parti-colour'd white and bay. The edge of the shell is perfectly Oval, and the inner Margin of a pale blew. Here are two fair Ones of this sort, about three inches long.

The PEARLY OVAL LIMPET. The inside hereof is of a curious pearl colour, with some rays of purple. It hath a greater convexity than the former, and is waved all round about.

The OVAL LIMPET, with very deep furrows round about. Whereby the edges also are very angular. The *Seat* of the Animal white. *Columna* (c) seems to have described this by the Name of *Lepas sive Patella maxima striata.*

(c) Lib. de Aquat. & Terr. c. 50.

The LEVEL-LIMPET. *Patella Plano-convexa.* The sides of this lie level betwixt the edges and the top. 'Tis also furrowed, but not deeply. Yet the edges are more angular than of the former. The *Seat* of the Animal is white, surrounded with a kind of double Glory. The outer Margins are of a blackish shining Bay. There are several small ones of this sort, having the inner side streaked with black and yellow.

The CONICK-LIMPET, with the top high, and the sides and edges level round about.

The CONICK-LIMPET, with part of the edge raised toward

toward the top or *Navle* of the ſhell. This ſort I meet with no where. Without of an aſh-colour, rough with wrinkles in rays, and waved Circles. Within ſmooth, the Margin white, about ¼ of an inch broad; the *Seat* of the Animal yellow ſpread out both ways.

The Animal it ſelf is headed and horned like a *Snail.* See *Bellonius*'s Deſcription. Our *Fiſhermen* uſe the ordinary kinds to bait with, who find them every where in our Seas on the Rocks near the *ſhore.* (*a*) If they feel themſelves touched, they ſtick ſo very faſt to the Rock, that they can hardly be looſened thence without a Knife. (*b*)

(*a*) Lyſtri lib. de Cochl.
(*b*) Wormius.

CHAP. II.

Of SHELLS Double and Multiple.

NOte, That when I ſpeak of the *Baſe*, I mean, that part on which the Teeth, Joynts or Hinges ſtand. When of the *Navle*, the peeked end of the ſhell, which for the moſt part ſtands behind the *Baſe*; as alſo that part which anſwers to it, where it doth not. When of the ſides, not the Concave and Convex, but the edges produced from the *Navle* on the right and left.

The SEA-WING. *Pinna.* Each *Valve* is very like in ſhape to the Wing of a large Fowl, from whence I name it. Where broadeſt, near ½ of a yard over. In length two feet: being the largeſt and longeſt of all the ſhells that I know. The two *Valves* are naturally ty'd together with a ſort of *Tow*; whereby they are alſo faſtened to ſome Stone or other Body under Water. The Animal is very good meat.

The SEA-OYSTER; in diſtinction from the common, which may be called the *Shore-Oyſter. Oſtrea Pelagia.* Here are ſeveral of this ſort, all of them but ſmall. *Rondeletius* ſaith, that in *India* they are ſometimes a foot long.

The CHESTNUT-OYSTER. I meet with it no where deſcribed or figur'd. It is near two inches and ½ long, of an Oval Figure, and ſomewhat writhen. The outſide is of a dark-brown, very uneven with large Oval Furrows. The inſide

inſide of a dark-Bay; from whence I name it. Held up againſt the light, it looks like a deep Tincture of *Safforn* or *Myrrh.* The *Seat* of the Animal is rough with ſmall frizled or undulated Wrinkles, ſurrounded with a ſmooth Margin, on one ſide above ½ an inch broad, after an odd faſhion turn'd or ſpread outward, Convex inward, and entirely encompaſſing the *Navle* of the ſhell. Here are three or four ſmaller Ones of the ſame *Species.*

A SHELL with the *Baſe* a little cover'd. *Oſtrea Baſi Cooperta.* I find it not deſcribed. It's ſomewhat doubtful whether a *Limpet* or an *Oyſterſhell.* I think the latter. The *Navle* ſtands obliquely. But the ſides make equal or ſimilar lines from the *Baſe.* Somewhat above an inch in length, very Convex, the Margin oval. The *Baſe* is as it were ſhaded with a tranſverſe Plate $\frac{1}{7}^{th}$ of an inch broad. The inſide, blew; the outſide ſpeckled below with tawny and black ſpots, above with white and purple, with very ſmall lines running acroſs or Net-wiſe.

The PLAIN ROUND ESCALLOP. *Pecten Valvis rotundis & æqualibus.*

The ROUND FURROW'D ESCALLOP, with ſmooth *Shells* or *Valves.*

Another of the ſame ſort, with rough ſhells.

The LONG ESCALLOP. Theſe and the other kinds ſeldom exceed the bigneſs of the palm of the Hand. But *Linſcholen* (*a*) ſaith, That by *Malacca* are ſhells found like *Scallops*, ſo big, that two ſtrong men can hardly draw one of them, with a leaver, after them. *Scallops* will move ſo ſtrongly, as oftentimes to leap out of the *Catcher* wherein they are taken. (*b*) Their way of leaping or raiſing up themſelves, is, by forcing their under *Valve* againſt the Body whereon they lie. (*c*) They are taken amongſt other places, near *Portland*, and at *Purbec* and *Selſey*, where they are excellent good. *Rondeletius* prefers them, for Meat, before *Oyſters.*

(*a*) P. 90.

(*b*) Ariſt. H. A. lib. 4. c. 4.

(*c*) Scal. exerc. 219. S. 1.

COKLE. *Pectunculus.* Here are of theſe, both White, Red, and ſpeckled with various Colours.

The CORALLINE SCALLOP. *Concha Corallina.* I call it a *Scallop*, becauſe it ſeems to be but another ſort without ears. This is only waved. See *Rondeletius*'s Deſcription. He ſaith 'tis rarely found, and ſeldom, except

in

in the *Dog-days*, after long Southern Winds, caſt on the ſhore.

The CORALLINE-SCALLOP both waved and wrinkled; the Wrinkles and Waves ſtanding not acroſs, but the ſame way.

The long GAPING COCKLE. *Chama.* 'Tis thiner and more eaſily broken than moſt other ſhells. The *Valves* are ſeldom or never cloſe ſhut. The ſides are produced from the *Baſe* by ſimilar lines, as in the *Cockle*, and the figure of the ſhell oblong: from whence I have taken leave for its Name. Whether the Anatomy of the Animal would ſuggeſt a better, I know not. This here is about an inch and ½ long; and of an aſh-colour.

Of this, and probably all the other *Species*, it is omitted by thoſe that deſcribe them, that from each of the two Joynts at the *Baſe*, is produced a kind of bony *Epiphyſis*, about ¼ of an inch long, thin, ſharp and flexible: whereupon ſome of the muſcular parts of the Animal ſeem to be faſtened, for the reſtraining the opening of the ſhell from any inconvenient degree.

The BLACK GAPING COCKLE. This is ſomewhat leſſer than the former, and of a rounder Figure, radiated, and the edges wav'd. As thin as the former, and hath the like *Epiphyſes*.

This ſort, when the *South-Wind* blows, riſe up to the top of the Water, and ſetting their two ſhells wide open; with the one under them, as a Boat; and the other, on one ſide as a Sail, they ſcoure along. (*a*)

(*a*) Bellon. H. Anim. lib. 15. c. 12.

The Broath of this *Shell-Fiſh* is affirmed by *Dioſcorides* to be both *Laxative* and *Diuretick*. They have a kind of biting taſt, like *Pepper*; and are therefore called, by the *French*, *Des Flammes*: and the *Italians*, for the ſame reaſon, call them, *Peverazas*. (*b*)

(*b*) Bellonius

The SHEATH-FISH; commonly ſo called from its ſimilitude to the ſheath of a Knife. *Solen. Unguis.* As the *Sea-Wing* is the longeſt, ſo this is the moſt expanded of all Shells; though uſually call'd *A long Shell*, but improperly. For it may be noted, that the length of a ſhell is properly from the *Navle* to the edge directly oppoſite; the breadth, between the two ſides thence produced, which in this Shell are the two ends: as if you ſhould cruſh the

the two ends of a mouldable ſubſtance of an Oval figure, till you made the two ſides become the two ends. Some of theſe are ½ foot wide, or more.

This Shell is found on the ſhore near *Scarbrough* after long *Winter*-Storms. (*a*) The Animal ſhines much in the dark, eſpecially when the ſhell is full of liquor, the drops whereof gliſter where ever they fall; by virtue of which, it is moſt probable, that the Fleſh it ſelf becomes ſhining. (*b*)

(*a*) Lyſter. de Conch.

(*b*) Pliny.

The ROUND-OYSTER, with ſimilar ſides produced from an oblique *Navle*. The Convex is very white, and finely wrought with circular, and radiated lines acroſs.

The MULTARTICULATE OYSTER with a bended *Baſe*. The Convex is ſmooth, and ſtained with *Cheſtnut* upon *white*. Its *Baſe* is in a manner ſemilunar, produced a little forward from the *Navle*. Upon this *Baſe* are fourteen, ſixteen, ſometimes twenty ſmall Joynts, ſtanding obliquely, and alſo in a bended line anſwerable to the *Baſe*. To the two ends whereof, the *Seat* of the Animal is contiguous. The fore-edge and Margin are furrowed and toothed within. Here are four of this ſort.

The BROAD-OYSTER, with ſimilar ſides.

The FISTULAR OYSTER. *Concha Valvis Fiſtuloſis.* Deſcribed by *Columna* with the name of *Concha exotica margine in Mucronem emiſſa*; who hath alſo figur'd it well. It hath not only ſeveral Furrows or Gutters reaching from the *Navle* to the edges round about, but the Furrows are alſo cover'd over, and ſo properly fiſtular; whence I have nam'd the Shell. The circumference or edg is alſo prolonged into ſeveral Peaks, which have ſome kind of likeneſs to Sword-points. But *Columnas* name is ſomewhat obſurdly given, unleſs inſtead of divers, there had been one only.

The MULTARTICULATE OYSTER, with a ſtrait *Baſe*. Deſcribed and figur'd by *Columna* with the name of *Concha* πολυλεπιδογὴς λυμὸς. Here are two of this ſort. The chief marks hereof are, that it hath a great number (twenty or more) of ſlender Joynts, about ¼ of an inch long, placed parallel, upon a ſtrait *Baſe*.

The ASSE-FOOT OYSTER. *Oſtrea Gaderopoda*, So called

called from its Figure. Described by *Bellonius*. Its chief Characters are, that it hath very great Joynts, like the eye-teeth of a Man, and upon a ſtrait *Baſe*. It grows not looſe, as other *Oyſters*, but fixed to the Rocks under Water: and therefore in thoſe Seas only, which ebb and flow not, (*a*) as the *Ægean*, the *Helleſpont*, &c. (*a*) Bellonius

The CORALLINE-OYSTER. *Spondylus Echinatus & Corallinus*. I meet with it no where. 'Tis of an unuſual Figure. The *Baſe* hereof is ſtrait, and an inch and ½ over. In each end hereof is a roundiſh cavity, doubtleſs for the reception of anſwerable Joynts. An inch and ½ or more beyond this, the *Navle*, which is a little bended upward, ſmooth within ſide, and ſcaly without. The inner part of the ſhell is exceeding white, ſmooth, hard, and thick. The outward Cruſt thiner, yet alſo very hard, wrinkled, ſpiked, and of the colour of red *Coral*. Part of it is broken off.

MOTHER of PEARL. *Concha Margaritifera*. See a true, and good Figure hereof in *Calceolarius's Muſæum*. It is naturally within of the ſame colour with that of a Pearl. It is ſometimes ſeen with a pearly Knob growing within it, as in this here, near the centre. But the Pearls themſelves grow within the Animal: within the Fleſh (as *Athenæus* (*b*) affirms) as that ſort of Kernel in a *Hog*, called *Grando*. Although more probably in the Stomach, as *Bezoar*, and the like, in other Animals. (*c*) As Eggs in the Belly of a *Pullet*, ſaith *Tavernier*. (*d*) The Shell is ſaid to be found near the Iſland *Borneo* ſometimes ſo big, as to weigh forty ſeven pounds. (*e*) (*b*) Quoted by Rondeletius. (*c*) Philoſ. Tranſ. N. 101. (*d*) Indian-Voyage. (*e*) Charl. On. Zoic.

Take *Mother of Pearl*, the ſmall White *Venus-Shell* of each equal parts. Pour upon them, being firſt powdered, the juyce of *Lemons*, and let them ſtand together (a day or two) then filtre the liquor, and keep it, as the beſt waſh for the Face in the World. (*f*) (*f*) Prævot. lib. de Med. facilè paralilibus.

MOTHER OF PEARL, with the backſide cover'd all over with thoſe little Shells called *DENTALIA*, as having ſome little likeneſs to Teeth: that is to ſay, White, Smooth, Conick, and bended *Tubes*, which grow to this and other Shells. See *Geſner* of *Entali & Dentali*, *p.* 940. The inſide of the *Sea-Ear*, of ſome ſorts of *Limpets*, and of divers other Shells, are commonly ſold in Shops for true *Mother of Pearl*.

ORIENTAL PEARL, round, and with a good Water.

PEARLS of the bigneſs of a large *Peas*, and perfectly round, but without a Water.

ROUND PEARLS, of divers Colours, *ſc.* White, Aſhen, Brown, Red, and Bay.

PEARLS of divers Figures, *ſc.* Oval, Cylindrical, Flat, Conick, Twins, and three and four together.

WELSH-PEALR. Given by the Honourable Mr. *Boyle*. They are moſt of them flatiſh, and of a ſhining blackiſh colour.

Heretofore, the moſt rich fiſhing for *Pearls*, was at the Iſland *Margarita*. Whence their Name. (*a*) At this time the chief Fiſhings in the *Eaſt-Indies* are three, the *Perſian-Gulph*, on the Coaſt of *Arabia* the *Happy*, and in the Iſland *Ceylan*. In the *Weſt-Indies*, five; along the Iſlands *Cubagna*, and *Manguerita*, at *Camogete*, *Riodela Hacha*, and St. *Marthas*. They fiſh in twelve-fathome Water, five or ſix leagues off at Sea, *Spring* and *Fall*. (*b*)

(*a*) Geſner.

(*b*) Tavern. Indian-*Voyage*.

Of *Pearls* we have theſe following Preparations, and probably the firſt, of all, the beſt, if perfectly ground.

Pulvis, *Eſſentia*, *Flores*, *Sal*, *Tinctura*, *Magiſterium*, *Liquor*, *Arcanum*, { *Commune*, *Butyraceum*, *Plumaceum*, *Riverij*.

The PEARLY OYSTER. *Concha Cælata*. 'Tis ſhaped much like the *Mother of Pearl*, but is ſomewhat oblong. It hath alſo a pearly-colour within-ſide; but of a more leaden-water.

The SQUARE-MUSCLE. *Concha Rhomboidea*, *ſ. Muſculus ſtriatus Rondeletio*. That part where the *Valves* joyn, *i. e.* the *Baſe*, is long, not rounded, but ſtrait, and ſtandeth erect or perpendicular, by which it may be diſtinguiſhed from other Shells. It lies in the deeper parts of the Sea, and is rarely found.

The RUGGED-OYSTER. Not deſcribed, that I know. The Joynts hereof very ſhallow. The *Navle* very oblique. The Sides thence produced, diſſimilar. The Back cut with round Furrows; and the Furrows edged, and beſet with a number

number of little ſhort prickles. It is of a dull aſh-colour, roundiſh, and ſomewhat bigger than a *Half-Crown*.

The SAND-MUSCLE. *Tellina.* They live much in the *Sand*; for which reaſon, unleſs they are ſhaked long in water, before they are boyl'd, they are very gritty. (*a*) At *Rome*, they are eſteemed a pleaſant Junket. (*b*) Here are ſeveral ſhells of this ſort.

(*a*) Rondeletius.
(*b*) Wormius.

The TOOTHED-MUSCLE. It is of a roundiſh Figure, and the edges, eſpecially before, toothed almoſt like a *Saw*.

The GREAT WAVED-MUSCLE. Well deſcribed and figur'd by *Columna* with the Name of *Concha Maxima marmorea exotica imbricata.* It is alſo called *Concha Tridachna:* becauſe it contains as much meat, as a Man can ſwallow at thrice. A certain number put for an uncertain: for ſome of them hold meat enough almoſt to fill a mans belly, being a foot in length, or rather in expanſion or breadth; this here ¾ of a foot. The Back is waved with broad and deep Furrows, and the edges indented anſwerably. It is (*c*) commonly found in the *Red-Sea*.

(*c*) Bellonius

The LONGISH-MUSCLE, with rough Wrinkles or Rays.

ANOTHER with ſmooth Rays, *i. e. Concha Rondelet. Striata* 3.

The ROUNDISH radiated *Muſcle.*

The PLAIN LONGISH MUSCLE. This hath no Rays on the Back.

The PLAIN BROAD MUSCLE. Of theſe here are two ſorts, the one leſs, the other more expanded. This latter is by *Rondeletius* called *Concha longa*; miſtaking what is properly the breadth, for the length of the ſhell. Of this (*d*) Shell, is commonly made a ſort of *Lime*.

(*d*) Rondeletius.

The BROAD-MUSCLE, with deep Joynts.

The TOOTHED BROAD-MUSCLE. Deſcribed and figur'd by Mr. *Lyſter*, (*e*) with the Name of *Tellina intus ex Viola purpuraſcens, &c.* 'Tis a little ſhell not much above an inch broad, the edge indented round about with curious ſmall Teeth; and having within-ſide a faint purple bluſh.

(*e*) Lib. de Conch. Tit. 35.

ANOTHER little broad *Muſcle*, without Teeth, or even-edged.

A BLOBLIP'D-SHELL, which ſeemeth to be a kind of *Muſcle*. I find it no where. Here are ſeveral ſingle ſhells of this ſort, but not one pair: which makes me ſomewhat doubtful what to make of them. Moſt of them have about an inch of expanſion. The Concave in the inſide, is triangular, with ſmall ſtrait tranſvers Wrinkles, one Angle obtuſe, two acute. From the two longer ſides of the triangle, the Margin is ſpread out, and on one ſide as it were doubled backward. It hath alſo one, ſometimes two Joynts, very deep, and for ſo ſmall a ſhell, remarkably ſtrong.

The Natives of *Braſile* uſe *Muſcle-ſhells* for *Spoons* and *Knives*. (*a*) *The aſhes of Muſcle-ſhells*, ſaith *Wormius*, *are of a Cauſtick-nature*. As if it were peculiar to this ſhell. Whereas the ſhells of all ſorts of *Shell-Fiſh*, being burnt, obtain the like. Moſt of them, being ſo order'd, and powder'd, make excellent good *Dentifrices*.

(*a*) Barlæus, de rebus geſtis in Braſilia.

Hitherto go the Double Shells, or with two *Valves*. There remain ſome which are made up of ſeveral ſhelly pieces conjoyn'd to make one Concave-ſhell: as

The Conick CENTRE-SHELL. *Balanus major*. Deſcribed by *Rondeletius*, and others. It is in ſhape ſomewhat like a *Tulip*, the ſeveral ſhelly Plates which compoſe it, being pointed at the top, and ſtanding together, as ſo many leaves. They always grow fixed to ſome other Body. When boyl'd, they are a delicate ſort of Meat.

The SPUNG-CENTRE-SHELL. *Balanus Spongiarum*. So I name it. Commonly, but ſomewhat abſurdly, called *Lapis Spongiæ*. For being well obſerved, they appear to be little *Centre-Shells*, which probably never grow very big; and wherein the leaves ſeem to be a little more ſeparate, than in the former *Species*. They look juſt like ſmall petrifi'd Buds of Trees.

A ſmall *Centre-Shell*, growing upon a Branch of *Coral*.

The FLAT CENTRE-SHELL. *Balanus compreſſa*. Commonly called the *BARNACLE-SHELL*; and *CONCHA ANATIFERA*. Becauſe ſuppoſed to be the Egg of the *Barnacle*. And by ſome (*b*) it is confidently deliver'd, that in the *Orcades* there are certain *Worms* grow in Hollow-Trees, which by degrees obtain the Head, Feet, Wings and all the feathers of a *Water-Fowl*, which grows to the bigneſs of a *Gooſe*.

(*b*) Hector Boethius *quoted by* Geſner, *and our Country-man Dr.* Turner.

Gooſe. *Scaliger* alſo deſcribes this (ſuppoſed) Bird within this ſhell. (*a*) And with reſpect to ſo worthy a Perſon as Sir *Robert Moray* (who never meant to deceive) I my ſelf was once induced to publiſh his Deſcription of the ſame. (*b*) But having examined the Shell it ſelf, I am of Opinion, That all that is ſaid of a Bird, is fabulous. *Bartholine* (*c*) would have it to belong to a kind of *Cancellus*. But I rather agree with *Columna*, that it is a ſort of *Centre-Shell*; as being fixed in like manner upon it's *Baſe*, and compoſed of ſeveral ſhelly parts.

(*a*) Exercit. 59. *toward the end.*
(*b*) Philoſ. *Tranſact. N.*
(*c*) Hiſtor. Cent. 6.

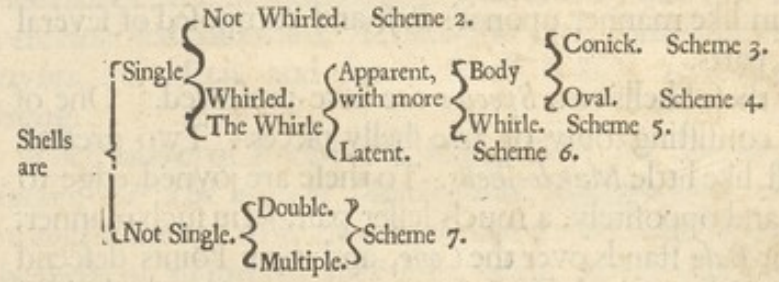
Of theſe Shells two *Species* are here preſerved. One of them conſiſting only of five ſhelly pieces. Two greater, almoſt like little *Muſcle-ſhells*. To theſe are joyned, edge to edge, and oppoſitely, a much leſſer pair, *ſc*. in ſuch manner, as their *Baſe* ſtands over the *Cone*, and their Points deſcend half way towards the *Baſe*, of the greater pair. Both theſe pairs are on one ſide hem'd in with a fifth piece, narrow, long, and inwardly Concave, almoſt like a *Larks* Heel. The Neck to which they are faſten'd is here wanting. This *Species* is figur'd, and in ſome ſort deſcribed by *Wormius*. But the Figure in *Calceolarius*'s *Muſæum* anſwers not.

The FLAT CENTRE-SHELL with the Scaled *Baſe*. *Balanus compreſſa & Squamata*; ſo I call it. This *Specics* is in ſome ſort figur'd by *Rondeletius*. But his Deſcription worth nothing. 'Tis near an inch long, and ¾ of an inch broad at the *Baſe*, where it is ſomewhat narrower than in the middle. Whitiſh, and with ſome Rays of blew. It conſiſts of five greater pieces, whereof the middlemoſt pair, the greateſt and the longeſt. The leſſer pair are joyned to them edge to edge, reaching half their length, but not oppoſitely with their Points downward, as in the former *Species*, but upward. The fifth piece not joyned to this leſſer pair, as in the other *Species*, but to the oppoſite edge of the greater. Round about the *Baſe* of the Shell ſeveral little pieces, ſome bigger and ſome leſs, ſtand after the manner of *Scales*, with their points alſo forward. So that it looks almoſt like a great *Bud* cruſhed flat. 'Tis joyned to a *Neck* about ¼ of an inch over; an inch, ſometimes more, or leſs, in length; of a brown colour, rough, and compoſed of an innumerable company of ſmall Knobs, almoſt like thoſe on ſome Fiſhes Skins. Several Shells, by the like Necks, commonly grow all together in a Cluſter. I have

I have seen some of these *Shells* perfectly formed in all their parts, not much bigger than a *Cheese-Mite*.

Thus far the Titles and Descriptions; the Schemes follow, which take in all, save one or two of the *Sub-Species:* and wherein the Order is a little more corrected.

Scheme 1.



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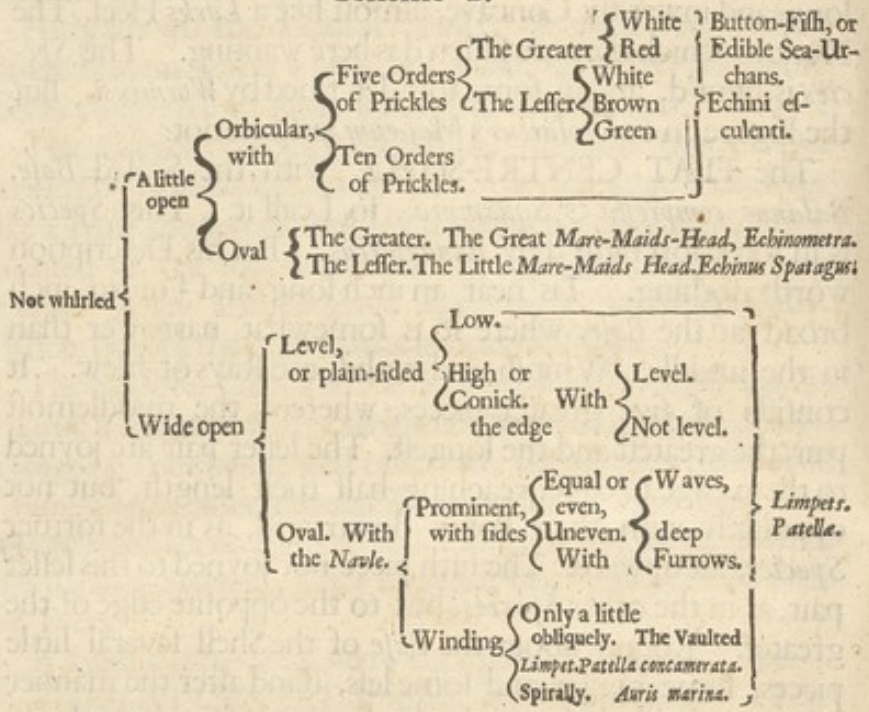
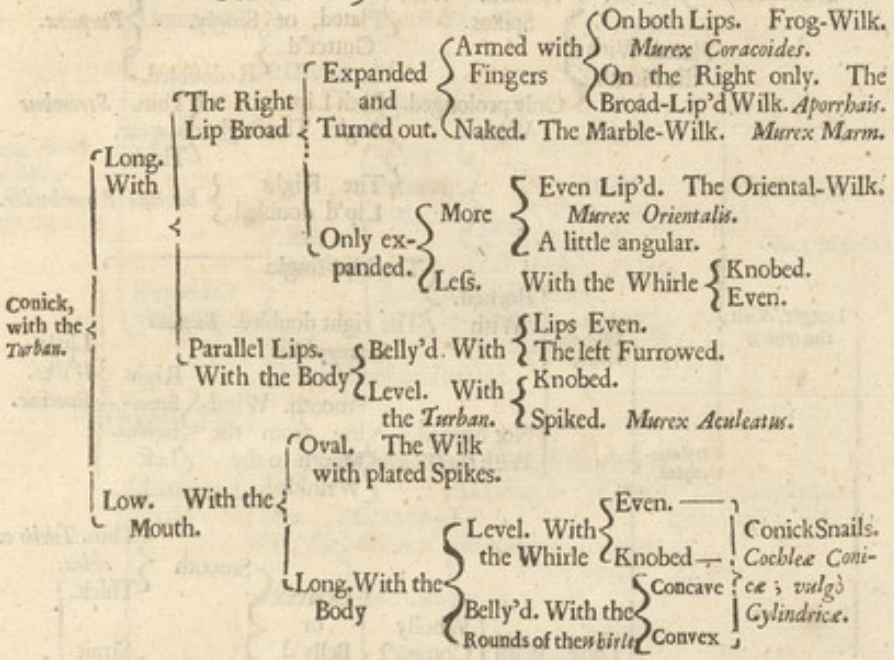


Scheme 3.

Scheme 3.



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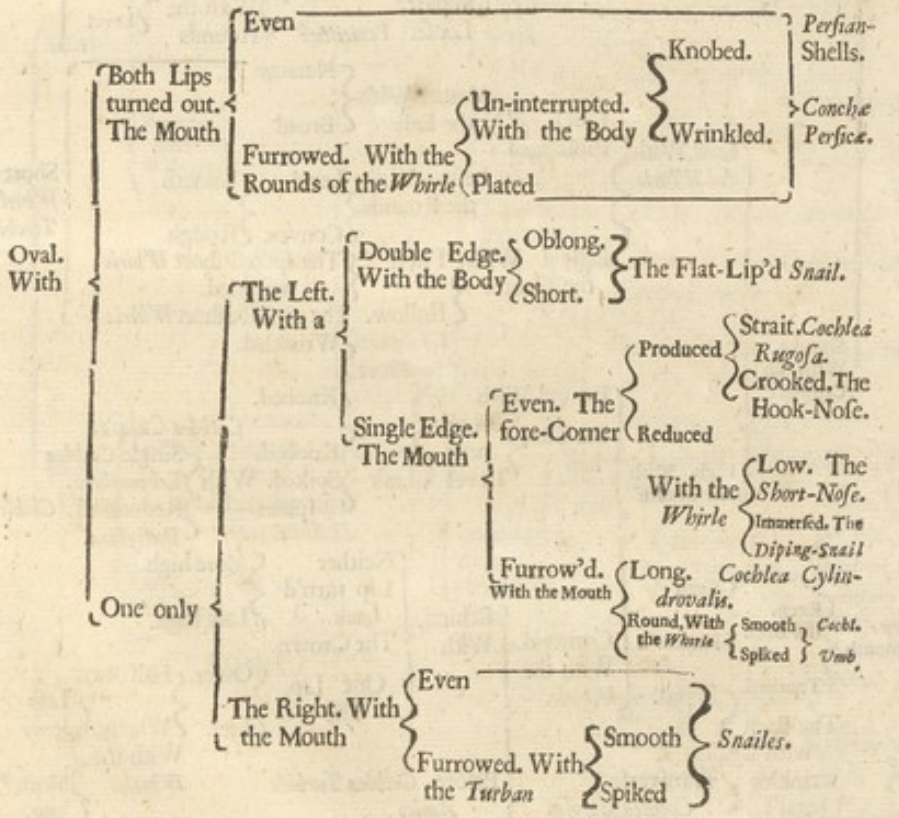
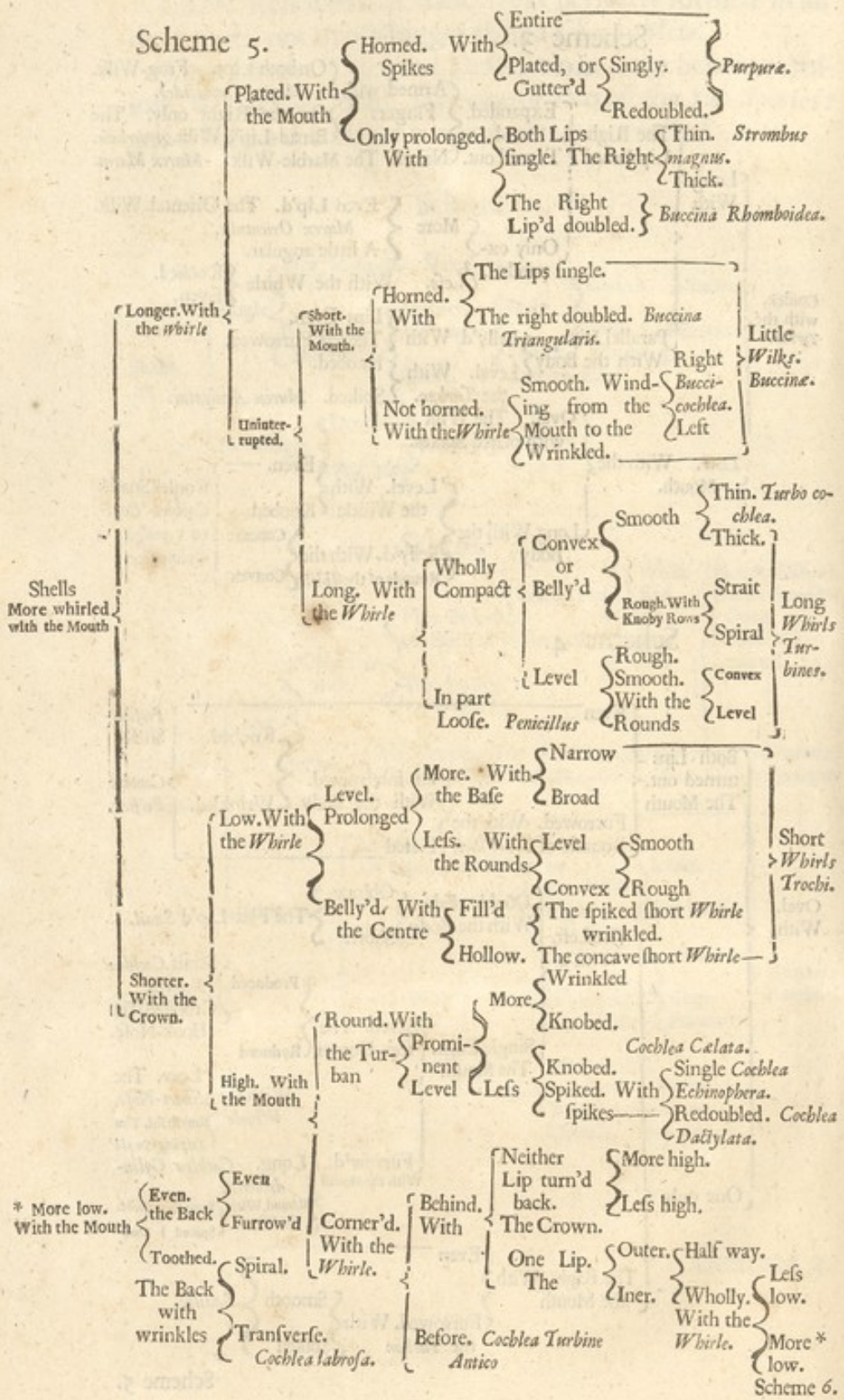
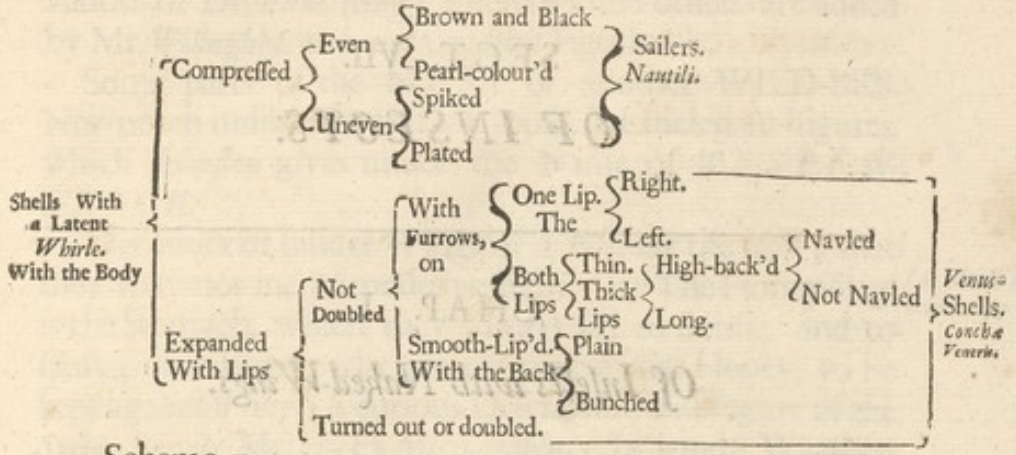


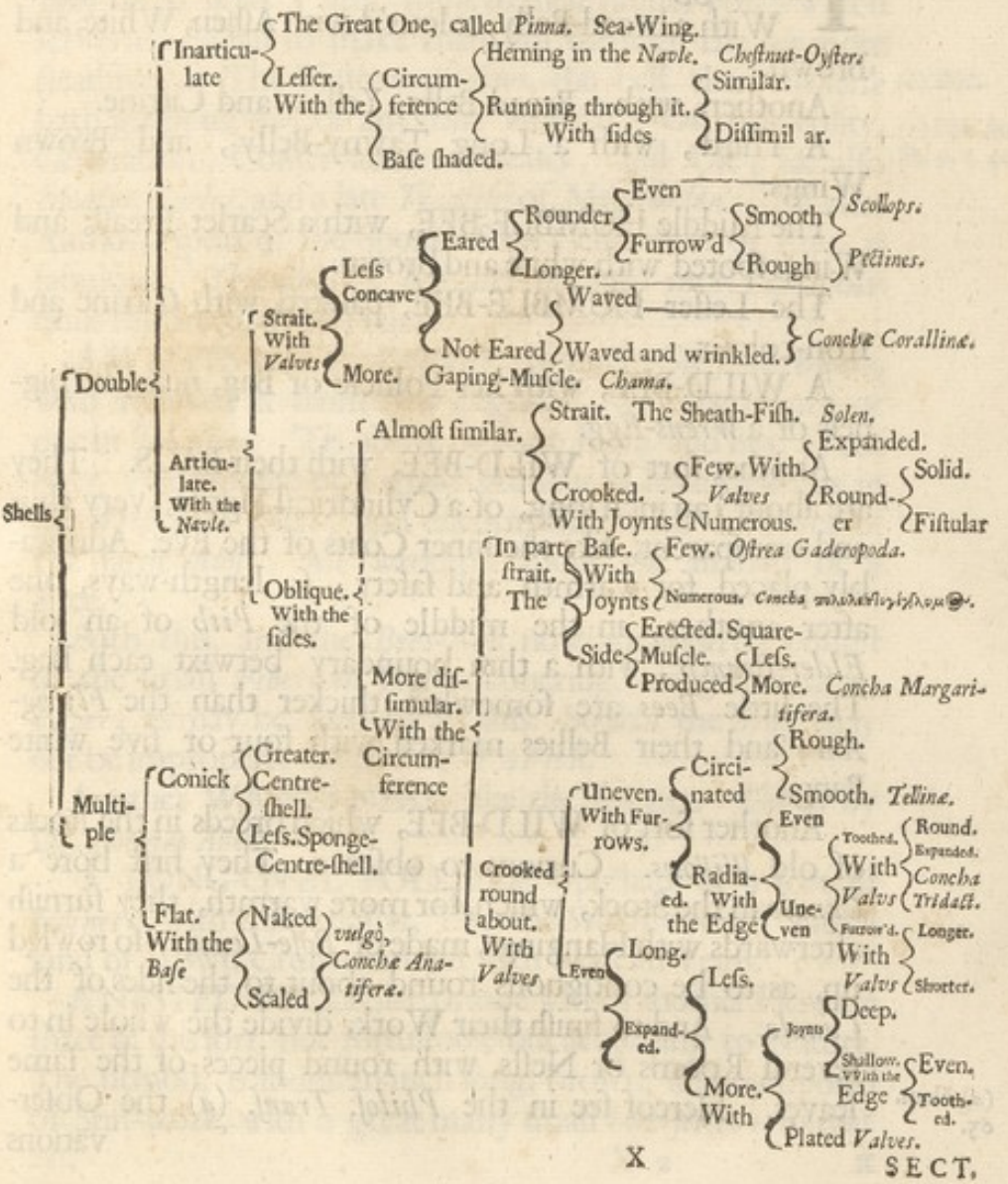
Scheme 5.


Scheme 5.
Shells More whirled with the Mouth
Plated. With the Mouth
Horned. With Spikes
Entire
Plated, or Gutter'd
Singly.
Redoubled.
Purpuræ.
Only prolonged. With
Both Lips single.
The Right
Thin. Strombus magnus.
Thick.
The Right Lip'd doubled.
Buccina Rhomboidea.
Longer. With the Whirle
Short. With the Mouth.
Horned. With
The Lips single.
The right doubled. Buccina Triangularis.
Not horned. With the Whirle
Smooth. Winding from the Mouth to the Wrinkled.
Right Buccinocochlea.
Left
Little Wilks. Buccinæ.
Uninterrupted.
Long. With the Whirle
Wholly Compact
Convex or Belly'd
Smooth
Thin. Turbo cochlea.
Thick.
Rough. With Knoby Rows
Strait
Spiral
Long Whirls Turbines.
Level
Rough.
Smooth.
With the Rounds
Convex
Level
In part Loose. Penicillus
Shorter. With the Crown.
Low. With the Whirle
Level. Prolonged
More. With the Base
Narrow
Broad
Less. With the Rounds
Level
Smooth
Convex
Rough
Short Whirls Trochi.
Belly'd. With the Centre
Fill'd
The spiked short Whirle
wrinkled.
Hollow.
The concave short Whirle
High. With the Mouth
Round. With the Turban
Prominent
Level
More
Wrinkled
Knobed.
Less
Knobed.
Spiked. With spikes
Single Cochlea Echinophera.
Redoubled. Cochlea Dactylata.
Cochlea Cælata.
* More low. With the Mouth
Even. the Back
Even
Furrow'd
Toothed.
The Back with wrinkles
Spiral.
Transverse. Cochlea labrosa.
Corner'd. With the Whirle.
Behind. With
Neither Lip turn'd back.
More high.
Less high.
The Crown.
One Lip. The
Outer.
Half way.
Wholly. With the Whirle.
Less low.
More * low.
Iner.
Before. Cochlea Turbine Antico
Scheme 6.

Scheme 6.



Scheme 7.



SECT. VII.

OF INSECTS.

CHAP. I.

Of Insects with Naked-Wings.

THe Bigger HUMBLE-BEE. *Bombylius major.* First, With a broad-Belly, colour'd with Ashen, White, and Brown.

Another, with a Broad-Belly, Yellow and Citrine.

A Third, with a Long Tawny-Belly, and Brown Wings.

The Middle HUMBLE-BEE, with a Scarlet Breast, and Wings spoted with white and brown.

The Lesser HUMBLE-BEE, painted with Citrine and Iron-colour.

A WILD-BEE, with her Follicle or Bag, near the bigness of a *Wrens-Egg*.

Another sort of WILD-BEE, with their BAGS. They are about ½ an inch long, of a Cylindrical Figure, very thin and transparent, like the inner Coats of the Eye. Admirably placed, for warmth and safety; *sc.* length-ways, one after another, in the middle of the *Pith* of an old *Elder-Branch*, with a thin boundary betwixt each Bag. The little *Bees* are somewhat thicker than the *Flying-Ant*; and their Bellies marked with four or five white Rings.

Another sort of WILD-BEE, which breeds in the stocks of old *Willows*. Curious to observe. They first bore a *Canale* in the Stock, which, for more warmth, they furnish afterwards with Hangings, made of *Rose-Leaves*, so rowled up, as to be contiguous round about to the sides of the *Canale*. And to finish their Work, divide the whole in to several Rooms or Nests, with round pieces of the same leaves. Hereof see in the *Philos. Transf.* (*a*) the Obser-

(*a*) Num. 65.

vations

vations of Dr. *Edm. King*; whereto ſome others are added by Mr. *Willughby*, and explained by Figures.

Some parts of the NEST of another WILD-BEE. Not much unlike the firſt of thoſe not inelegant figures, which *Johnſton* gives under the Name of *WESPEN-STOCK*.

The under or hinder Wings of a *Bee*, are the leaſt; that they may not incommode his flight. (*a*) The Honey-Bag, is the Stomach, which they always fill to ſatisfie, and to ſpare; vomiting up the greater part of the Honey, to be kept againſt *Winter*. A curious Deſcription and Figure of the *Sting*, ſee in Mr. *Hook*'s *Micrography*. In windy Weather, *Bees* often hold a little ſtone in their hinder Feet; which ſerves as a Ballaſt to make them ſail through the Air more ſteadily. (*b*) The Hiſtory of *Bees*, the beſt that *Ariſtotle* hath given us, (*c*) of any one Animal. Of their Polity, Generation, Conſervation, Diſeaſes, and Uſe; ſee alſo *Mouſet*, *Butler*, and a late *Treatiſe* of Mr. *Ruſden*. All that Authors ſpeak of the Spontaneous Generation of *Bees*, is fabulous. The aſhes of *Bees* are put into moſt Compoſitions for breeding of Hair.

(*a*) Mouſ. de Inſect. cap. 1.

(*b*) Ibid.

(*c*) Hiſt. An. lib. 9. c. 40.

A WASPES-NEST. *Veſpetum*. Given by Sir *Jonas Moore*, who received it from *New-England*. See the Figure of one in *Johnſton*. 'Tis above a foot high, and near a foot over. Compoſed of a great number of little Cells, as in the *Wild-Bees* Neſt, and encompaſſed with a Cover of the ſame *ſtuff*. All wrought about the Branch of a Tree.

Both this, and the *Bees-Neſt* now mention'd, conſiſt of the ſmall *Fibers* of Plants, cohering, altogether as in *Paper*; as may be ſeen by a Glaſs. So that the *Stuff* may not be improperly called *BEE-PAPER*.

Another WASPES-NEST, like the former. Given by Dr. *Thomas Allen*.

A LONG-OVAL FOLLICLE (perhaps of a ſort of *Hornet*) with this peculiar, That the *Silk* is cover'd with a kind of brown Cruſt, marbled with blackiſh Veins.

A NESTED FOLLICLE, or one within another. Here are three of this ſort, not fortuitous, but according to Nature. The utmoſt, is about an inch long, brown, and compoſed of Stiff-work, with a great many ſmall *Interſtices*: ſo that

it looks just like an Oval-Net. Within this, lies loose another much smaller, of a light Ash-colour, and made like other *Insect-Bags.*

The Polish'd FLESH-FLY; that which is of a blewish-black, like *Steel.*

Another FLESH-FLY with a strong *Proboscis* or Trunk, tawny Wings, black Eyes, bunched Back, brown, long, and sharp Belly, forked Tail, Chesnut Feet, the hinder the longest.

The GOLDEN-EYE. *Musca Chrysopis*, as *Moufet* calls it. The Eye of this Fly is very curious, not only with its golden colour, but in being most elegantly latticed, like that of a *Butterfly.* Whilst alive, they have a very stinking scent.

The OX-FLY. *Musca Boaria. Asilus.*

The WHAME. *Musca Apiformis. Tabani species.*

The WASP-FLY. *Tabani species altera.*

The TWO-BRISTLED-FLY. *Musca Bipilis.* He hath two Bristles upon his Tail, standing level. *Moufet* describes five *Species.*

The THREE-BRISTLED-FLY. *Tripilium.* Of these *Moufet* also describes five sorts. Here are two of them; One greater, the other less. They are most in *May* and *June* before and after the Rains.

Flys, at the end of their *Proboscis*, have a *Piercer* where-
(a) Mouf. de Inf. c. 10. with they broach the Skin. (*a*) They go only, saith *Moufet*,
(b) Ibid. with four Feet, using the two foremost instead of Hands. (*b*) This latter part of his Assertion is true; but the former, contrary to common Observation.

The Hair of the Head being often wet with the water of common Flys distill'd in *Balneo Mariæ*, will grow to a
(c) Id. c. 12. very great length. (*c*) Almost all Flys, being chew'd and
(d) Id. c. 12. *out of* Arnoldus. swallow'd, cause violent vomitings. (*d*)

Two FLY-NESTS; with some of the Flys. They are all black, with four Wings, the Horns and hinder Legs both long, and the end of the Tail thick. Of kin to the *M. Bipilis.*

The Nests are fasten'd or wrought, one, upon a head of *Cypress-Grass*; above ½ an inch long: the other, on the top of a Branch of *Fern*; and is about an inch long. Both oval, and white like Wooll; very porous and compressible, like

like a fine *Sponge*; and perforated with several little round Holes. Cuting one of them down the middle, I found, within, the more elaborate Work, consisting of a great number of little oval *Cells*, as in a *Wild Bees-Nest*. These *Cells* are placed in their length transversly to that of the Nest. In each of which, each *Fly* is bred a part from the rest.

The Great BUTTERFLY. *Papilio major*. This is of the second magnitude. The Wings are painted with citrine and black, both in long streaks and spots.

The Great PLUMED BUTTERFLY. The Wings are painted with black and scarlet Rings. In the place of Horns, he hath a pair of Plumes in his Forehead.

Another, with LONGER PLUMES. The Wings of this are spotted with black and tawny.

The lesser BUTTERFLY, with scarlet Wings; the foremost of which are far shorter than the other.

Another, having the Wings speckled with red, yellow, brown and black spots.

Of the larger, middle, and lesser kinds, *Mouset* reckons up and describes five and thirty sorts. (*a*)

(*a*) Latter part of *C.* 14.

That which seems to be a Powder upon the Wings of a *Butterfly*, Is an innumerable company of extreme small Feathers, not to be discerned without a *Microscope*. (*b*)

(*b*) See Dr. *Powers Microsc. Observ.* and Mr. *Hook's Micrography.*

Butterflys, as most *Insects*, saith *Mouset*, are very Diuretick (*urinas egregiè movent*) and with more safety. (*c*) 'Tis worth the trial.

(*c*) Cap. 14.

The Great ADDERS Boult; from the strait long figure: *Dragon-Fly*, from the colour and bigness. *Water-Butterfly*, because they most frequent Rivers and watry places. *Perla*, from its colour. *Libella*, from its figure, when the Wings are spread out. In this, the *Bases* of the Wings are spoted, the Belly almost triangular, the Tail pointed, painted with black and gold-colour.

Another GREAT ONE, with silver Wings, a golden Mouth, a green Forehead, Chesnut Eyes, a round Belly painted with citrine and black.

A THIRD, with citrine Wings, a green Back, and a yellow Belly. It is furnished both with Horns and Plumes in the Forehead.

The Middle ADDERS Boult. It is of a dark-Green.

The

The Head small, the Chest or middle part short, the Belly very long and slender. *Mouset* reckons up in all about 20 sorts.

The LANTHORN-FLY of *Peru*. *Cucujus Peruvianus*. A quite different *Species* from that described by *Mouset*. And, with respect to his Wings, is no way of kin to the *Beetle* or *Scarabeus*-kind, but rather the *Locust*. I find it no where described.

'Tis above three inches long, and thick as the *Ring-finger*. His Head, in bigness and figure, admirable; near an inch and half long; in the thickest part of it above half an inch over. From the Eyes forward it first swells or bellies out, afterwards contracts into a smaller, yet blunt end. 'Tis also crowned with a broad blunt knob, and the end resimated or bended upward. In its Circumference it hath seven low Ridges or Angles, marked with so many black lines, an eighth line being added betwixt the two uppermost Angles. The greater part hereof (now) betwixt yellow and straw-colour. Yet stained with brown and red streaks and spots, neatly ranged, especially on the top and both sides. It seems, at least in the fore part, to be hollow, and almost like a Bladder blown up.

The Eyes, for the bigness of his Body, very small. Of a dusky-colour, yet glossy, and Sphærical, looking just like two brown Seed-Pearls. Under these stand two small round parts, open at top, which seem to be the Roots of a pair of Horns: unless any will conceit them to be his Ears. Both these and the Eyes are guarded with a semilunar Ridge.

The other parts, being more or less spoil'd, cannot be perfectly describ'd. His *Proboscis* sufficiently strong, about $\frac{1}{3}$ an inch long, and as thick as a stitching or *Taylers* Needle. The Feet all broken off. His Body an inch and $\frac{1}{3}$ long, not much exceeding the length of the Head; about $\frac{1}{4}$ over. Composed, besides the Shoulders, of about ten Rings. He hath four Wings, almost like those of the *Locust*; the uppermost somewhat stronger and stiffer than the other. Both Pairs are of a dun-colour, sprinkled with dark-brown spots. They are extended considerably beyond the Body; yet the ends are worn off.

That which, beside the figure of the Head, is most wonderful

wonderful in this *Insect* is the shining property of the same Part, whereby it looks in the Night like a little Lanthorne (*Lamphorne.*) So that two or three of these fasten'd to a stick, or otherwise conveniently disposed off, will give sufficient light to those that travail or walk in the Night.

A BAULME KRICKET. *Cicada.* It is the fourth in order described by *Mouset.* The upper Wings of this *Insect* also are stiffer than the other, like those of the *Locust.* But that which is most remarkable, is the broad Hood which is spread over his Head and the top of his Shoulders. It is a Stranger here in *England.*

This *Insect*, saith *Mouset* (*a*) after others, *feeds only upon Dew; and hath no Excrement*; which is most unlikely. It is by some given inwardly instead of *Cantharides*, both as a safer, and more effectual *Diuretick.* And so far also a better Remedy in *Veneris languorem.* (*b*)

(*a*) Lib. de Inf.

(*b*) Cap. 17. p. 133.

A Great WINGED-LOCUST. Given by Sir *John Hoskins.* It seems to be the second Male described by *Mouset.* In length almost three inches. The Face perpendicular, from the Mouth to the Crown of the Head ½ an inch. The Wings Membranous; the upper pair, the stiffest, stained with dark brown spots, and a few Rays of Red. It is one of that Swarme which some years since destroyed all the fruits in the Island of *Tenariffa.*

Of the Winged-Kind, *Mouset* reckons up about a dozen *Species.* Of their Generation, and the Description of the Parts thereunto subserving, see the same Author. The Description and Figure of the Lungs in *Malpighius.* (*c*)

(*c*) De Bombyce p. 28. Tab. 4.

Locusts hurt the Corn, Meadows, and Hort-Yards, not only by eating, but also by their Dung; *and an ill-natur'd Spittle, much of which they spew out of their Mouths, as they eat.* (*d*) 'Tis probable, That the Spittle (if they spew any) is not ill-natur'd; because the *Jews* were permitted to eat this as a clean Animal. Yet may prove hurtful to the Corn, as a Nest fit for the breeding of small *Worms*, or other Animals, which may disease it.

(*d*) Mouset *out of* Valleriola.

The *Ethiopians*, and divers other Nations, eat them, being first salted and dryed. (*e*)

(*e*) Mus. Wormian.

The FEN-KRICKET or CHUR-WORME: Because towards Night, when he comes out of his Buries, he makes

makes a noiſe like that of a *Kricket*. So great, ſaith *Mouſet*, as to be heard above a mile off. *Gryllotalpa:* ſo called by the ſame Author, for that with his fore-feet, which are very ſtrong and broad, and ſhaped like thoſe of a *Mole*, he continually digs up, and makes himſelf Buries in the Earth. His hinder Feet are very long, wherewith he leaps; and by which, as well as by his *Hood*, he borders at leaſt, upon the *Graſhopper*-Kind. His *Hood* or *Mantle*, which *Mouſet* I think omits, is about ½ an inch long; extended forward, over part of his Head; behind, over part of his Wings; before Concave, behind Convex.

His Eyes *protuberant*, yet not great (as *Mouſet* would have them) but very ſmall if compared with his Body: in colour, ſhape, and bigneſs like a *Strawberry-ſeed*.

His Wings, ſaith the ſame Author, are longer than his Body. Whereby it appears, that he did not take notice, That this Animal hath four Wings, whereof the uppermoſt pair are not above ¼ of an inch long. The other indeed are prolonged above ¾ of an inch beyond the Tail. Each of theſe apart is moſt curiouſly foulded up inwards with a *double Roll*, ſo as to end in a point; having their middle Rib (as I may call it) which covers the two Rolls, flat and edged, and divided with tranſverſe lines at right Angles. Their being thus folded up, is a contrivance to ſecure them from being torn, as he runs to and fro under ground.

CHAP. II.

Of Inſects with ſheathed-Wings.

THE TINGLE-WORME. *Proſcarabæus.* He's remarkable, eſpecially, for his Teeth, which are two great Hooks bended inward, almoſt as in the *Squill-Inſect*. He differs from the *Scarabæus*, chiefly, in that the *Vaginæ* or *Wing-Covers* are very ſhort, reaching but about ⅓ way toward the end of the Tail. His Wings, notwithſtanding *Mouſet* calls them *Alarum rudimenta*, are very perfect, and by a *treble fold* lodged under their Cruſtaceous Covers. He alſo

also omits the Description of his Eyes, which, through a *Microscope*, are a curious sight.

This *Insect*, with the least touch, drops a kind of Oily liquor from his Mouth; for which cause *Moufet* calls it *The Oil-Clock*. (*a*) Being bruised, it yields a fragant smell. (*b*) They are numerous in *Heidleburge* and other parts of *Germany*.

(*a*) Cap. 23.
(*b*) Id. *out of* Toxites's Onomasticon.

The Great BULL-CHAFER. *Taurus volans maximus*. *Johnston* out of *Marggravius* in some sort describes four *Species* of *Bull-Chafers*, of which, as I take it, this is one. I meet also with the Picture of it in *Olearius*. (*c*) He hath three Horns. The first is only the Snout produced and bended upward, and is therefore moveable with the Head. In length, according to the figure in *Olearius* (for it is here broken off) about an inch and ½ forked at the end, and with one upper branch a little before the Eyes. The Head very little. Upon his Shoulders he hath two immovable or unjoynted Horns, about ¼ of an inch long, ¼ of an inch over at the *Base*, directed forward, and with their points inward, like a *Bulls-Horns*. From the end of his Snout or fore-Horn to the end of his Tail he is about five inches long, over his Back above two and a ½; the bigest of *Insects* yet known. His fore-Feet are armed with Spikes, as so many Claws; wherewith, 'tis likely he digs himself Buries. Of his Wings it is Observable, That at their utmost Joynt, they are laped up, or doubled inward towards the Head, and so kept safe under the Wing-Covers; being, when out at their full length, almost twice as long as the hinder Body or Section of the Animal. The like is observable of the Wings of some other *Beetles*. His Horns, Legs, Back and Wing-Covers are all black; his Belly brown.

(*c*) Tab. 16. Fig. 2.

Another Great BULL-CHAFER. Of the same sort.

The Lesser BULL-CHAFER. *Nasicornis Triceros minor*, so it may be called. 'Tis all over of a shining-black. Above two inches long, almost one broad. The Snout-Horn is not bended upward, as in the former, but downward, ⅔ ds of an inch long, and edged above. On the top of his Back or fore-Section he hath two other little Horns, about ⅛ of an inch long, thick as those of a *Snail*, and bended down as the former.

The HEAD and Fore-SECTION of the same Animal; but of one far bigger.

The TODDY-FLY. *Taurus volans Marggravii Quartus*, or *Nasicornis Diceros*. This here came from *Guinea*. 'Tis very well described by the said Author. Except, that he doth not well compare the Eyes to a *Hemp-seed*: for they are not only Sphærical, but as big as a well grown green *Peas*. But that shelly-Guard, which, as it were, hoops in the Eye, and hides the greater part of it, unless you lay the *Insect* on his Back, might occasion his mistake. He hath but two Horns, yet those great ones. A Snout-Horn bended and toothed upward, and a Shoulder-Horn bended downward. From the end of which to the end of his Tail, about five inches. But he is not so broad as the *Great Bull-Chafer*.

Thirty or forty of these together, rasping or sawing off part of the Barque of the *Toddy-Tree* by the help of their Snout-Horn, will drink themselves drunk with the liquor that flows from it: from whence their *English* Name. For which purpose, Nature hath well placed the Teeth of the said Horn, above: for that here, the Work is not done, as by a Man in sawing, by the weight of the Animal, which is inconsiderable; but by the strength of his Legs, which force the Horn upward.

See the Description of the Parts subserving to Generation in the *Philos. Transact. N.*94. Communicated by Dr. *Swammerdam*.

Two more TODDY-FLY'S, like the former.

The RHINOCEROS BEETLE. *Scarabæus Rhinoceros*. See the Figure and Description hereof in *Imperati*. It hath only one Horn upon the Nose standing almost upright, only bended a little backward, as in the *Rhinoceros*; whence its Name.

The PRICKLE-NOS'D BEETLE. *Scarabæus Naso aculeato*. I meet with it no where else. So I call it, because that in the place of the Horn above-said, it hath only a small short Prickle. The fore-Section also, near the Head, is depressed and somewhat Concave. 'Tis very near as big as the former, and of a like Chesnut-colour.

The STAG-BEETLE. *Cervus Volans*. Described by *Moufet*, *Imperati* and others. He hath his Name from his

his two Horns, which are branched like those of a *Stag:* but yet moveable. His Head is very big and broad; ratably, far bigger than in any other known *Beetle*, much exceeding the bigness even of the fore-Section. Under his fore-Feet, he hath *Tufts* of short brown Hair. His Wings are doubled up inward and towards the Head, as in the *Great Bull-Chafer*. From the Tips of his Horns (which are about an inch long) to the end of his Tail, above three inches in length.

His Horns being moveable, he useth them to catch hold with, as a *Lobster* doth with his Claws. For which purpose, they are not only branched inwardly, but also toothed with a numerous Series of little knobs, by which to take the surer hold.

The Description and Figure of the Lungs of this *Insect* is given by *Malpighius.* (*a*) Some Observations of his Nature, see in the *Philosoph. Transf. N.* 127. *Chioccus* saith, That there are many of them in *Lombardy.* (*b*)

(*a*) De Bombyce, p. 27. Tab. 3.
(*b*) Mus. Calceolar.

The Horns of this *Insect* being set in *Gold*, and so worn as an *Anulet*, are said to be of excellent force (*c*) in easing of Pains, and against the *Cramp.* Read *Fienus, Of the Power of Phancy.*

(*c*) Chioccus in Mus. Calceol.

Four more STAG-BEETLES; but lesser than the former.

Another, with the Head broken off.

The little THREE-HORNED BEETLE. *Scarabæus Triceros minor.* *Mouset* seems to describe it by the Name of Βυκερὼς; but imperfectly. His Head is guarded with two Shoulder-Horns, and one in the Neck between them, not in his Forehead, as *Mouset* mistakes. They are all three immoveable or unjoynted, of the thickness of a little Pin, or the bigness of short *Gooseberry* Thorns. That in the middle stands reared upward, the other two are bended a little downward. In all other parts 'tis shaped like the *Scarabæus Melanocyaneus* with furrow'd Wing-shells; of which anon.

The NOCOONACA. So called by some of the Natives of the *West-Indies*, from whence it came. I meet with it no where else. 'Tis three inches long, and an inch broad. The Head ½ an inch broad, ¼ of an inch long. The Horns rooted on each side the top; but are all broken

off, saving a Joynt or two: which are of that thickness, as he seems to be of kin to the *Capricorne*-kind; and may be called *The Great West-Indian GOAT-CHAFER.*

His Back-Piece near ½ an inch long, ¼ broad, armed with two black sharp *Prickles*, ¼ of an inch long, and bended a little backwards. The Wing-shells almost square, *knobed* on each side before, where each of them hath one, and at the hinder end two more very short *Prickles.* They are cover'd with a kind of *Down*, or very short and fine Hair, like the *Pile* of Velvet; for the most part brown, but adorned with Dashes of Red and Yellowish, or Citrine, of an answerable shape upon both shells. The brown spaces before are also rough-cast with a great number of small round black knobs, like Mourning Pins-Heads. The fore-Feet are four inches and ½ long, as long again as the other; contrary to what, at least, for the most part, they are in other *Beetles.* They are also set with sharp black Prickles like those on the Back-Piece. The rest without them. All of them vary'd with the aforesaid Colours.

Another NOCOONACA of the same bigness.

The Great *European* GOAT-CHAFER. *Capricornus maximus Europeus.* Given by Sir *Philip Skippon.* Described by *Mouset.* 'Tis about two inches long. Of a dark brown or Musk-colour. He hath on his Forehead two slender Horns, knoted or with many Joynts; above an inch long, and commonly standing backward, like those of a *Goat*, from whence his Name.

The *Goat-Chafer*, saith *Mouset*, being weary with flying, to spare his weak Legs, wraps his Horns (*I doubt weaker than his Legs*) about the Twig of a Tree, and so rests himself.

The LONG-SHELL'D GOAT-CHAFER. *Capricornus Vaginis longioribus.* I think no where describ'd. It is above an inch long, and the Wing-shells of themselves an inch, being prolonged near ¼ of an inch beyond the *Anus*; and near ½ an inch broad; so deep, as to come down below the Belly on both sides. All over of a straw-colour. The Shoulders a little knobed. The Neck, red; and about ¼ of an inch square. The Head still lesser, scarce so big as a *Flesh-Flys.*

The MUSK-GOAT-CHAFER. *Capricornus odoratus.* It is of the Middle-kind. Described by *Mouset.* (*a*)

(*a*) Cap. 21.

While

While it lives, and for sometime after its death, It hath a fragrant smell; from whence the Name.

The lesser *Goat-Chafer* blew and green. *Minor Chlorocyaneus*, as it may be called. About $\frac{1}{3}$ of an inch long, the Head and Neck green, the Wing-shells blew, both glossy. The Horns $\frac{1}{3}$ of an inch. The Legs like bright *Steel*.

The little *Saffron-Goat-Chafer*. *Minimus rubrocroceus*. About $\frac{1}{3}$ an inch long. His Horns $\frac{1}{3}$. His Legs like polish'd *Steel*.

The little *Brown Goat-Chafer*. *Minimus pullocroceus*, as we may call it. About $\frac{1}{3}$ inch long, and slender. Of a brown colour, with a yellow Ring on the upper part of his Neck, two more on his Wing-shells, and two sloap streakes upon each: His Horns and Legs of a *Chesnut*.

The GREAT GOGLE-EYED BEETLE. *Carabus Indiæ Orientalis maximus*. I find it no where described or pictur'd. Two inches and $\frac{1}{3}$ long, and an inch broad. His Head of a middle size. His Face perpendicular, about $\frac{1}{3}$ of an inch long, in the middle of a golden green. His Teeth like polish'd *Steel*, of great thickness and strength. His Eyes of a fine colour betwixt a light *Chesnut*, and that of red *Coral*; of an Oval figure; and ratably, very great, *sc.* $\frac{1}{4}$ of an inch long. Which also, so far as I have observ'd, is the principal Character of all the *Carabus*-kind, so far, as distinct from the *Capricorne*: whence I take leave for the *English* Name. His Horns rooted between the Eyes and the Snout; but they are here broken off. His Shoulder or Back-Piece almost square; yet edged with a Convex Margin on each side; above $\frac{1}{4}$ of an inch broad, and $\frac{1}{3}$ an inch by the length of the *Insect*; burnish'd with two large spots of the colour of polish'd *Bellmettle*; betwixt which, and on the edges or margins of a shining-green.

The *Wing-shells* almost two inches long, with small furrows running by the length, and united with short transverse lines, all together, like Network. Not Oval, but rather expressing the figure of a *Speer-Mint-Leaf*. At the end of each, two very small points or prickles. In the middle, of a glorious golden red like that of burnish'd *Copper*; On the edges of a shining blewish green. The Belly of the same colour with the middle of the *Wing-shells*; saving, that the fore part of every Ring (whereof there

are

are three) and the Tail-piece, is also variegated with a curious sort of small white Streaks, which, at the first, look like fine Hair.

The great Joynts of the Legs (as is also best observable in other larger *Insects*) are joyn'd together, not only by Ligaments, as are the Bones in other Animals; but the globular knob of one, is entirely inclosed, and so winds, within the globular Concave of another. The imitation whereof, may be seen in the *Joynted Images*, which some *Stone-Cuters* make use of, for their direction as to *Postures*.

The THICK GOGLE-EYED BEETLE of the *East-Indies*. *Carabus Orientalis crassus*. I find it not describ'd. About an inch and ½ long, ⅓ of an inch over where thickest. His Eyes near the colour, shape and bigness of golden *Millet-seed*. His Teeth of a sad *Chesnut*, and very *robust*. His Horns are broken off. His Forehead, the sides of his Breast, Shoulder-piece, and Wing-shells, all rough cast, especially the two parts last nam'd; the Shoulder-piece with numerous small punches, the Wing-shells with greater and fewer; two whereof before, rounder and larger than the rest.

On his Breast he hath a short, thick and sturdy *Thorne* or *Spike* directed forward, and somewhat downward. He is all over of a curious green, bright and with strong Rays of Gold, but mostly on his Belly, Forehead, and the inward Margins of his Wing-shells. The hinder ends of which have one or two little Indentures. His Legs broken off.

The long GOGLE-EYED BEETLE of the *East-Indies*. Neither is this describ'd, that I find. About an inch and ½ long; where broadest ⅓ an inch. His Head small, somewhat bigger than that of a common *Bee*. His Eyes great, Oval, and of a *Chesnut* colour. His Forehead between them of a shining green, and rough cast. His Teeth very strong. His Horns broken off. His Shoulder-piece almost square, but somewhat broader behind. This, his Wing-shells, and his Breast of a glorious green mixed with some faint Rays of Gold; but their outer Margins, especially, as you turn him on his Belly, look of a pure *Bice-Blew*. Their hinder ends (as also the Tail) tinged with the colour

colour of bright *Copper*. Their ends are likewise indented like the leaves of some Plants; and so rounded, as both together to make an Elliptick. His Feet are lost.

The LONG STRIATED CARABUS. *Carabus sextus Aldrovandi*. Above an inch long, and ¼ broad. The Wing-shells are furrow'd by the length with small *Striæ*, and also wrought with punched or pricked lines in the same Order. The fore-feet are soled each with four little *Tufts* of Down or short Hair. Here are Three of this sort. One, all over of a blackish colour. A second hath his Shoulders and the Rimms of his Wing-shells, blew. The third hath Crimson shoulders, or like pure Lake, and the Wing-shells of a sad green with some Rays of Gold.

Another *Carabus* of the same kind with the former, but lesser, being not above ⅓ or ¼ of an inch long. Here are of this *Species* of several colours. Some, of a dark-brown; others, cole-black; others, of a gilt-green; and others, of a gilt-red like bright *Copper*. None of these are punched, but only striated.

The LONG SMOOTH CARABUS. 'Tis all over of a shining-black; very smooth, without either prick'd or striated Lines. Only a row of very small Pricks just above the Rimm of the Wing-shells. Also in proportion somewhat longer and slenderer than the former.

The little GREEN CARABUS. About ¼ an inch long. His Head small, scarce so big as of the common *Black-Fly*. His Snout oblong. His Eyes gogling, and of a *Chestnut* colour. His Neck also little. His Belly and Wing-shells much broader, especially behind, which is unusual. Above, of a curious green; the Wing-shells marked with seven or eight white Specks on the Margins, and two in the middle. Underneath of a golden red.

The Little BROWN CARABUS. Like the former, saving his colours; his Snout being of a shining straw-colour; as also his Eyes, and very great; finely Cancellated; through a Glass a curious sight. His Wing-shells brown, with whitish Spots, fewer and bigger. His Legs of a golden red.

The Little BROAD CARABUS. Shorter, and proportionably broader, than any of the precedent *Species*. All over black. The Head extream small. The Shoulder-piece broad,

broad, smooth, and almost square. The Wing-shells striated, each with three ridge-lines, and each having a narrow and level Rimm or Margin; as in the other *Species*. Of this sort, here are three or four; the biggest ½ of an inch long, and ¼ broad.

The common slender SPANIHS-FLY. *Cantharis vulgaris*. It seems to border both upon the *Capricorne* and the *Carabus*.

Spanish-Flys, being taken in too great a dose, will exulcerate the Bladder. Some bold *Whores* take them to kill and bring away their Conception. *Mouset* (*a*) speaks of a singular Remedy which he had, *Contra Veneris Languorem*. Which seems to be some Præparation of *Spanish-Flys*, by the Symptome which he saith did once follow the use of it, which was bloody Urine. Yet this hath sometimes happen'd, only *ex effrænatâ Venere*.

(*a*) Lib. de Insect. c. 19.

℞ *Spanish-Flys* ℥ß *Rhenish-Wine*, or rather *Spirit of Wine* ℥iiij. Digest them, without fire, for some days. Then filtre the *Spirit* through a brown Paper. To every spoonful of this, add seven of clean *Wine* or *Ale*. Of this mixture take the first day, one spoonful; the second, two; and so increasing every day. Against a *Virrulent Gonorrhæa*, a suppression of *Urine*, and the *Stone*, the happy success of this *Tincture*, saith *Bartholine*, (*b*) hath been experienced by Dr. *James-Francis Kotzbue*. I mention it, for a safe way of using this *Insect* inwardly, if in any Case we may expect more from them, than other Medicines.

(*b*) Thom. Barthol. Hist. Cent. 5.

The BROAD GILDED BEETLL. *Cantharis latus Mouseti*. Here are several of them. They all agree in shape; their Principal Characters, That they are broad Back'd, and Headed, like the *Scarabæus Melanocyaneus*; Tail'd, like the *Scarabæus Fullo* (of both which anon) and have a small Part indented betwixt the fore-ends of the Wing-shells, like the Tongue of a Buckle. But their Colours are various. Two of a golden green on the Back, and like burnish'd *Copper* on the Belly. One like *Bell-metal* on the Back and Belly. And one like *Copper* on the Back and Belly.

The DORR or HEDGE-CHAFER. *Scarabæus Arboreus*. Described by *Mouset*. His chief marks are these, His Head small like that of the common *Beetle*. This and his Eyes black,

black, notwithstanding *Mouset* saith these are yellow. His Shoulder-piece and the middle of his Belly also black; but just under the Wing-shells spoted with white. His Wing-shells, Legs, and the end of his Tail (which is long and flat-pointed) of a light *Chestnut*. His Breast, especially, cover'd with a downy-Hair.

The LEOPARD-FLY. *Scarabæus Fullo.* Described also by *Mouset*. 'Tis bigger than the *Dorr*. His Nose as black as jet, his Wing-sheaths, and almost all other parts, speckled with ash-colour and black: in other respects like the *Dorr*.

The little TAIL'D-BEETLE. *Scarabæus caudatus minor.* The Head and Shoulders are wanting. The Wing-shells almost two thirds of an inch long and ⅓ over. Of a dull ash-colour besprinkled with extream small blackish specks. His Legs and Belly of the same. He hath a strait, pointed Tail prolonged beyond the Wing-shells ⅓ of an inch, from whence I have nam'd him; and by which he seems of kin to the *Hedge-Chafer*.

The SHORT-SHELL'D BEETLE. By *Aldrovandus*, called *Scarabæus Serpentarius*, somewhat absurdly, *sc.* for that he once found them in a *Serpent*. But his Description is not ill. He seems by the shortness of his Wing-shells to border on the *Dorr* or *Hedge-Chafer*, as the former. As also by their colour, composed of black and Chesnut Rings indented together. Here are five of this *Species*.

Another of the same *Species*, with the Wing-shells all over of a Chesnut colour. Described also by *Aldrovandus*. Of this sort here are several small ones.

The BLACK and BLEW BEETLE. *Scarabæus Melanocyaneus.* See *Mouset*'s Description. Of this, the Wing-shells are striated or furrow'd by the length. All the upper parts are black, the under parts blew, exactly like that colour which *Watch-Makers* and others give to their *Steel-Works*. Sometimes the nether parts are rather reddish, just like pure bright *Copper*. Sometimes their Tails and Belly of a golden Green, of which is that called by *Wormius*, *Scarabæus* χλωρόχρυσος. Here are of these, in all, about half a score.

ANOTHER, of the same kind. But this hath both the Shoulder-piece, and also the Wing-shells very smooth.

A THIRD, a kin to the former. Yet different from them, not only in being all over black, but especially in the make of his Feet. In those, hard and sharp with several little Prickles standing in a Row, with some straggling hairs. In this, having only two sharp Hooks or Claws at the end of his Feet, and his Feet soled with a treble *Tuft* of a close short tawny Down.

The SQUARE-SHELL BEETLE. The Head and Shoulders of this are lost. The Wing-shells together, make almost a long square; being flat on the top, which is unusual, and the sides making right angles with their upper end. They are also striated or furrow'd by the length; and the sides curiously punched or pricked.

The BEETLE with pointed shells. The Head and Shoulders of this also are lost. All over of a very dark shining Bay. The Wing-shells above ½ an inch long, and of a peculiar figure; being not only much narrower, but also pointed behind.

The LONG-HEADED BEETLE. Here are several of them; all of a dun or blackish brown. But that whereby they differ from all other *Beetles*, is the shape of the Head, which, in proportion, is very long and slender.

The small PURPLE BEETLE. Of this sort here are two somewhat flat; and one thick and round.

The BLEW ROUND BEETLE. *Viola*. One as big as a *Lady-Cow*, but longer: the other near ½ an inch long; Both of a Violet colour.

The GREEN ROUND BEETLE, burnish'd with glorious golden Rays.

The Round Chesnut BEETLE, not without some Rays of Gold.

It may be worth the trial, Whether any of the *Gilded* sort of *Beetles*, are of the same Nature with *Spanish Flys*, or may produce the same effect, with less pain.

The SPIKED WATER-CLOCK. It seems to be that which *Aldrovandus* describes (but very imperfectly) under the Name of *Scarabæus Aquaticus*. 'Tis about two inches long, and ½ over where broadest. All over of a shining black: excepting, that his Eyes are brown; his *Antennæ*, tawny, his fore-Belly overlaid with a kind of *Lemon colour'd Velvet*. On his Back, there is a triangular piece indented between

between the Wing-shells. The Legs are much broken, on the third Joynts, at least of four of them, grow a pair of black sharp Prickles about the length and thickness of the sting of a *Bee*. But that which is most remarkable, is a strong and sharp *Spike* or *Needle* which stands horizontally on his fore-Belly, and with its point towards the Tail. His Wing-shells are carry'd down considerably below his Belly: so that being turned on his Back, he looks as if he lay in a Boat.

By the shape of the Wing-shells, this *Insect* seems, like the *Notonecta* (whereof presently) to swim on his Back. In which posture, in case of an approaching enemy, the aforesaid *Needle* is also ready for his defence.

The Great *English* WATERCLOCK. *Hydrocantharus major Anglicus.* Described (*a*) and figur'd (*b*) by *Moufet.* It comes near, in bigness, to the former; as also in shape; but hath no Needle, neither are the Wing-shells below the Belly. That part most observable in him, is his Eye, which is of a curious bright colour, almost like a *Butterflys.*

(*a*) Lib. 1. c. 23.
(*b*) At the end of the Second Book

Another *Water-Clock* of the same *Species.*

The small brown *Water-Clock.* 'Tis flat and narrow, and $\frac{1}{3}$ of an inch long.

The smallest *Water-Clock.* Scarce bigger than a Sheep-Tick, all over of a shining black.

These *Insects* make use of their hinder Feet instead of *Oars.* They are seldom or never seen in the day, excepting in the *Water*, which they leave in the night, and fly up and down, (*c*)

(*c*) Moufet, lib. 1. c. 23.

The BOAT-FLY. *Notonecta.* Described by *Moufet*, but very briefly. (*d*) A *Water-Insect*, in shape like that which lives in *Cuccow Spittle*, but six times as big, *sc.* $\frac{1}{3}$ of an inch long. The upper Wings are opacous and thicker before; at their hinder ends, where they lap over, transparent and extream thin, like the Wing of a Fly.

(*d*) Lib. 2. c. 38.

He swims, saith *Moufet*, (*e*) *contrary to other Creatures, on his Back.* And the shape of his Back seems to favour it, being very like the bottom of a *Boat.* Nor do his hinder Legs, which are thrice as long as the former, unaptly resemble a pair of *Oars.*

(*e*) Lib. 2. c. 38.

The Great WINGED PUNEE. *Cimex sylvestris alatus major.* *Moufet* (*f*) hath given three good Figures of this

(*f*) Lib. 1. c. 29.

Kind, but scarce describes them. All the *Species* agree, in having a very small Head, broad Shoulders, a Pyramidal Back-piece, and the upper Wings somewhat like as in the *Boat-Fly, &c.* half Crustaceous and half Membranous. This, is almost ¼ of an inch long, near ⅓ an inch broad. His Shoulder and Back-Pieces yellow, shining and rough cast. The fore half or crusty part of the upper Wings of a russet, the Membranous of a sad green. The Belly straw colour'd and Chesnut, and divided into several Sections with black Lines, half of them meeting at the ridge of the Belly.

The SPIKED PUNEE. In proportion longer and narrower than the former. The Back russet, brown and black. The Belly, ashen. Where, that which is most observable, is a short, flat, and very sharp *Thorne* or *Spike* standing level, as in the *Spiked Water-Clock*, but with the point the quite contrary way, *&c.* towards the Head.

The HIGH-SHOULDER'D PUNEE. He is otherwise of the shape and bigness of the former: all over of a brown or dun colour, especially the Membranous parts of his Wings.

The SQUARE-WINGED PUNEE. Scarce ¼ of an inch long, and almost as broad. Partly colour'd with a shining black, and three spots of white on each side.

Another Square PUNEE, with the Crustaceous part of the Wings russet.

The SHORT-WING'D PUNEE. In which respect chiefly, it differs from the former; the Wings being in those prolonged to the end of the Tail; here, but half way.

The LONG-PECKLED PUNEE. This kind, *Mouset* hath pictur'd among the small *Beetles*; but by a mistake, it being really a sort of *Flying Punee*, with Wings partly Crustaceous and party Membranous, which is their Characteristick. The Shoulder-piece, Back-piece, Sides, Belly, and crusty part of the Wings, are all red bespeckled with black spots; the Membranous part, dun and speckled with white.

CHAP.

CHAP. III.

OF CREEPING INSECTS.

THE SMALLEST ANT or EMMET. When well grown, they are then hardly bigger than a good big *Flea*. In *Barbados*, saith *Ligon*, there is a larg sort of *Ants*, that build their Nests, with Clay and Lome, against a Wall or a Tree, as big as *Bee-Hives*, and divided into several Cells. (*a*) Of the Ingenuity of this *Insect*, see divers Relations in the same Author. (*b*) They are exceeding numerous throughout all *India*. So that they are forced to set the feet of their Cupboards and Chests in Cisterns of Water to preserve their Cloaths and Victuals (*c*) from them.

(*a*) *Hist. of* Barb. p. 64.
(*b*) P. 63.
(*c*) Linchot. p. 80.

Of their Kinds, and Generation; as also their use for feeding of *Pheasants* and *Partridges*, see some Observations in the *Phil. Transf.* (*d*) Communicated by Dr. *Edmund King*. Of their Nature, some others in the same *Transact.* (*e*) Communicated by Mr. *Ray* from Dr. *Hulse* and Mr. *Fisher*. The former observing, amongst other particulars, That the Liquor which they sometimes let fall from their Mouths, droping upon the blew Flowers of *Cichory*, immediately gives them a large red stain; and supposeth, it would produce the like in other blew Flowers. The latter, That not only the Juyce, but also the Distill'd Water or Spirit of this *Insect* will produce the same effect, &c. Amongst which, Mr. *Ray* mixeth some Notes of his own.

(*d*) N. 25.
(*e*) N. 64.

The Liquor of *Ants* is commended by *Schroder* (*f*) for a most excellent *Ophthalmick*.

(*f*) Pharmac.

The BAHAMA-SPIDER. It is of the *Tarantula* kind, and may be called *Phalangium maximum Indicum*; being the biggest of all the *Species*, *&c.* two inches long. Described by *Wormius*, and others. He hath six Eyes, not so big as the smallest Pins head. They stand not in a circle, as represented by *Laet*, *Wormius*, *Piso*, and *Olearius*, but two and two on each side, and two betwixt them transversly, thus :·: He hath two strong black shining Teeth, like crooked Claws, standing parallel, and with their points downward,

downward, above ½ an inch long by the bow. These Teeth being set in Gold, are used (*a*) by some for *Tooth-Pickers*. Being vexed, they strike with a *Sting* so very small, as it is hardly visible. (*b*) They will live several Months without eating any thing.

(*a*) Piso, Hist. N. l. 5.

(*b*) Ibid.

The *Nhanduguacu*, a great *Spider* in *Brasile* (*c*) so called, is probably of the same *Species*.

(*c*) Barlæi Res Brasil. p. 224.

The TOOTH of the NHANDUGUACU or *Bahama-Spider*.

The WEB of a *Bermuda-Spider*. It is so strong, as to snare a Bird as big as a *Thrush*. (*d*) 'Tis here wound upon a Paper like Raw-Silk.

(*d*) Philos. *Trans.* N. 40.

Spiders, saith *Aristotle*, (*e*) cast their Threads, not from within, as an *Excrement*, as *Democritus* would have it; but from without, as the *Histrix* doth his *Quills*. Of the spining of *Spiders*, and the rest of their History, see the curious Observations of Mr. *Lyster*. (*f*)

(*e*) Hist. An. lib. 9. c. 39.

(*f*) Lib. de Araneis.

The CLAW of a SCORPION. 'Tis long and slender, and belongs to the first *Species* described by *Mouset*.

A thick and short CLAW of a Scorpion, belonging to the third *Species* in *Mouset*.

The TAIL of another, with the *Sting* at the end, which is a little crooked, and as sharp as that of a *Bee*. The other parts of all three are broken off and lost.

In the *Musæum Cospian:* is the Figure of a very large *Scorpion*, three times as big as I find any where, yet said by *Lorenzo Legati*, to be drawn after the life.

This *Insect* aboundeth in *Brasile*. Those that are stung with them, suffer extraordinary pains for about twenty four hours, but seldom die upon it. (*g*)

(*g*) Joh. de Laet. l. 15. c. 6. *out of* Lerius.

Of *Scorpions* are prepared, *Oleum Compos. Magnum*, i. e. *Matthioli*, *Sanguineum* (*h*) *Magni Ducis*, & *Ol. Scorp. purgatum*. (*i*)

(*h*) Schrod. Pharm.

(*i*) Poterius.

The GREAT GALLY-WORME. *Scolopendra*. Described both by *Mouset* and *Aldrovandus:* but yet imperfectly. Neither is this here entire. Yet thus much remains Observable of the Feet; That each of them is armed, in the room of Claws, with three, four, or five Needles, of different thickness and length; some of them above ½ of an inch long; of a black shining colour like the *Sting* of a *Bee*, and equally sharp; in respect to which the

Figure

Figure neither of *Moufet* nor of *Aldrovandus* doth any way answer. Besides these, there are a great many more on each side, of the like shape and bigness, but of the colour of *Copper* or tarnish'd *Brass*. The Back and Sides are shag'd, the Belly smooth or bald. He is about three inches and ½ long.

The Teeth of this Animal, are said by all to be venimous. And probably, all the Needles above described, are so likewise.

The middle Bald GALLY-WORM. *Julus glaber*. They have commonly betwixt forty and fifty Legs on a side answering to so many crustaceous Rings, with some resemblance to a *Triremis*; whence *Moufet* gives it the *English* Name.

Another Bald *Gally-Worme*, of a yellowish colour, and fewer Feet; being the third sort mention'd by *Moufet*.

Of the *Gally-Worme* Mr. *Lyster* conjectures, That it may yield an acid Spirit, like that of *Ants*. (*a*)

(*a*) Phil. *Trans*. N. 68.

The SILK-WORME. *Bombyx*. The full History hereof is written by *Malpighius*; as to the manner of his feeding, the several changes he undergoes while a *Worme*, and while transformed into an *Aurelia*, and thence a *Butterfly*, with the business of Generation afterwards. But principally in the Anatomy of the Parts; as Feet, Mouth, Muscules, Lungs, Heart, Stomach, *Medulla Spinalis*, *&c.* in the *Worme*. And in the *Butterfly*, the *Penis*, *Paraſtata* and *Testicles* of the Male; and the *Womb* and *Ovarium* of the Female. Particularly, of the Lungs, he saith, That the *Silk-Worm* hath not only these, or Parts analogous, but that almost every Ring hath two pair, which are branched out to all the other Parts abovesaid: their several *Orifices* being remarquable, by so many little black Circles which encompass them, on the sides of the *Worme*. If any of these *Orifices* be oiled over, so as to exclude the *Aer*, the Parts to which they belong, presently grow *Paralytick*; and if all, the *Worm* will die within the space of a *Pater Noster*. Of the *Medulla Spinalis*, he saith to this purpose, That, from the Head to the Tail, there are about thirteen large Nodes therein; which he conceives to be, as it were, so many little Brains; the *Worme* having no visible Brain distinct from these Nodes.

A very

A very large *Aurelia* and Slough of a *Silk-Worme*. *Moufet* affirmeth, That in the Transmutation of the *Worme* into a *Fly*, the Head of the *Worme* makes the Tail of the *Fly*; and the Tail of the *Worme* the Head of the *Fly*. But Sig^r. *Malpighius* makes no mention hereof; neither is it any way likely to be so.

Two BAGS of the *Virginian Silk-Worme*. They are of an Ash-colour, and about the bigness of a *Pullets* Egg. Of exceeding thickness, thrice as thick as the shell of a *Hen-Egg*. It seems not to be one entire piece of Work, but composed of several Skins one within another, woven by so many *Worms*, ready for spining, one after another. And accordingly, in each Bag, being opened, I find four *Aurelias*.

The RED or CRIMSON CATERPILLER. *Vinula*. So called, because, while living, his Body is dy'd all over with a deep *Claret* colour. See *Moufet* hereof. (*a*)

(*a*) Lib. 2. cap. 2.

The YELLOW-CATERPILLER. *Eruca flavescens*. Both this and the two former are all smooth or bald. This is also mention'd by *Moufet*.

The PALMER-WORM. *Ambulo*. For that he hath no certain home, or diet, but pilgrims up and down every where, feeding upon all sorts of Plants. In respect of his great shag, called also *The Bearworme*.

EARTH-EGGS. About the bigness of *Nutmegs*, and somewhat Oval. So called, because made of Earth by some sort of *Caterpillar*, or other *Insect*, for their Nests, wherein to breed under ground.

(*b*) L. 2. c. 37.

The SQUILL-INSECT. Described by *Moufet*. (*b*) So called from some similitude to the *Squill-Fish*: chiefly, in having a long Body cover'd with a Crust composed of several Rings or Plates. The Head is broad and squat. He hath a pair of notable sharp Fangs before, both hooked inward like a *Bulls* Horns.

(*c*) Cap. 38.

The WATER-SCORPION. *Moufet* (*c*) figures three sorts; to the third of which, this answers. He describes it not. Nor can I well, being glewed to a Paper with the Belly upward. But it may be easily known by its pointed Tail. He hath four Legs, and two Arms or Claws, betwixt which a very small Head. He's about ¼ of an inch long.

The

The SHARP-TAIL'D SEA-LOUSE. *Pediculus marinus cauda acuta. Mouſet* (*a*) deſcribeth an *Inſect* by the Name of *Pediculus marinus.* But with a bunched, not a taper'd Tail, nor with long nodous Horns, like this. 'Tis about an inch and ½ long, and ¼ inch broad, compos'd of ſeveral ſhelly Plates, like the *Aſellus* or *Wood-Louſe*, with as many Feet on each ſide. (*a*) Lib. 38.

ANOTHER, with a Tail of four Spikes or Briſtles, about ¼ of an inch long, thick as a ſmall Needle, ſharp, and ſpread horizontally.

OSCABIORN. An *Inſect* ſo called in the *Daniſh*-Tongue, the name ſignifies as much as *Urſus Voti*, or the *Lucky Bear*; Becauſe the people commonly believe, That he who for a good while holds a certain Stone or Body contained in it under his Tongue, ſhall enjoy his Wiſh. It is uſually found adhering to a kind of *Aſellus* or *Cod-Fiſh* in the *Iſland-Sea*, to which it is very troubleſome. This account together with the *Inſect* it ſelf were ſent hither by Mr. *Olaus Borrichius*. Not diſagreeing from *That* which is deſcribed in ſome ſort by *Wormius*, by the ſame Name: nor from *That* in *Piſo*, called by the *Americans*, *Acarapitamba*. Yet I find not the Figure any where to anſwer to the Animal; the entire length whereof, is about two inches and ½. The fore part Oval: whence it narrows all the way to the Tail. Where broadeſt above ¼ of an inch. Its ſhelly Armor conſiſteth of about twenty Plates, of a ſtraw colour: The Legs on each ſide in number anſwerable. The Eyes are moſt curiouſly latticed with croſs lines, ſo as to divide them into an infinite number of *Rhombs*. He ſeemeth to have notable ſharp Chiſell-Teeth, whereby partly he becomes ſo troubleſome to his Bearer. The other parts are loſt.

The SEA-HORSE-LEECH. *Hirudo marina*. Deſcribed by *Rondeletius*. (*b*) He hath a harder Skin, than the *Poole-Horſeleech*: for which cauſe, he cannot draw up himſelf ſo round, but exerts and contracts his Head and Tail only. (*c*) (*b*) De Inſ. c. 7. (*c*) Ibid.

A WATER-WORME. *Lumbricus Aquaticus*. Not four inches long: but doubtleſs ſhrank up much when it died.

The HAIR-WORME. *Vermis Setarius*. Given by Mr. *Malling*. 'Tis little thicker than a Horſe-Hair or a Hogs Briſtle; Of a light Fleſh-colour; and about ¼ of a

foot in length. 'Tis commonly believed, but erroniously, that this sort of *Insect* is nothing but a Horse-Hair animated. By some, that they are bred out of *Locusts*. See *Aldrovandus* hereof. But especially the Observations of Mr. *Lyster* in the *Phil. Trans.* (*a*) who found them in the Belly of a kind of black and not uncommon *Beetle*; in some one only, in others two or three together: of all which he hath several Remarques.

(*a*) N. 83.

Whether there are not a sort of Eggs first laid by some Animal upon the *Beetles* Breech, which being hatched eat their way into his Belly, may be a Question. And therefore, whether the like *Wormes*, may not sometimes be also found in the Bellies of *Locusts*.

A SEA-WORME NEST. 'Tis a piece of TUBULATED WOOD; part of the *sheathing* of a Ship. Brought in, by *Wormius*, improperly amongst Woods; as not being naturally Tubulous, but made so by a sort of *Sea-Wormes*; described by *Rondeletius*, and out of him, by *Aldrovandus* and others. The Tubular Holes are numerous, of that width as to admit a *Swans-Quill*, very round, equally wide, and winding every way too and fro, so as some times to run one into an other. Most curiously lined, or as it were Wanscoted with a white Testaceous Crust, of the same substance and thickness with those called *Tubuli Marini*.

PART

PART II.

Of Plants.

SECT. I.

OF TREES.

CHAP. I.

Of WOODS, BRANCHES, and LEAVES.

A Piece of LIGNUM ALOE, with its own GUM growing upon it. Given by the Honorable Mr. *Boyle*. The taſt of the *Gum* is perfectly like to that of the Wood. The Colour, like that of the pureſt and moſt lucid *Aloe*, called *Succotrina:* for with the light reflected, it looks almoſt like *Pitch*; with the light tranſmitted, it gliſters like a *Carbuncle*; powder'd, it is of a reddiſh yellow. This, or ſome other like *Aromatick Gum*, the *Aloe* of the *Hebrews:* whence the other, from ſimilitude, hath its Name.

The Tree is deſcribed by *Linſchoten*; (*a*) about the bigneſs of the *Olive*. This Wood is the Heart of the Tree, the outward part, commonly called the Sap of a Tree, being whitiſh and ſoft. 'Tis ſaid by Sir *Philiberto Vernatti*, (*b*) formerly Reſident in *Java major*, to yield a Milk ſo hurtful, that if any of it lights in the Eyes, it cauſeth blindneſs; or ſcabbineſs, if on any other part of the Body. But this, doubtleſs, is to be underſtood neither of the Heart, nor the Sap; but only of the Barque: there being no Milk-Veſſels in either of the former, that I remember, in any Tree; by me obſerv'd.

(*a*) Lib. 1. c. 76.

(*b*) Phil. *Tranſ.* N. 43.

(a) Linsch. l. 1. c. 76. Of this Tree there are two sorts: (a) The best, called *Calamba*, and grows most in *Malacca* and *Sumatra*. Much used in *India* for the making of *Beads* and *Crucifixes*. The wilder, called *Palo Daguilla*, and grows most in *Seylon* and *Choromandel*. With this, they burn the dead Bodies of their *Bramenes* and other men of account, in token of honor.

(b) Notæ in Garsiam. See hereof also *Jac. Bontius*. (b)

A piece of *Indian*-Wood, called *GARON*. Very oily; in colour, hardness and weight, like to *Lignum Aloe*. But being held a little to the fire, hath a strong fragrant scent, much like to that of *Cloves*: and seems therefore, as well as by its Name, to be the Wood of the *Clove-Tree*.

(c) Lib. 1. c. 65. The *Clove-Tree* is described by *Linschoten*. (c) Shaped like a *Bay-Tree*. It grows in *Amboyna* and the Neighbour Islands. The best sort in *Makian* and *Tidor*.

The BARQUE of the Tree LAWANG. Sent from *Java major*, where it is so called. Being well chewed, it hath the self same Taste with that of *Sassafras*-Barque, so that, probably, the Tree is a *Species* of *Sassafras*.

Part of an Arm of the STINKING-TREE; as it may well be called: for it naturally smells like the strongest humane excrements, especially, as upon the emptying of a *House of Office*. It grows in the Isles of *Solon* and *Timor*, from whence Sir *Philiberto Vernatti* procur'd it and sent it

(d) Phil. *Trans.* N. 43. to this *Musæum*. (d) Where, though it hath now been preserved many years, yet seems to give as full and quick a scent as ever. Yet in burning, it yields no smell; as do *Lignum Aloe* and some other Woods. 'Tis ponderous, hard, and of the colour of *English*-Oak; and as that, hath large *Aer-Vessels*; yet but few. I should have conjectur'd, that this Wood belong'd to the Tree called *Ahovaj*, which hath a stinking smell, but that *this* is said to be the more odious when it burns.

A piece of SERPENT-WOOD. *Lignum Colubrinum*. There are divers sorts of Woods so call'd. This here is different from all those *Species* described by *Garsias*, and out of him by *J. Bauhinus*. Yet comes nearest to the Second. 'Tis above three inches in Diametre, the Barque thin, the Wood solid, more than that of *Pear-Tree*. Of a very bitter Taste; especially when reduced to powder.

A piece of an other sort of SERPENT-WOOD. Within

of

of a pale yellowish colour. Full of great *Aer-Vessels*. And also very bitter, as the former.

They grow in divers places of the *East-Indies*, as in *Seylon*, &c. And have their Name from one of their especial Uses, being an excellent Remedy (*a*) against the Bitings of *Vipers* and other venemous *Serpents*. They are also, saith *Bontius*, given in *India* against *Intermittent Fevers*. From whence, and their bitter Taste, one may guess, That they are either of kin to the Tree whereof the *Pulvis Patrum*; or might give occasion, to some who have been in both the *Indies*, to find out the Virtue of it.

(*a*) Linsch. l. 1. c. 75.

The WOOD of a Tree of *Angola*, there call'd *Tacusa*. 'Tis very solid and ponderous, like that of the *Lignum vitæ*, and with a blackish grain.

Another sort of *Angola-Wood* by the Inhabitants called *CHICENGO*. 'Tis somewhat hard and ponderous, and of the colour of *Spanish-Oak*. Being power'd, it hath a bitterish Taste. Both these Woods, may be of the like use with the former.

Part of the Trunk of a young MOUNTAIN CABBIGE. Sent from *Jamaica* by Mr. *Sam. Moody* to the Author. Now it is dry and shrunk in, not above a foot and ½ in compass. Consisteth of a great number of very thin fibrous Rings or *Tubes* one within another, now, by the shrinking up of the pithy parts, distinct.

'Tis said by Mr. *Stubs* (*b*) who lived for some time in *Jamaica*, where this Tree grows, That it is one sort of *Palm-Tree*. It grows also in *Barbados*: where, as it was confidently reported to the same Person, there was one about three hundred feet high, *i. e.* about thirty yards higher than the great Corinthian Pillar in this City called *The Monument*. The young tender *Sprouts* of one year, are eaten both boyl'd and raw, and are both ways excellent good meat.

(*b*) Phil. *Transf.* N. 36.

The BARQUE of a kind of *Pine-Tree* in *Nova Scotia*. Hereupon grow up and down many Knots, about the bigness of a *Horse-Bean*, hollow, and filled with a liquid, clear, and fragrant *Turpentine*; which, as it drops, the Natives gather and use as the Balsom of *Peru*.

A natural KNOT of Wood of an Oval Figure, and as big almost as a *Turkeys*-Egg: the fibers whereof are prettily

prettily waved by the tranſverſe eruption of ſeveral ſmall ſprigs.

A ſuppoſed naturally entire RING of Wood, almoſt in the ſhape of a Womans Head-Roll, but not ſo big as now worn, about four or five inches Diametre. *Wormius* alſo mentions one in his *Muſæum* like this, but ſomewhat bigger.

PITT-WOOD. *Lignum foſſile.* Colour'd like that of the *Cedar*, but a little brighter. Smooth, light and ſoft; yet hath no conſpicuous pores. Hath neither taſt nor ſmell. Whence this was dig'd, is uncertain. But in *Lancaſhire*, and ſome other places here in *England*, the people find the Bodies of large Trees at a good depth underground, and which the poorer ſort burn, being ſplinter'd, to ſave *Candles*.

A BRANCH of a Tree, by ſome called *The COCK-SPUR Tree*. Perhaps more properly, *Oxyacantha Americana*, or the *AMERICAN HAWTHORNE*. I meet with it no where deſcribed or mention'd. This Branch is an Eln long, without any appendent Branches. An inch Diametre. Of the ſolidity of *Hawthorne-Wood*. Encompaſſed with great *Thornes* alternately placed on every ſide, ſo aſcending, as every two *Thornes* on the ſame ſide are about four inches and ½ one above another. Moſt of them about 1 ½ inch, ſome an inch and ¾ long, of the thickneſs of a large *Cocks-Spur*, and very ſtrait. Not meerly Cortical, as the *Thornes* of *Raſpis*, *Gooſeberry*, and the like; but Lignous or Woody, as thoſe of *Hawthorne*.

A BRANCH with a great WEN. It ſeems to be of the *Hawthorne*. The Branch, not above an inch in compaſs; the Knot or Wen, almoſt ¾ of a foot. 'Tis tuberous and ſpiked. So that it ſeems to be made by the caſual eruption of ſeveral ſturdy Buds together, which having begun the draught of the Sap, it ſtill continu'd to ſwell the Knot, after they were faln off. And it is probable, that Animal-Wens are then produced, when two or three ſprigs of a Nerve bigger or more than ordinary, ſhooting into a part of a Muſcle, do thereby more invigorate it, and ſo make it capable of a more copious nouriſhment.

Another tuberous Knot like the former. There is one like theſe in the *Muſæum Coſpianum*. (*a*)

(*a*) Lib. 2. c. 26.

A little

A little *Oaken* BRANCH with a great WEN growing round about it. 'Tis above a foot in compass, as big as a midling Bowl.

A WARTED-BRANCH. 'Tis of *Oak*, about as thick as ones middle Finger; the Warts the bigness of *Hasle-Nuts*.

Another BRANCH with four or five great *Warts* or *Wens* upon the sides. *Wormius*, who hath one like to these, not of *Oak*, but *Hasle*, calls it *Lignum Strumosum*.

An *Oaken* BRANCH permitted to grow for some time, after the Barque had been cut round about to the Wood. By which means, that part of the Branch above the *Cutis*, is grown much thicker, than that underneath; the one being little, more than an inch about, the other almost two inches. Neither is it only the swelth of the Barque, but the Wood it self is augmented. An Experiment lately made by Sig^r. *Malpighi*; and may seem an argument for the Circulation of the Sap. In what manner the Circulation of the Sap is performed, especially in the Root, the Author of this Catalogue hath some years since explicated. (*a*)

(*a*) In his first Book *Of Plants*, Chap. 2.

A piece of a BRANCH naturally shaped like a *Penis* with a pair of *Testicles* annexed. *Wormius* hath one like to this, which he calls *Lignum Inverecundum*.

A WINGED-BRANCH of *Ash*. About two feet and ½ long, and subdivided into two lesser. Where the division begins, the Barque is spread out from the Wood for the breadth of above an inch, and of the thickness of *Sheeps Leather*, and so joyns both the Branches together for the length of about a foot. From thence they are perfectly divided, and so wind two several ways, almost like a *Rams Horn*; the Barque being spread out all along to their ends: yet only so as to make them edged. The two ends, with Buds like little Claws on the edges, look like a *Seals Feet*. *Wormius* hath some Branches, not of *Ash*, but *Firr*, which seem in some part answerable to this now described.

A HASLE BRANCH seeming as if it were naturally TWISTED. But made so by a *Woodbind* or some other Convolvulous Plant. In the *Mus. Cospianum* is such another of *Hawthorne*.

A WILLOW BRANCH, winding to and agen, like a *Snake*, with six or seven close flexures. A Figure not uneasily given to a young *Twig*.

A Pipe

A Pipe made of a hollow BRANCH, and twiſted into a looſe Knot, in which one part of the Branch is incorporated with the other.

Two large BRANCHES incorporated in the form of a St. *Andrews Croſs.*

Two leſſer, growing together in the ſame form.

Two BRANCHES growing together in the form of our Saviours Croſs.

'Tis probable, That theſe were bound together (as may be any other) when they were young, and with the Barque pared off, where contiguous; and ſo, by a kind of ingrafting, became coaleſcent.

A PALMETO LEAF. *Palmæ humilis folium.* 'Tis a yard and ¼ long. Hath about a hundred and forty Plates, ſeventy on each ſide the middle Rib, whereupon they are all folded. Which Rib alſo diſtributes it ſelf into Plates towards the top of the Leaf. The Plates are of ſeveral bredths from ¼ an inch to an inch and ¼. Moſt of them are now broken or torn aſunder. But originally they make all one entire piece, rudely imitated by a folding *Fan.*

Theſe are the Plates, which both the *Arabians* and *Indians* make uſe of to write upon, by *Impreſſion* with a *Style.*

Part of another ſort of PALM-LEAF. 'Tis ¾ of a yard long, and at one end ſeven inches broad: but rolled up, and with the ends of the Fibers unwoven, ſo as to look like a *Broom.* Of a wonderful ſubſtance, in ſome places ¼ of an inch thick, and very denſe and ſtubborn work. Conſiſteth of great and leſſer flat Fibers; and ſmall round ones; ſomewhat alike as in the *Palm-Net,* whereof preſently.

The Leaves of ſome *Palms,* are uſed, where they grow, for making of Garments, and thatching of Houſes. The Country-People Tap the *Wine-Palm* about two feet above the ground, and of the Liquor which runs from it, and which they catch in Earthen Veſſels, they make an excellent Wine called *Mignol*, like the *White Champane.* (*a*) The fruitful kinds flouriſh chiefly in *Ægypt* and *Syria:* as alſo in the hoteſt parts of the *Indies*; and in the *Canary-Iſlands:* amongſt which, there is one called,

(*a*) Thevetus

The

The Palm-Island. (*a*) The barren kind in *Italy* and *Sicily.* (*a*) J. Bauh.

The PALM-NET or BAG. The Tree which produceth it called, *Palma Saccifera.* Whether *Bauhinus* giveth this under the Name of *Folium Nucis Indicæ*, is uncertain. If so, both the Figure and Description are very imperfect.

Some part of it hath been cut off both at the bottom and on the side; yet is it above two feet long; at the bottom a foot broad; from whence it tapers to the top. Originally entire, like a taper'd Bag, commonly call'd *Hippocrates's Sleive:* but by some inconsiderate hand cut open on one side.

'Tis naturally sewed or woven together with admirable Art. And yet not with more, than that which may be observed in every Plant; though not so visibly, and with variation. There is a five-fold *Series* of *Fibers* herein. The greatest of all swell out above the rest, and like so many Ribs, are obliquely produced on both hands, so as to encompass the Sack. Along each of these woody Ribs, on the inside the Sack, runs a small whitish Line; which seems to be a Thred or Fiber of *Aer-Vessels* growing thereto. Betwixt the said large Ribs, there are others, as it were lesser, *parallally* interjected. On the inside a third *Series* also obliquely produced, and *transversly* to the former. The fourth and fifth, consist of the smallest Fibers, not only *transversly* produced, but also *alternately* from the outside to the inside of the Sack, *& vice versâ.* By which all the rest are most elaborately woven into one entire and strong piece of Work. A *Cover* which Nature hath provided, to protect the delicate Fruit of this Tree, from all the extremities of the weather, and the ravine of Birds.

Another PALM-SACK or Net, almost a yard long, and made of different Work. See one like to this in *J. Bauhinus.* (*b*) (*b*) L. 3. c. 176.

About the Year 1599. the *Hollanders*, saith *Clusius*, returning from *America*, in an *Island* there, by them called *Coronopes*, found whole Woods of this Tree: and, probably, then first discover'd the same to *Europe.*

A LEAF of the ROCOUR-TREE. 'Tis near ½ a foot long, four inches broad, the lower end Oval or Elliptick,

pointed like a *Spear*. From the middle *Fiber* divers other collateral ones (all prominent underneath) are produced alternately, and at acute Angles. 'Tis smooth on both sides, and of an obscure redish colour. Of this Tree (which I think grows in *New-England*) is made a sort of red powder, used for a dry colour; but being wet, at least, mixed with Oil, makes but a dull one.

CHAP. II.

Of FRUITS; particularly such as are of the Apple, Pear, and Plum-Kinds.

PART of a PRICKLE-APPLE. The Tree is in some sort described by *Ligon.* (*a*) The Fruit is remarkable for the several Tussucks or Bunches of Thorns wherewith it is armed all round about: each Bunch consisting of about six or eight Thorns; some of which stand erected, the rest couched down a little and crooked outward; of several lengths, from one inch, to above two; altogether, if pull'd off, somewhat resembling a *Jack a long-legs*.

(*a*) *Hist. of Barb.* p. 70.

A MALE-ORANGE of *Chio*, commonly called *Sio*.

A FEMALE-ORANGE of the same Island.

A CROWNED-ORANGE: that is, having an Orbicular Piece on the top.

A FRUIT like a little ORANGE: perhaps, *Aracynappil Paludani*; described by *J. Bauhinus*. (*b*) This here is crowned with a circle of ¼ an inch Diametre.

(*b*) Tom. 1.

A sort of BASTARD-QUINCE. *Cotoneaster Gesneri*. (*c*)

(*c*) J. Bauh. Tom. 1.

An HERMAPHRODITE-LIMON, exhibiting the *pudenda* of both Sexes.

A FRUIT of BRASILE, probably described in *Bauhinus* by the Name of *Bras*. (*d*) Of the bigness and shape of a little *Limon*. 'Tis now yellowish, when fresh, likely, of a golden colour. Filled with an innumerable company of Seeds, which *Bauh.* describes not. They are almost as hard as Stones, ¼ of an inch broad, and flat, almost as the seeds of *Lillies*.

(*d*) Tom. 1.

An

An INDIAN FRUIT, having its surface (now) very uneven, with Furrows and Knobs all round about. The Furrows, ten. Both the Description and Picture hereof taken by *Bauhinus* (*a*) from *Platerus*; But ill placed. (*a*) Lib. 3. cap. 204.

A Round *Indian* FRUIT with one end pointed, and a (now) granulated surface. Described as I take it by *Bauh.* (*b*) With the Name of *Fructus Peregrinus orbicularis cuspidatus.* (*b*) Lib. 3. cap. 50.

The POLVILLERIAN-PEAR: becauſe either it grows moſt about *Polvilla* in *Alſatia*, or was firſt taken notice of there. A very ſmall fruit, (now) no bigger than a *Nutmeg.* See *Bauhinus.*

The MOUNTAIN SERVIS. *Sorbus Alpina.* Chiefly upon the *Alps.*

MYROBALANUS CHEBULA. The largeſt and longeſt of all the five Kinds known in Shops. Next to which is the *Citrine*, alſo long. Then the *Belliricks* and *Emblicks*, but both theſe are round. The *Indian* or *Black*, the ſmalleſt, and long. The Stone of the *Emblick Myrobalan*, of a peculiar angular Figure. This, and the five *Myrobalans* are all figur'd in *Beſler.*

The GREAT CITRINE MYROBALAN. A rare kind. In ſhape like that which *Bauhinus* (*c*) gives by the Name of *Myrobal. Rauwolfij*; but is much bigger, near two inches long, and above an inch and ½ over. (*c*) Lib. 2. c. 19.

Myrobalans grow moſt of them in *Cambaia*, *Goa*, and *Malabar*; *Chebs*, in *Biſnagar* and *Bengala*; *Emblicks* and *Belliricks*, in *Java*; the *Great Citrine*, in *Paleſtine.*

Theſe Fruits, ſay *Fallopius* and others who have purpoſely made enquiry, are no where mention'd by any of the ancient *Greeks*; but by the *Arabian* Phyſitians firſt of all. In the Countries where they grow, and may be had freſh, they are doubtleſs of good Medicinal uſe to the Natives. But as they come over hither, they are moſt of them meer rubbiſh, whereof, with the plenty of far better Medicines, we have no need. The *Chebs*, *Belliricks* and *Indians*, are *Preſerved* with Sugar in *India*, and ſent thence into all the Neighbouring Countries. The *Emblicks* are there uſed, as *Sumach*, *&c.* for the tanning of *Leather.*

SEBESTEN, *i. e. Fructus Mixæ.* It grows naturally in *Ægpyt* and *Syria:* And is alſo nouriſhed in *Italian* Gardens.

The JUJUBE of *Cappadocia*. *Bacca Ziziphi Cappadocicæ*. In ſhape like the wild, but leſſer, and ſomewhat rediſh. Of a dryiſh ſubſtance, almoſt like that of *Hawthorne-Berries*. The Tree well deſcribed by *Dalechampius*. It grows, to the bigneſs of the *Willow*; eſpecially in *Syria* and *Ethyopia*.

A Black round FRUIT of the ſhape and bigneſs of the largeſt *Red Cherries*. Perhaps, *Prunula Inſana*.

A STONED-FRUIT in ſhape and bigneſs like a *Quince*. The Fleſh or Pulp being now dry'd and ſhrunk, very thin. It comprehends three very great Oval *Stones*, thin, and brittle: in each of which is alſo included a *Kernel* of anſwerable bigneſs.

An ORBICULAR STONE of an *Indian-Plum*. *Os Pruni Indici fere globulare*. Of the bigneſs of a midling *Wallnut*, of a dark bay colour, knobed all round about, extraordinary hard, at the baſe and top a very little prominent.

Another GLOBULAR STONE. In ſhape and bigneſs, like the former; excepting, that the baſe is a very little broader. Of a citrine or ſtraw-colour. Hard as a *Wallnut*. Very uneven and ruged all round about, with ſmall furrows and holes intermixed.

A third GLOBULAR STONE. Yet ſo, as to be divided into five Valves or Sides, all ruged as in the firſt, equally hard, and of the ſame bay colour. But not bigger than a midling *Cherry*.

An OVAL PLUM-SONE. As big as a *Pigeons* Egg, and of the ſame ſhape. Somewhat rough, of an Iron colour, and hard ſubſtance, but not very thick.

Another OVAL STONE. As big as a *Hens* Egg: and almoſt of the ſame figure; ſaving that the Baſe is a little blunter, the Cone or top a little ſmaller. Of a bay colour. Wonderful hard. Divided into five ſides, ruged and uneven, with a great many holes and deep furrows. The Sides diſtinguiſhed by as many ſtrait Fiſſures, beginning a little above the Baſe, and thence prolonged towards the *Cone*. Within each of which alſo grows a ſtony, and as it were toothed piece above an inch long. This, the Third, and the Firſt, are all of kin.

A LONG OVAL STONE. In length two inches, and one inch over; ſhaped like that of an *Olive*. Cover'd with

with a kind of ſtraw-colour'd Membrane. Under which, 'tis all over unequal with furrows. Of a dark aſh-colour without; inwardly, whitiſh. Exceeding hard.

Another LONG OVAL STONE. Naked or without any Membrane. Much bigger than the former, being two inches and ½ long, and an inch and ½ over. The furrows alſo of this are more, and deeper.

A THIRD of kin to the former, but far leſs, not much bigger than the common *Cornelian-Cherry*. Theſe three laſt are all of kin. Not to be ſuppos'd the elder and young ſtones of the ſame fruit: for that they are all equally hard, and therefore at their full growth.

A PLUM-STONE almoſt like a *Wallnut*. An inch and ¼ long, half an inch broad at the Baſe, which is a little hollowed in; in the middle an inch and ½, the top a little ſharp and prominent. It hath three ſides, all uneven with many furrows, and ſomewhat deep. Of a ſtraw-colour, and very hard.

A STONE figur'd into a SPHÆRICAL TRIANGLE. Near two inches long. Hard, rough, and of a *Wallnut* colour. The three ſides unequal: one above an inch broad, the others narrower; all united at acute angles, and a little prominent. This Stone ſeems to belong to the fruit which, together with the Tree, is deſcribed in *Laet* (*a*) by the Name of *Totocke*.

(*a*) Deſcr. Ind. Occ. l. 17. c. 4.

ANOTHER, of like ſhape, ſubſtance and colour with the former. But much leſs; and ratably, broader; *ſc.* about an inch long, and as broad. Conſiſteth of three ſides; whereof one the greateſt, and convex; the other two almoſt plain or level.

A STONE ANOMALOUSLY figur'd. Above two inches long. One way, almoſt two, over. Another, an inch and ½. Of a dark citrine, and ſomewhat rough, as it were beſprinkled all over with ſand. On one ſide, flattiſh, but unevenly. On the other ſwelling up into a double Lip, very rough; and having a Fiſſure running by the length.

Another ODDLY figur'd Stone. Above two inches long; In the middle, two over. At the Baſe, in a manner, an inch and ½ ſquare, ½ an inch over at the top. Almoſt ſmooth, and of the colour of ſpruce *Oker*.

A THIRD. Three quarters of an inch long; one way, ½ of an inch over; another, ¼. One side, Concave; the other, Convex. The Margin pinched out into a sharpe edge. Of a dark bay.

A Great MAMMEE-STONE. Two inches and ½ long; an inch and ½ broad in the middle, flat, and somewhat sharp at both ends. *Bauhinus* gives the Description and Figure hereof both out of *Clusius*, by whom it is called *Avellana Indica*. 'Tis also curiously figur'd in *Calceolarius*: but with the same Name. And with the same, described by *Matthiolus*. All of them mistaking it for a *Nut*. Whereas in truth it is the Stone of a kind of Fruit like a great *Peach*, and bigger; in which there are commonly two of these Stones.

A little MAMMEE-STONE. Described by *Clusius* with the mistaken Name of *Avellana Indica minor*. And, out of him, by *Bauh*. (*a*)

(*a*) Tom. I.

A ROUND MAMMEE-STONE. Of the same colour with the former; but that which is here the far greater part, of an obscure brown, and somewhat uneven with a few crooked furrows. The remainder and here the far less portion, of a shining bay. 'Tis of the bigness of a good large *Walnut*.

The Fruit grows in *Jamaica*, *Barbados*, and other parts of the *West-Indies*. Of the flesh or pulp whereof, they there make very good Conserves.

(*b*) Tom. I. p. 328.

A NETTED-STONE. Described by *Bauhinus* (*b*) with the Title of *Fructus reticulato corio*: mistaking it for a *Nut*. The greater part of the Stone is of the same substance with that of other Plum-stones. But over this is spread a netted Work of larg woody *Fibers*. It was brought from *Guiney*; but it grows also in *Virginia*.

Another WOODY STONE. A very great one; but ratably short, *sc.* two inches long, and two and ½ over, like a midling *Pippin*. Very little stony, but all its outer part, at least, perfectly woody, or made up of a multitude of woody *Fibers*. The largest whereof are prolonged from the *Base* to the *Cone*, associated all along by lesser ones running betwixt them.

A Third WOODY STONE. Almost of the shape and bigness of a *Pigeons-Egg*. But a little compressed. 'Tis cover'd

cover'd all over with Liguous *Fibers*, so extream closely woven together, that it looks as if it were all Wood. Some of the greater run directly from the Stalk to the Flower or top. So great a difference there is betwixt these *Indians* Stones, and those of our *Europæan* Fruits, which have very few, and most not above two or three on the outside.

The STONE of the *Brasilian* Fruit called *ANDA*. *Wormius* hath given hereof but a bad Figure: but describes it better. Yet with a mistaken Title, as if it were the entire Fruit. 'Tis a very hard and great Stone, as big as a midling *Bell-Peare*, but a little compressed: broad at the Base, and sharp pointed, with some resemblance to a Heart. The sides of the Shell of a wonderful thickness. Penetrated to the Kernel with three great holes.

Amongst many observable Instances of the Contrivances Nature makes for the growth of the Seed, in whatsoever Cover (*a*) it be included; this Stone is one. For being so extraordinary hard and thick; it were impossible the Kernel within it (which is also great) should be supplyed with *Aer* and *Sap* sufficient for its growth; were not those three great holes made on purpose, for a plentiful admission of both.

(*a*) See the Authors Book *Of Plants*, c. 1. & ult.

And as great an instance it is of the seemingly wonderful force of the *Radicle*, or that small and tender part of the Kernel, which becomes the Root of the Plant; by which, chiefly, the sides of the Stone, those thick Walls, are made to cleave asunder to make way for its descent into the ground. But *Time* seems to do the same thing here, as *Celerity* doth in the *Statera*; where a small Weight set at a greater distance from the Centre of gravity, will ballance a bigger that's nearer: because, what it wants in *bigness*, is made up by the *Celerity* of its motion. So the *Radicle* of a Kernel, having though a slow motion, yet some, and that continu'd, it is able in time to master a sturdy Body which hath no contrary motion at all, but is at rest.

One or two of the Kernels, which are as big as *Damascene-Plums*, both Purge, and sometimes Vomit. If taken raw, they work roughly: but boyl'd and preserv'd with Sugar, may be given to Children. (*b*)

(*b*) Piso.

Another POYNTED-STONE. A very great one: three inches and ½ long, an inch and ½ over, one way; another near

near two inches. On one side, very Convex; on the opposite, almost flat. The Base Oval; the top, presently sharpen'd into a point. Of a russet colour, very hard, ruged, and having broad Furrows, most of them running by the length; out of some of which arise several woody *Fibers*.

Another like STONE. 'Tis as big as a *Pullets* Egg. On one side more Convex, as the former. Of a russet colour, hard and granulated. All over uneven with many, though not very deep Furrows, divers whereof are produced from the *Base* almost to the *Cone*.

The said Furrows, both in this and all the other Stones, are to be understood the Seats of woody *Fibers*, wherewith they were originally fill'd up.

A TWIN *Almond-Stone*.

GUM LACK, naturally adhering to a small Branch of its own Tree, called *Ber Indica*; a sort of *Plum-Tree* growing in *Pegu*, *Martaban*, and some other parts, sometimes as big as a *Wallnut-Tree*. (*a*) 'Tis generally agreed, That this Gum is made, in *Summer*-time, by Winged-*Ants*, out of the Tree it self. *Garsias* adds, as *Wax* is by *Bees*. How far the Comparison holds, requires examination. In the mean time, 'tis most likely, That these *Ants* finding the Sap or Gum of this Tree agreeable for their food or other use, and nibling the *Barque* to come at it, it thereupon issues at the Wounds they make.

(*a*) Garsias ab Horto.

The *Indians* make several sorts of artificial *Lacks*, by mixing this *Gum* with other Materials of all colours. With these, all the turn'd Wood-Works in *India* and *China* are wrought and burnished. *Trochisci Dialaccæ*, a Medicine formerly much commended, but now *obsolete*.

CHAP.

CHAP. III.

Of CALIBASHES, and ſome other like Fruits.

THE Great OVAL CALIBASH. In length, almoſt ¾ of a foot; above a foot and ½ in compaſs. Its Figure anſwerable to that of a *Hens-Egg*, one end, *ſc.* the top, being ſomewhat ſmaller than the other. 'Tis now of a kind of tawny colour, or like that of an old *Pomgranate-Pill*. About as hard as a *Wallnut*, and the ſhell ſomewhat thicker. Originally fill'd (as may be ſeen by ſome of them) with a Pulp and a great number of Seeds, as is a *Melon* or *Gourd*. Yet a *Calibaſh* is the Fruit of a Tree. In ſome ſort deſcribed by *Ligon.* (*a*)

The Middle OVAL CALIBASH. Of the ſame tawny colour, as the former; as alſo a little ſlenderer at the top, than the bottom. In length four inches and ¾, and 3 and ½ broad; of the bigneſs of a *China Limon*. It hath a little round knob at the top, as big as a *Great Pins Head*. The Seed, almoſt of the colour, ſize and ſhape of an *Apple-Kernel*; ſaving that the top is ſhaped like the common Picture of a Heart.

(*a*) *Hiſt. of* Barb. p. 72.

The little OVAL CALIBASH. Of a like colour with the former, but ſtained with ſome black Spots. Three inches and ½ long; two and ¾ over; ſomewhat bigger than a *Turkeys-Egg*. Of a perfect Oval, that is, with both the ends cut by the ſame *Ellipſis*, yet both a very little prominent. And the top apiculated, as in the former. It ſeems a kin to the *Cucurbita Indica minor Taberna Montani*; and that the ſaid Author miſtook a *Calibaſh*, for a *Gourd*.

An ORBICULAR CALIBASH. Of the ſhape and bigneſs of a *Jack-Bowl*.

The halfs of an ORBICULAR CALIBASH, four inches and ½ Diametre.

The Middle (*b*) FLAGON CALIBASH. Figur'd after a manner by *Bauhinus* with the miſtaken Title of *Cucurbita Indica Lagenaria*: it being not a *Gourd*, but the Fruit of a Tree, as is aboveſaid. It hath a Head and Belly divided by a Neck, ſomewhat reſembling an old faſhion'd *Flagon*.

(*b*) See the Great ſort miſplaced in *Sect.* 3. *Ch.* 2.

The Belly, about five inches and ½ long, and four and ½ in Diametre. The Neck, two inches long, and about an inch over. The Head, about as long, and above an inch and ½ over. Originally, of a ſtraw colour: but by the *Indians* painted, after a rude manner, with a dull red. The Shell very hard, and about a ¼ of an inch thick.

The little FLAGON or BOTTLE CALIBASH. About four inches and ½ long. The Belly, three inches over. The Head, an inch and ½. The Neck, a little above an inch. The Shell, at the top of the Head above ¼ of an inch thick.

The PEAR-CALIBASH. In length about five inches, the Neck ſomewhat long and ſlender, the Belly two inches and ½ over: ſo as both in figure and bigneſs to reſemble the *Pear* figur'd by *Bauhinus* with the Name of *Pirum Strangulatorium*. On one ſide, colour'd with a light, on the other with a deeper yellow.

A Double PEAR-CALIBASH.

A TRIANGULAR CALIBASH. 'Tis ſmooth, and black, ſhaped like the *Egyptian Cucumer*, called *Chate*. About five inches long. The Neck triangular; whether naturally, uncertain. From thence belly'd like a *Pear*; two inches and ½ over. The ſhell very hard, and as thick as of the *Flagon-Calibaſh*.

Theſe Fruits grow in *Guiney*; as alſo in *Virginia*, *Barbados*, and other parts of the *Weſt-Indies*. Where they are uſed, either whole or cut through the middle, for *Cups*, *Diſhes*, *Baſons*, *Buckets*, *Flagons*, *&c.* according to their bigneſs. The Natives ſometimes line their inſides with ſome kind of *Roſin* (as we roſin Wooden-Cans) the better to preſerve the Liquor they put into them; which, if ſpirituous, would otherwiſe either drench through, or looſe of its ſtrength. Whether the Roſin they uſe, be ſuch as gives no ill taſt to the Liquor may be a query.

The BAOBAB. *Abavi Cluſij.* Of affinity with the Fruit by *Scaliger* called *Guanabanus*. *Wormius*, I think miſtakingly, makes it the ſame. 'Tis well deſcribed and figur'd by *Bauhinus*. (*a*) This is of the bigneſs of a midling *Pomecitrine*, and of anſwerable ſhape. The ſhell of a good thickneſs, but not very hard; of a kind of dusky green, and faced almoſt all over with a *velvet Down*.

(*a*) Lib. 1. c. 42.

When

When fresh gather'd, 'tis fill'd with a soft Pulp, and as it should seem, much more juycy, than in the *Calibash*. Within the Pulp is contained a great number of Seeds, or little Stones, of the bigness, and with somewhat of the shape, of *Indian* Wheat. *Besler* hath a good Figure hereof, representing it cut open, to shew the Seeds.

The GREAT LONG BAOBAB. I meet with no Description answering to this *Species*. 'Tis in length ten inches, a foot in compass, being ratably much slenderer than the former, and almost Cylindrical. The upper end, made a little slenderer; the top of all, flat, and an inch and ½ over.

The GREAT BELLY'D-BAOBAB. Much bigger than the former, and no where describ'd, that I find. In length, an inch above a foot; and above a foot and ½ in compass. Towards the upper end, belly'd. But the end it self pointed almost like a *Limon*.

The *Baobab* grows in the Island *Zeilan*, and in *Ægypt*. The Juyce hereof is of an acidulated Tast, very grateful: of which the *Ægyptians* make much use, especially when they travail, to quench their thirst.

The MACOCQUER. A *Virginian* Fruit, described by (*a*) *Bauhinus*. It seems to be of affinity with the *Calibash*, or perhaps a small *Species* thereof. It is of an Orbicular-Figure, and of the bigness of a little Hand-Ball. Though *Clusius* affirmeth (*b*) it to be sometimes four inches in Diametre. The shell is thin and brittle. Originally fill'd with a soft and juycy Pulp, in which a great many Seeds of the colour and bigness of an *Apple-Kernel*.

(*a*) Tom. 1. 254.

(*b*) Exot. l. 11. c. 11.

The Natives, having empty'd the shells of the Pulp and Seeds, and in the room hereof, put in some little Stones, use them as *Rattles*, wherewith to rejoyce upon any special Occasion.

The GENIPAT, *Junipap*, or *Junipappeeywa*. A *Brasilian* Fruit so called. Described by *Bauhinus*. (*c*) And probably by *Piso* with the Name of *Janipaba*. This also is a kind of little *Calibash*. Of the bigness of a *Wallnut*, and almost Oval; containing a Pulp and Seeds much like those of the *Macocquer*. It grows upon a tall Tree.

(*c*) Tom. 1. 253.

The Natives use this Fruit against *Diarrhœ'as*. As also to paint themselves. They chew the Pulp, and then

squeezing the Juyce out, rub it upon their Body: as it drys, it turns to a blackish blew. This they do, when they visit a Friend, or upon any solemn Occasion, would be fine.

Another FRUIT, of kin to the former, with a pointed top. It was brought from *Guiney*.

(a) Tome 1. A FRUIT resembling that described by *Bauhinus* (*a*) under the Name of *Charameis Acostæ*. Yet this here, by the reduction of the point or seat of the Flower to the Base, a little flatish.

CHAP. IV.

Of NUTS, and Divers other like Fruits.

THE JACAPUCAIO-NUT. A *West-Indian* Fruit. Both this and the Tree tolerably well described by *G. Piso*.

(b) Hist. N. Ind. (*b*) It is about the bigness of a *Boys* Head of ten or twelve years old, somewhat oblong, with a circular Ridge toward the top. Now all over, without and within of a dark or blackish colour. The sides extraordinary warm, being an inch thick. Within, divided into four Quarters. In each of which (saith *Piso*) are contained about thirty Kernels. But here they are wanting. Described also in part, and

(c) Histor. Ind. lib. 4. figur'd, in *Calceolarius's Musæum*, out of *Jos. Acosta* (*c*) by the Name of *Amygdala dell' Anidi*.

Of these Kernels, much bigger than *Almonds*, the Natives make both Medicines, and pleasant Meats. Sometimes the Fruit of one Tree, hath served to Victual a whole Camp. Those that fall are, with leave, greedily devoured by the Cattel. Of the Timber of the Tree, are made the Rowls of *Sugar-Mills*; as being tougher, or otherwise fitter for that purpose, than other Woods.

Another of the same NUTS of equal bigness.

The COVER of the said NUT. A like colour'd, and in shape almost like a *Mushroon*. When the *Nut* is ripe (which always hangs down) this *Cover*, with the least shake, falls out, and the Kernels after it, into the Laps of the Natives.

One half of the MALDIVE-NUT; called *Coccus de Maladiva*.

ladiva. Tavarcare, in the Language of the *Island*. Described by *Chioccus* (*a*) out of *Clusius* and *Garzias ab Horto*; and well figur'd. *Piso* (*b*) also hath the Description and Figure, together with a prolix Discourse hereof. They are said to be no where found, except upon the Sea-shore. Nor is the Tree it self to be seen any where in the *Island*. The entire *Nut*, somewhat like a double *Box*, or a pair of *Panniers*. This half, about a foot long, and near ½ a foot broad; a kind of half Oval; yet flat on that side, where the two halfs are conjoyn'd. The shell about ¼th of an inch thick, and as hard as that of a *Coco-Nut*. As black as a *Coal*. This is empty; but originally they contain a certain white Pulp, of no great Tast.

(*a*) Musæum Calceolar.
(*b*) Mautissæ Aromaticæ, c. 19.

Of this Pulp both the People and Princes of *Malabar* have a high opinion, as if of great Virtue against most Diseases, especially in case of Poyson, or *Epileptick* and other like Affections. So that sometimes they value them at about five and twenty pounds a *Nut*. 'Tis also highly commended for the same purposes, by *Piso*, both from the experience of others, and his own. They sometimes make Drinking-Cups of the Shells, and tip them with Silver or Gold-Plate. 'Tis Death for any to be known to take up any of them; because those things that are cast upon the shore, are the Kings.

The COCO-NUT. The Fruit of a very tall Tree, both in the *East* and *West-Indies*, growing only upon the top of it. Mention'd by many Writers of Natural History, but not by any one distinctly describ'd. As by one sent me fresh by Mr. *Sam. Moody* from *Jamaica*, I had the opportunity to observe. Here are three of them entire. The bigest whereof is about a foot in length, and one and ½ in compass. With three sides, one whereof more flat; belly'd in the middle, and somewhat Conick at both ends; so that it is a kind of Sphærical Triangle. The Husk or outmost part of the Nut on the sides, about an inch thick; at the Corners, an inch and ½; almost wholly consisting of tough woody *Fibers*; so that being cut *transversly*, it looks like a stiff *Scrubbing-Brush*. Next within this *Fibrous* Part, lies the Shell, brown, hard, and brittle, like a *Plum-Stone*; the ¼ of an inch in thickness; about three inches Diametre, and of an Oval Figure, not much unlike that of an

Ostriches,

Oſtriches, or ſometimes a *Caſſowarys-Egg*. Yet ſo, as always to be *Trivalvous*, *i. e.* compoſed of three Sides or Plates joyned together by the length of the Shell; one Side being commonly much bigger than either of the other two. At the *Baſe* of the ſaid Shell, are always likewiſe three conſpicuous Holes, by which originally are admitted a conſiderable number of *Fibers* into the Concave of the Shell. Next within the Shell is a thin, dry and Membranous Coat, branched or veined all round about with a great number of *Fibers*, chiefly for the conveyance of Sap. Within this Veiny-Coat, lie's a ſoft, white, thick and Oval Body, commonly; but falſly, ſuppoſed to be the *Kernel:* it being only the *Cover* next or immediate thereunto. In thickneſs about ¼ an inch, and of a ſweet and pleaſant taſt. This Body, while the *Nut* is yet unripe, is filled full with a very limpid and ſweetiſh Liquor; which, in the Nut I had ſent me, was in all about ½ a *pint:* all conveyed from the ſaid fibrous Coat, and filtred through this thick ſoft Body. Out of this Liquor, the true *Kernel* is in time produced: the Liquor diminiſhing, as the *Kernel* increaſes, in the ſame manner, as in an Egg, the White waſts, as the Chicken grows. Or as, indeed, in the Seeds of all Plants whatſoever, (*a*) which are not meerly Metaphorically, but really ſo many Eggs (like thoſe of many Animals) without a Yelk.

(*a*) See the Authors firſt Book *Of Plants*, Cap. ult.

Letting this Liquor ſtand in a Bottle, corked up, for ſome months; although at firſt as clear as Rock-water, yet was it not only grown very *fetid*, but being after left open for ſome time, did let fall a *Sediment* above ¼ an inch thick. Arguments of its being impregnated with a ſufficient ſtore of ſeminal Principles.

And as no Animal Egg is vital without the Male: ſo neither is this Liquor, without the above-ſaid *Fibers*; which communicate their *prolifick Vertue* to the ſame. Amongſt which *Fibers*, being many *Aer-Veſſels*, they alſo ſerve for the hardening of the Shell. As in like manner do all thoſe that compoſe the outward bruſhy part of the *Nut*. For were the Shell not only fill'd with ſo great a quantity of Liquor; but alſo, as in many Fruits, ſurrounded with a juycy Pulp; betwixt both, it would remain a ſoft *Parenchyma* (as all vegetable Stones at firſt are) and never, or not ſoon enough, harden into a ſhell. For

For the more eaſie and convenient eruption of the *Radicle*, the Shell is not one entire piece, but divided into three (as are moſt Seed-Covers into two or more) diſtinct Plates; which gradually cleave aſunder, to give way to the deſcent of the ſaid *Radicle* into the ground.

Two more LONG COCO-NUTS, ſomewhat leſs than that now deſcrib'd.

A THIRD, about as long, but much ſlenderer. Of the rounder kind, there is a good Figure in *Beſler*; as alſo of the Shell.

A LONG OVAL COCO-SHELL. About ½ a foot in length, and three inches and ½ over. One of the three Holes at the bottom, cut wider by ſome Body, who had a mind to cheat the Spectator by imitating a mouth. Almoſt in ſhape and bigneſs like a *Caſſowarys-Egg*.

Another Shell of the ſame ſhape.

THREE ſhort Oval COCO-SHELLS.

An ORBICULAR COCO-SHELL; four inches and ½ long, and as much in Diametre.

Another Great ORBICULAR one. 'Tis a foot and ½ in compaſs. A *Coco-Nut* of a foot and ½ compaſs, hath a Shell in compaſs about nine inches. The *Nut* therefore to which this Shell belong'd, was in compaſs above three quarters of a yard.

The COCO is one of the moſt uſeful Trees in the World. Of the Husk or outmoſt fibrous Cover of the Nut, all manner of Ropes and Cables are made throughout *India*. Of the Shells, the *Indians* make Ladles, Wine-Bottles, and many ſorts of Veſſels. The inmoſt Cover next the *Kernel*, while it contains only Liquor, they eat with ſalt, as a very pleaſant meat. The ſaid Liquor, is commonly uſed, as a clear ſweet and cool Drink. Sometimes they cut away the Bloſſom of the young *Nut*, and binding a convenient Veſſel to the place, thereby obtain a ſweet and pleaſant Liquor, which they call *Sura*. This ſtanding an hour in the Sun, becomes good *Vinegar*, uſed throughout *India*. The ſame Diſtill'd (I ſuppoſe after fermentation) yieldeth a pretty ſtrong *Brandy*, called *Fulo*, and is the firſt running. The ſecond, is called *Uraca*, the only *Wine* of *India*. Of the ſame *Sura*, being boil'd, and ſet in the Sun, they alſo make a ſort of brown Sugar, which they call *Jagra*.

From

From the *Kernel* it ſelf, when freſh, and well ſtamped, they preſs out a Milk, which they always mix and eat with their *Rice-Meats*. Of the *Kernel* dry'd (called *Copra*) and ſtamped, they make Oil, both to eat, and to burn. Of the Leaves of the Tree (called *Olas*) they make the Sails of their Ships: as alſo Covers for their Houſes and Tents; and Summer-Hats. Of the Wood, they make Ships without Nails; ſewing the ſeveral parts together with the Cords made of the Husk of the *Nut*. (*a*)

(*a*) Linſchoten. Joh. de Laet. Piſo, *and others.*

A ſmall ORBICULAR FRUIT, as it ſeems, of the Nut-kind, not bigger than a Phyſical Pill; a little flattiſh on that part which grows to the Husk. Very hard. And of a ſhining colour, like that of *red Coral*. Deſcribed (*b*) alſo by *Cluſius:* and neatly figur'd in *Calceolarius*'s *Muſæum*. (*c*)

(*b*) L. 2. c. 30.

(*c*) Sect. 5.

ANOTHER of the ſame hardneſs, ſhape, and bigneſs; but of a ſhining black.

ANOTHER hard and orbicular Fruit, by *Caſp. Bauhinus* called *Milium Indicum*. For what reaſon I ſee not, it having no ſimilitude thereto. That for which it is obſervable, is, that it looks as if it were artificially turn'd upon a *Lath*. See a rude Figure hereof in *J. Bauhinus*.

An Oval Stone or Shell, of the bigneſs and ſhape of a midling *Olive*. Given by Mr. *Anth. Horneck*. It ſeems doubtful, Whether of the Plum or Nut-kind. 'Tis all over ſmooth, and of a ſhining light bay, like that of a *Mammee*. Excepting only the Baſe which is of a dull colour, and ruged, and having two narrow ſmooth *Margins* like a pair of Lips, or an open mouth: from the corners whereof runs a natural Notch round about the Stone or Shell.

The YECOTL. The Fruit of a little Tree in *New-Spain*, which the *Spaniards* call *Palmam Montenſem*; and which I take to be all one with the *Palmapinus*, or the *Palma Conifera*. 'Tis deſcribed and figur'd both by *J. Bauhinus*, and by *Wormius*. Who Reports out of *Laet*, That theſe kind of *Nuts* are always found empty, or without a *Kernel*. Which is a miſtake; for this here hath one. 'Tis likely all that he ſaw (and ſo he ſhould have ſaid) were barren. The length of this, about two inches and half; the Diametre, one and ½, the Figure Oval. Smooth, and of a

ſhining

ſhining Bay. Compoſed of Scales, from the middle (where they are about ½ an inch broad) growing leſſer towards both ends, ſo as in ſome ſort to reſemble a *Cone*, of the *Picea Latin:* or *Male Firr-Tree.* Yet a quite different Fruit: for whereas in a *Cone*, the *Seeds* or *Kernels* are numerous, all placed between the Scales of the *Cone*; here (ſo far as can be gueſs'd by the ſound) we have but one ſingle *Kernel*, within the hollow of the Shell.

But that which is moſt obſervable, and whereof no Author takes notice either in the Deſcription or Figure of this Fruit, is this, That the Scales which compoſe the Shell, are not ſo ſet together, as to have their open ends or points upwards, as in a *Cone:* but on the contrary, ſo as to have their roots uppermoſt, and their open and outmoſt ends or points downwards, or towards the Baſe of the Shell, as of the Slates upon a Houſe towards the ground. A ſingular contrivance of Nature, to prevent the rain from running into the hollow of the Shell, and ſo rotting the *Kernel.* And although the Scales of a *Cone* are open towards the point of the *Cone*, yet even hereby they anſwer the ſame end; becauſe it always or moſt commonly hangs upon the Tree with the point downward.

This Fruit is pictur'd in *Beſler, Tab.* 1. But miſtakenly, for the *Arecca* or *Faveel.*

The CONICK YECOTL. I find it not deſcrib'd. 'Tis much leſs than the former; in length, an inch and ½[d]; in the middle near an inch thick. Slenderer at both ends, and the upper plainly taper'd. The Scales, as in the former.

Of the Leaves (*a*) of this Shrub, the *Indians* make a ſort of Thread. (*a*) Ximenes

A SCALED FRUIT a kin to the YECOTL. 'Tis of a rounder Figure, almoſt like a *Pippin*, and about as big as a midling *Peach.* See the Figure hereof in *Bauhinus*, under the Title of *Nux Indica Teſſellata.* They grow in *Guyana.*

A Great PALMACOCO-NUT. *Bauhinus* deſcribes (*b*) another *Species* by the Name of *Fructus Palmæ Nuciferæ.* Perhaps the Tree may not be improperly call'd *Palmacocus*, as bearing a Fruit, though ſmall, yet reſembling the *Coco-* (*b*) Tom. 1.

ſhell. This is the biggeſt of ſeveral here preſerved, which make it doubtful, Whether it belong to a *Cocus* or a *Palme*. In length, near ½ a foot; in the middle, two inches over. The *Baſe* ſomewhat Oval, and Prominent, with three large Holes, as in a *Coco*; the upper end Conick, and a little inflected. Compoſed of three *Valves* or *Plates*, making ſo many Angles, below, obſcure; above, more ſharp. The colour mixed, according to the diſtribution of the woody Fibers.

A middle PALMACOCO-NUT. As big as a larger *Walnut*. In length, an inch and ½; the *Baſe*, an inch over. Figur'd into a kind of Convex *Cone*. Upon the *Margins* of the three Holes in the *Baſe*, are finely ſpread a great many ſmall black *Fibers*; like the *Fibrillæ* of the *Lig. cili* are round about the *Cryſtal* Humour. See alſo *Cluſius*'s Deſcription hereof in *Bauhinus*. Two of this *Species* are here preſerved.

ANOTHER alſo Conick, but leſs. In ſhape like the *Pear* called *Moſcatellinum:* but is ſcarce ſo big as a ſmall *Nutmeg*. Of a woody ſubſtance, and the colour of *Box*. With three open Holes, as in all the reſt.

The DOG-PALMACOCO. *Bauhinus* deſcribes and figures one of theſe *Nuts* by the Name of *Nux larvata*. The like is performed in the *German Ephemerides*. But I take this to be a different *Species* from them both. In length, an inch and ½; an inch over, where thickeſt; and of a Conick Figure. The Crown or thicker end of the Shell is encompaſſed with a great many ſmall *Fibers*, originally ſpread all over the Shell, but here clip'd off by ſome Body, to make it look like a Head of Hair. About the middle of the Shell are two natural Holes, ratably large, like a pair of Eyes; and the upper *Margins* prominent, like Eye-brows, whereupon are naturally ſpread a number of ſmall black *Fibers*, like the Hair on the Eye-brows. Underneath a third Hole, alſo hairy, ſtanding in the place of a Mouth. Betwixt which, or before, there are three little Knobs, which together make no ill reſemblance of a Noſe, and the upper Lip all natural; So that, at the firſt ſight, one would take it to be a little Head of a *Greyhound* carved in Wood.

TWO more, of the ſame kind, but much ſhorter.

An

An Oval PALMACOCO, about the bigneſs of a *Nutmeg*.

Another, of a ſtraw colour, wrinkled, knobed, and ſomewhat compreſſed, Figur'd in ſome ſort by *Bauhinus*, (*a*) under the Title of *Avellana Indica peculiaris Camerarij*. (*a*) Tom. 1.

A BROAD PALMACOCO. An inch over or in breadth; from the *Baſe* to the top directly, not above ¾. That almoſt flat, this with a blunt point. It hath three Holes on the ſides, almoſt equidiſtant.

An ORBICULAR PALMACOCO. Yet a little compreſſed, as a *Bowl*. Not above ¾ an inch Diametre; of the colour and hardneſs of *Box*; furrow'd as a *Peach-Stone*. On the ſides are three equidiſtant Holes, over-ſpread with black capillary *Fibers*.

A RHOMBOID-NUT, of affinity with the former. An inch and ¼ long; ½ broad, and ¼ an inch thick, the ſides being a little compreſſed. Cover'd round about with ſmall woody *Fibers*, produced from the Stalk or Baſe to the top of the Shell.

The FAVEEL or FAUFEL. The Fruit of a kind of *Palme*, by the *Malabarins* called *ARECCA*. Deſcribed by *Garcias*, *Bauhinus*, and *Wormius*. But by none of them well. It hath a three-fold Cover, of ſo many ſorts of work. The utmoſt, conſiſting of ſtraw-colour'd, ſoft and (as *Garcias* rightly) downy *Fibers*. The middle, of yellowiſh, and ſturdy ones, of the thickneſs of a ſewing Needle: about ¼ an inch longer, than to the top of the Shell, yet couched down round about it. The inmoſt, a thin ſlender Caſe, but woody. Yet lined with a pithy ſubſtance. All contrived for the greater warmth, and gradual expoſing of the *Nut* within to the *Aer*. This *Nut* is about the bigneſs of a little *Nutmeg*; but not ſo long.

This Fruit grows in *Malavar* and the Iſland *Mombaim*. Being eaten unripe, it ſtupifies, and as it were inebriates. For which cauſe, (*b*) ſome eat them to make them unſenſible of great pains. *Garcias* ſaith, That he uſed their Diſtill'd-Water, in *Bilious Diarrhæa's*, with great ſucceſs. (*b*) Garcias.

A FRUIT very like to the *Faufel*. *Bauhinus* deſcribes and figures it out of *Cluſius*, by that Name. Yet it ſeems, to me, to be the *Faufel* it ſelf in the Bud.

The DATE-NUT, *qu. Nucidactylus.* I find it neither described nor figur'd by any Author. 'Tis above two inches long; near the Stalk, above an inch over; towards the top near two, being belly'd like a *Pear.* Along one side, a little ridged. The Stalk cover'd with a whitish *Down*, like a *Quince's.* The outward Skin of a dusky Bay, smooth, soft, and thin. Next under this is a *Work* of *Fibers*, not produced, as in other Fruits, by the length, but standing bolt upright, like the *Pile* of *Velvet*, about a ¼ of an inch in depth; or rather, like the *Bristles* upon a *Hogs* back. So that the outward Skin being taken off, the Fruit looks and feels like a round *Scrubing-Brush.* These *Fibers* are continuous all round about with the next Cover, which is of a woody substance, and very tough, about ½ of an inch thick. Next within this Cover or Rind, is contained a soft and light substance, which, by the space it hath left, appears to have been originally a very fleshy and sappy part. Within This lies the Stone, about as big as a young *Pigeons-Egg.* This Stone is not hollow, like others, but altogether solid, like the Stone of a *Date*, and is within of the same whitish, dense, and horny substance: from whence I have taken leave for the Name. At the top of the Stone is formed, like as in a *Nutmeg*, a little round Cell, in which the true Seed is contained, no bigger than a midling *Pins* head.

A TWIN DATE-NUT of the same *Species.*

A THIRD, a single one, with the outward Rind taken off, whereby the said brisly *Fibers* are conspicuous.

A CACAW-NUT. Given by *Francis Willughby* Esq; 'Tis five inches long; and about two, over; shaped like a *Garden-Cucumer*; but the Stalk-end a little slenderer. Now it is dry, angular with five wrinkled and black Ribs an inch broad. The spaces between, half as broad, smooth, and of a redish Bay: the blackness of the Ribs proceeding also from a fuller and deeper *Red* under the Skin; as in many other Fruits: or as *Scarlet Blood* makes blew Veins. Within the Rind are contained about fifteen or twenty *Kernels*, near as big as a *Garden-Bean*, but smaller at one end; somewhat like a little *Birds Heart.* Yet the shape, I suppose, in different *Nuts*, may have some variaton.

Another CACAW-NUT, like the former; given by Mr. *John Short.* This

This Fruit grows principally in *New Spain*, and the Province of *Guatimalla* in *Mexico*. In which, and other places of the *West-Indies*, the *Kernels* are used, saith *Jos. Acosta*, (*a*) instead of *Money*; and commonly given to the *Poor*, as *Alms*. With *Chacawlate*, the *Indians* Treat Noble Men, (*b*) as they pass through their Country.

(*a*) Hist. l. 4. c. 22.

(*b*) Ibid.

These *Kernels* being well pounded, as *Almonds*, in a Mortar, and mixed with a certain proportion of *Sugar* and *Spices* (according as the Trader thinks or finds it best for Sale) are commonly made up in *Cakes* or *Rowles*; which are brought over hither from *Spain*, and other parts. But those that would have a good quantity for their own private use, had much better procure the *Nuts* themselves (as fresh and new as may be) and so prepare and compound them to their own Constitution and Tast. And for those that drink it, without any Medicinal respect, at *Coffee-Houses*; there is no doubt but that of *Almonds* finely beaten, and mixed with a due proportion of *Sugar* and *Spices*, may be made as pleasant a drink, as the best *Chacawlate*.

The BUTTER-NUT: a Fruit growing in *New England*, and there so called, because the *Kernel* yieldeth a great quantity of a sweet Oil. I meet with it no where. In length, two inches and ½; in the middle, near an inch and ½ over; the two ends narrower, and a very little prominent, shaped somewhat like a small *Cucumer*. The Skin smoothish, and (now) brown. The substance within it, black: originally, a kind of Pulp or fleshy Rind about ¼ of an inch thick, answering to that of a *Walnut*. The Stone almost Oval, and edged with six or seven Angles by the length, the greatest, which are also opposite, ending in a sharp point. The Spaces betwixt the Angles, very uneven with a great many ruged and thin plates and knobs.

With a Decoction of the Barque of the Tree, the *English Planters* dey their *Linsey Woolsey* of a *Cinamon* colour, without *Alum*, or any thing else being added.

The EDGED-WALNUT of *New England*. In colour, as the common kind. Near an inch long, as broad, and a little above ¼ an inch thick. The *Base*, and especially the point, a little prominent. Figur'd with eight Angles or Edges, whereof one half sharper than the other. The *Kernel* shaped, as in the common kind.

A

A WALNUT ſhaped like a *Pear*. Whether monſtrous, or of any *Species*, is uncertain. 'Tis two inches long, at one end ½ of an inch thick or over, and the other, above an inch.

Another, with one Concave of the Shell twice as big as the other.

A Third, with a Shell compoſed of three *Valves* or *Plates*.

A NUT, which ſeems to be a ſort of *Indian Filbert*. I find it not deſcrib'd. Of a triangular Figure, one greater ſide ſubtended to two leſſer. The *Baſe* ½ an inch thick; an inch and ½ long, or wide; from thence to the *Cone* as much. Of a brown aſh-colour; and ruged all round about by the diſtribution of a great number of *Fibers*. Only the true *Baſe*, by which it joyned to the Husk, is ſmooth; and, as that of a *Filbert*, cleavable along the middle.

The HAZLE-NUT of *New England*. Neither is this deſcrib'd. Here is a Box of them. They are ſhorter, and broader, than the common ſort; the point depreſſed, and the *Baſe* more produc'd. In colour, both alike.

HAZLE-NUTS, ſome three, and ſome four growing together.

The NUT called MEHEMBETHENE. It grows upon a ſmall Tree, like a *Haſle*, in *New Spain*. Deſcribed in *Bauhinus*. (*a*) 'Tis ſomewhat Oval, an inch and ½ long, ½ ds over. Divided by a triangular partition into three Cells, for the lodging of ſo many *Kernels*.

(*a*) Lib. 3. c. 36.

The BARBADO-NUT. The Fruit, in truth, of a kind of *Plum-Tree*. (*b*) Yet the Name prevailing, I have placed it here. Deſcribed in *Bauhinus*, *Wormius*, and others by the Name of *Avellana purgatrix Americana ſ. Ben magnum Medicorum vulgò*: (*c*) but not well. 'Tis about the bigneſs of a *Filbert*. The ſhell blackiſh, thin, and brittle, and ſomewhat angular. Within, there is a white ſoft Body, commonly, but falſly ſuppoſed to be the *Kernel*. For this Body is not divided, as are all *Kernels*, into two diſtinct *Lobes*, but is one entire part. Yet ſo as to have ſome little hollowneſs in the middle, capable to lodge a very thin *Filme*. This *Filme*, is the true *Kernel*, conſiſting not only of two large and perfect Leaves (anſwerable to the two

(*b*) Lig. *Hiſt.* of Barb. p. 67.

(*c*) Muſ. Wormian.

Lobes

Lobes in other *Kernels*) but of thoſe parts alſo, which in time become the Trunk and Root of the Tree.

Theſe *Nuts* work ſtrongly both by Vomit and Stool; (*a*) four or five of them a great Doſe. Being eaten toſted, or injected in Clyſters, (*b*) which is the ſafeſt way of uſing them, they are a preſent Remedy in the *Cholick*. One thing, very obſervable, is mention'd by Mr. *Boyle*; (*c*) and ſince, alſo by Mr. *Ligon*: (*d*) and that is, That the *Cathartick Power* of the *Nut*, although ſo great, yet lies only or chiefly in that very thin *Filme* above-ſaid, by me affirmed to be the *Kernel*: for this being taken out, the reſt may be eaten, as any other *Nut*.

(*a*) Bauh. Tom. 1.
(*b*) Monardes.
(*c*) In his Book of the *Origine of Forms*.
(*d*) *Hiſt. of* Barb. p. 68.

A ſmall *Indian Nut*, about an inch long, and about half an inch over; with a pretty hard Rind, and of a ſhining black. Excepting the colour, very like to that deſcribed and figur'd in *Bauhinus*, with the Name of *Nucula Exotica Piſtacij ſpecie*.

The ANGOLA NUT. About ½ of an inch long, and as broad, on one ſide Convex; on the oppoſite, flat; and of a tawny colour. The Shell very hard. The Kernel thin and leafy, and loged within a thick white Cover, as in the *Barbado Nut*.

They purge upward and downward: one of them will give about a dozen Stools.

The Purging-CHESNUT. *Caſtanea purgatrix*. Well deſcribed and figur'd in *Calceolarius*'s *Muſæum*. (*e*) The Figure in *Bauhinus* (who deſcribes (*f*) it by the Name of *Fructus Indicus decuſſatus*) not ſo good. 'Tis a blackiſh Fruit, about an inch and ½ long, almoſt ſquare, and pretty flat. But that which is moſt obſervable, is the double *Sinus* which compaſſeth it both by the length and breadth, as if it had been girded acroſs with a ſtring. And, as it were, a Creſcent on that ſide, by which it grows to the Shell.

(*e*) Sect. 5.
(*f*) Tom. 1. lib. 3. c. 116.

A FRUIT in figure like a *Cheſnut*; but 'tis much leſs, at leaſt, than the common ſort. The outward ſhell of a dusky colour, and thin, yet almoſt as hard as a Pebble; or like that of the Seed of *Gromwell*. Under this lies another of the uſual hardneſs of a Fruit Stone. Within which is included a whitiſh Kernel, of a pleaſant taſt, yet producing a roughneſs in the Throat.

The

The *New England* CHESNUT. In figure, like the common ſort; but a little leſs. The *Cheſnut* was firſt brought from *Sardis* in *Lydia*, (*a*) into *Italy*, *France*, and *England*. In ſome places where they abound, the people make *Bread* (*b*) of them. Heretofore, ſaith *Bruyrinus*, (*c*) they were brought, with the laſt courſe, to the Tables of Princes. In his time, (about an hundred years ſince) the *French* uſed to make and eat *Cheſnut-Pottage*.

(*a*) Mouf. de Re Cib.

(*b*) Bauhin.

(*c*) Lib. de Re Cibar.

A kind of ſmall HORNED NUT. Not ſo big as a little *Nutmeg*, 'tis of a brown colour, and with two pointed knobs at one end, bended outward, like little Horns. Figur'd, as I take it, in *Bauhinus* (*d*) by the Name of *Fructus peregrinus, exiguus orbicularis, cum Sex Nervis.*

(*d*) Lib. 3. c. 104. Fig. 3.

A *Virginian* AKORN within its Cup. There is one like this deſcribed and figur'd in *Bauhinus* out of *Cluſius*, by the Name of *Calix cum Glande incluſo maximus ex Wingandecaow*, i. e. *Virginia*. The Cup is about an inch and ¼ Diametre, and the ſides very thick; compoſed of a great number of Scales, as the Empalement of a *Thiſtle*, and many other Flowers; but here very hard: of an Orbicular Figure, only open at the top about the breadth of ¼ an inch. The *Akorn* it ſelf, little bigger than the common ſort. But their taſt and ſubſtance may be more grateful. For in *Virginia* they are dry'd and preſerved for food. They ſteep, and boil them, and ſo eat them either with Fleſh or Fiſh.

The ANACARDIUM. A fruit ſo called from ſome likeneſs it hath to a little *Heart*; but yet flattiſh, and near as big as a *Garden-Bean*. Deſcribed and figur'd by *Garcias*, *Bauhinus*, *Wormius*, *Moſcardi*, *Beſler*, and others. Being held to the flame of a *Candle*, (*e*) it ſpits Fire, or ſparkling flaſhes of divers colours. Anciently much uſed in Medicines, now obſolete, as *Confectio Anacardina*, &c. *The Oil or Mellaginous* Succus *betwixt the Rind and the Kernel is that which is called* (*f*) Mel Anacardinum. Either the Name of Oil (given it by moſt) or of Honey, muſt be improper. It is of a very Cauſtick and venimous Nature. Being mixed with *Lime*, 'tis uſed for the marking of *Cottons* (*g*) throughout *India*. *The* Indians *pickle the green Fruit*, (*h*) *and eat them as Olives.* When perhaps they contain little or none of that Cauſtick Oil.

(*e*) Bauhinus

(*f*) Muſ. Wormian.

(*g*) Bauh. Tom. 1. 336.

(*h*) Garcias ab Horto.

The

The ACAJU, or Cajous-AKORN. The Fruit, or rather one part of the Fruit of a Tree growing in *Braſile* (where it is called *Acajaiba*) and other *Weſt-Indian* Countries. Chiefly deſcribed and figur'd by *Linſchoten*, (*a*) and *Piſo*. (*b*) The whole Fruit is called *Acaju*. That part next the Branch, by *Piſo*, the *Apple*; but is ſhaped more like a *Pear*. To the top of which grows this part, which he calls the *Akorn*. In ſhape almoſt of an *Hares Kidney*; ſaving that where it grows to the *Apple* 'tis thicker, than at the other end. Of a ſmooth Surface, (here) mixed with aſhen and brown.

(*a*) Lib. 1. c. 52.
(*b*) Lib. 4. c. 6.

Piſo in deſcribing this Fruit contradicts himſelf. *Flori* (ſaith he) *ſuccedit Caſtanea, exqua creſcit Pomum.* A little after, *Pomum hoc, tum Glans ei ſuperinnaſcens*---. Wherein he is falſe to himſelf, but true to Nature; the *Apple* not growing upon or after the *Akorn*, as he had affirmed at firſt; but the *Akorn*, upon the *Apple:* as by one I have now by me, may be ſeen.

Wormius confoundeth the Picture of the *Acaju*, with the Deſcription of the *Anacardium*. As may be ſeen by comparing *Chap.* the 22. and 24. of his *Second Book*.

The *Kernels* being pounded or ground, as *Walnuts*, yield abundance of Oil by expreſſion. That Oil (ſo called) which is diſtinctly contained in the Shell or Rind of the *Akron*, is of a hot biting taſt, and of a kind of cauſtick quality. Uſed by the *Indians* to cure the *Itch, Shingles, Malignant Ulcers*, (*c*) and *St. Anthonys Fire*. (*d*) But the *Kernels* are accounted a great dainty, either eaten raw with Wine and a little Salt; or eſpecially, when they are roaſted, or elſe preſerved in Sugar. For the ſake of this Fruit only, (*e*) the Natives ſometimes go to Wars; the Victors keeping poſſeſſion of the Place, till they have pluck'd the Trees upon it, all clean.

(*c*) Piſo.
(*d*) Linſchoten.
(*e*) Piſo.

By comparing what hath been ſaid hereof, and of the *Anacardium*, together; they ſeem to be two *Species*, under one *Kind*.

The ANOVAI. The Fruit of a Tree, or rather the Name of the Tree it ſelf, growing principally in *Braſile*. *Piſo* diſtinguiſhes a leſſer ſort, from the Greater, or *Aboaguacu*, the Tree whereon this Fruit groweth. Of a triangular Figure, almoſt like a little *Pouch*; about an inch

from corner to corner, very hard, ſmooth, of a *Cheſnut* colour, and now made hollow, the *Kernel* being pick'd out; and a hole cut on the top for that purpoſe. Figur'd in *Bauhinus*, *Piſo*, and others; but more neatly in *Calceolarius*'s *Muſæum*.

The *Kernel*, being eaten, is a ſtrong Poyſon. The Natives of *Braſile* (*a*) eſpecially when they go to Dancing, hang the empty Shells, for Ornament, and the pleaſure of the Noiſe they make, about their Legs: as *Carriers* do Bells about their Horſes Necks. The Wood (*b*) or Boughs being broken, ſtink intollerably; ſomewhat like to *Garlick*.

(*a*) Piſo.

(*b*) Lerius.

The true METHEL; or the VOMITING-NUT commonly ſo call'd. *Nux Vomica Officinarum*. Very well deſcribed (*c*) in *Bauhinus*. Of the ſhape and bigneſs of a midling *Troch*, cover'd with ſhort Hair, of a greeniſh brown. Very hard, and horny, and almoſt ſolid; ſaving that in the middle it incloſes, as the *Barbado-Nut*, a thin *Filme*, which is the true ſeed; whereof the ſaid horny Body, called the *Nut*, is only a great thick Cover.

(*c*) Tom. 1.

This Fruit is, by *Celaſpine*, moſt abſurdly called *Fungus Orientalis*. And *Wormius* (*d*) ſpeaking of it, ſaith, That no Body knows certainly what it is. Whereas, by Diſſection, it plainly appears to be a Fruit.

(*d*) Muſ. l. 2. c. 30.

I find, that *Cordus* goeth thus far, as to obſerve, That within this *Nut* is contained a Rudiment of the future Plant, conſiſting as it were of two little pretty veined Leaves, and a Stalk. But that theſe Leaves were the two *Lobes* or main Body of the Seed, that the Stalk of theſe Leaves, as he calls it, was the Root, and that between theſe Leaves was cooped the Bud, of the future Plant, are things whereof he had not the leaſt notion. Neither did he know (for he ſpeaks of it as a peculiar) that the like conſpicuous foliation, is, as in truth it is, obſervable in the ſeeds of a great many other Plants.

Half a Drachm of this Nut, given to a Dog, in powder, hath kill'd him, ſaith *Bauhinus*, in four hours. About ʒi, hath put a Dog into ſo great Convulſions, that he hath dy'd in leſs than half an hour.

The true VOMITING-NUT. *Nux Methel Officinarum*. So that by a miſtake, the Names of the *Nut* before deſcrib'd, and

and of this, are commonly transposed. An *East-Indian* Fruit described by *Bauhinus* (*a*) with the Name of *Nux peregrina oculata & compressa*: from its flatness, although a little swelling on one side; and from the resemblance which the Seed-Cells, in number five, have to so-many little Eyes.

(*a*) Tom. 1. l. 3. c. 144.

Two Drachms hereof being given to a man in Powder, purgeth strongly, and especially by Vomit, but also by Stool.

CHAP. V.

Of BERRYS, CONES, LOBES, and some other Parts of Trees.

CEDRE-BERRYS. The Tree by some called *Cedrus Phœnicea*; although *Baccifera* were better, thereby to distinguish it from the *Coniferous* or great *Cedre*. Described by *Clusius* under the Name of *Oxycedrus*; from its sharp-pointed Leaves. It grows wild in *France* and *Spain*. The *Berry* bigger than that of the lesser *Juniper*, and of a deep *Purple*; with little knobs about it, and some resemblance of Scales.

Great JUNIPER-BERRYS. *Baccæ Juniperi majoris Clusio*. As big as *Myrtle-Berrys*, round, soft, odorous, and of a redish colour. The lesser *Juniper-Berrys* (and probably these) are of good and various use in Medicine, if they are fresh. One of the best ways of using them, is by extracting a deep and strong body'd Tincture of them with Spirit of Wine, whereof a spoonful, or more or less, to be taken in Wine or other convenient Vehicle.

The BERRYS of the MASTICH-TREE. *Baccæ Lentiscinæ*. About half as big as a midling *Peas*, round, and of a blackish colour. The Tree flourishes in *Italy*, *Spain*, and divers other places.

AROMATICK INDIAN BERRYS. *Cocculi Indi Aromatici*. There are a sort called *Cocci Orientales*, used for the taking of Fishes; but not so round as these: neither, as

I take it, are they *Aromatick*. Of these some are not much bigger than a *Black Pepper-Corn*; others, as big as a *Black Cherry*: all of them of the colour of *Cloves*. They seem to come neareſt to that Fruit commonly called *Jamaican-Pepper*.

A CONE of the CEDRE of Mount *Lebanon*. *Conus Cedri magnæ ſ. Libani*. Given by *Abraham Hill* Eſq; Deſcribed and figur'd by *Bauhinus*. (*a*) Yet with the Scales repreſented by far too narrow or not enough expanded: in which *Beſler* is more exact. 'Tis about three inches and ½ long, and two and ½ over; of an Oval Figure, ſaving that the top is flat. Of this Tree it is affirmed by *Melchior Luſſy*, (*b*) That upon the ſaid Mount (on which he hath ſeen them grow) there are ſome ſo thick, that ſix or ſeven men can hardly encompaſs one of them with their Arms ſtretched out: which may be ſuppoſed above half as thick again, as the thickeſt *Oak* in *England*.

(*a*) Lib. 9. c. 15.

(*b*) In ſuæ Peregrinat. Hieroſolym. cap. 13.

A CONE of the MALE-FIRR. *Conus Abietis maris ſ. Piceæ Latinorum*. Deſcribed by *Bauhinus*. It grows abundantly in *Burgundy*, and the *Alps*; ſometimes in height (*c*) above a hundred and thirty feet. The *Cone* almoſt Cylindrical, about eight inches long. To each Scale underneath, two winged Seeds or little Kernels are adjoyned. Curiouſly pictur'd by *Beſler*.

(*c*) Simlerus.

A little Twin PINE-APPLE. *Pini Conus gemellus*.

Several CONES of the WILD-PINE. Of this Tree they make great ſtore of *Pitch* in *Burgundy*.

A CYPRESS-NUT. *Strobilus Cupreſſinus*. By *Cæſalpine* not ſo properly called a *Cone*, becauſe of its Figure, which is rather Orbicular. Yet any *Cone* is appoſitely called *Strobilus*, from the winding order of the Scales. 'Tis not much bigger than a large *Nutmeg*. The Tree grows abundantly in *France* and *Italy*, and there bears *Nuts*.

CAMPHIRE. The Gum of a Tree about as big as the *Hazle*; and probably of the Coniferous kind. Formerly thought a Mineral; and by *Kentman* (*d*) called *Bitumen Odoratum*. There are two ſorts hereof. One of *China*, which is carried in Cakes and Balls, into all Places, in great abundance. The other of *Borneo*, which is far the beſt.

(*d*) Nomenclat.

A LONG FLAT LOBE. *Lobus Bugloſſoideus*, ſo I call it for its being ſomewhat like a *Cows* Tongue. Deſcribed

ſcribed by *Bauhinus* (*a*) with the Name of *Ceratium Monococcon Indicum.* But this here, is thrice as big as his. 'Tis ten inches long; in the middle, 4 ½ over; both ends ſomewhat Oval. Very flat, ſcarce above ½ an inch where thickeſt; the Belly level, the Back Convex and with a blunt Ridge. Of a dull ruſſet, and all over rough with a great number of ſmall Knobs. Its whole Cavity is filled up with one ſingle Fruit; which *Bauhinus* not well examining, only calls it *Fructum ex fungoſa quadam materie compactum.* Whereas it conſiſteth chiefly of a wonderful Congeries of white *Fibers*; not produced by the length, or breadth, but the thickneſs of the Fruit, both ways, as the Teeth in a double Comb. The ſpaces betwixt which are filled up with duſt or powder; which was originally, the ſappy *Parenchyma* or Fleſh of the Fruit. (*a*) Lib. 12. c. 3.

Another LOBE of the ſame *Species*, but much leſs.

A THICK LOBE from *Virginea. Lobus ex Wingandecaow.* Not ill deſcrib'd by *Cluſius.* This here is not much above three inches and ½ long, an inch and ½ broad, and an inch thick. *Unciam denſus*, ſaith *Cluſius* improperly; that word not expreſſing the Dimention, but cloſeneſs or little poroſity of a Body. There are ſome *Lobes*, ſaith *Laet* (*b*) of the ſame *Species*, that are two or three times the bigneſs of This. (*b*) Lib. 3. c. 22.

A ſhort FIBROUS LOBE. I meet with the Deſcription hereof no where; nor the Figure, excepting in *Beſler*, (*c*) by the Name of *Fructus reticulato corio.* 'Tis almoſt three inches long, an inch and ½ broad, near an inch thick. At one edge it is cut through by the length; where, if you try to ſpread the ſides open, it reſiſts, from its great fibroſity, like a thick ſturdy piece of tann'd Leather. Lined within with a moſt ſmooth and thin Membrane. The Cavity all over even, or without any *Sepiment:* ſhewing it to have been fill'd up with only one large Fruit. (*c*) Tab. 1.

A Great SCALLOP'D LOBE; or rather part of it. Of kin to that deſcribed and figur'd in *Bauhinus* (*d*) by the Name of *Lobus Braſilianus ingens Siliquæ Acaciæ formâ.* The whole *Lobe*, is above two feet long; where broadeſt, near four inches, flat; and compoſed of ſix or ſeven Joynts, as *Bauhinus* calls them; rather Cells, ſo rounded or ſcallop'd on both Edges, as to look like ſo many (*d*) Lib. 12. c. 8.

Joynts,

Joynts. In this part of the *Lobe*, are only three. In each of them is contained a great NUT round and flat, and of a ſhining Bay; an inch and ½ Diametre, and half an inch thick. In the *Lobe Bauhinus* deſcribes they were not ripe.

A round FRUIT (probably) of a ſort of SCALLOP'D LOBE. 'Tis almoſt of the colour, bigneſs, and ſhape of the former; ſaving that the ſides are not ſo flat, but both of them a little Convex.

ANOTHER, almoſt of the Figure of a *Cat's* Kidney; having at the edge a ſhallow *Sinus* or depreſſure where it was faſten'd to the *Lobe*. Deſcribed in *Bauhinus* (*a*) by the Name of *Phaſeolus Novi Orbis, Cordis figurâ.* But, as is moſt likely, very improperly; This being ſo like the Fruit of the Scallop'd *Lobe* above deſcrib'd, which he himſelf makes the Fruit of a Tree; Neither doth the Kernels, its being naturally cleft into two halfs, (*ut ſunt omnia Phaſeolacea*, as *Cluſius* ſpeaks) argue any thing. For that is not peculiar to the *Phaſeolous* kind; but all other Seeds whatſoever, excepting Corn and that Kindred, are naturally cleft (*b*) into two or more *Lobes.* This Fruit is ſaid to be *Cathartick:* and therefore 'tis probable, the other *Species* are ſo likewiſe.

(*a*) Lib. 17. c. 1. p. 276.

(*b*) See the Authors firſt Book *Of Plants*, Chap. 1.

A long FRUIT of another LOBE. Deſcribed and figur'd in ſome ſort in *Bauhinus* (*c*) by the Name of *Faba Americana purgatrix longior.* 'Tis two inches and ½ long, an inch and ½ broad, flat, the edges thick, of an Oval ſhape, and dusky aſh-colour. Where it was faſten'd to the *Lobe*, not depreſſed, as in the former, but a little produc'd.

(*c*) Lib. 17. p. 277.

A broad FRUIT of another LOBE. Probably deſcribed and figur'd in *Bauhinus* (*d*) by the Name of *Lobus Membranaceus planus niger.* If ſo, he ſhould not have called it a *Lobe*, but the Fruit contained in it. 'Tis about an inch and ½ long, and almoſt as broad, flat, and very thin, and of a blackiſh brown. One of the edges ſharp, the oppoſite ſomewhat thick.

(*d*) Lib. 17. p. 278.

A ſquare FRUIT of an other LOBE. I find it no where. 'Tis almoſt an inch and ½ long; at one end, an inch and ½ broad, at the other, an inch; above ½ an inch thick in the middle, where it ſwells up on both ſides. Two of the edges oppoſite, Convex; the other two, Concave. Smooth, and of a blackiſh Bay.

So

So many of the above-said Fruits, as are described by *Bauhinus*, or other Authors, are number'd amongst Herbs, as if a sort of *Beans*. But by comparing them all together, and with the Fruit of the Scallop'd *Lobe*; they appear to have been all included in the *Lobes* of several sorts of Trees.

The COD of the wild LOCUST of *Virginia*. *Arbor. Lanif. Species*. Described by (*a*) *Ligon*. The Cod somewhat hard and brittle. In length, ½ a foot; sharp at both ends, in the middle an inch and ½ over, Convex on the back, the Belly plain. Fill'd with white *Down*, not like *Cotton*, but that of the *Pappous* kind of Plants, appendent originally to the end of the Seed: but the Seeds are here wanting.

(*a*) *Hist. of* Barb.

A sort of SILK COTTON with the SEEDS. Given by *Th. Povey* Esq;. They seem to have been taken out of the Cod of a Tree which grows about *Bantam*; described in *Bauhinus* (*b*) out of *Clusius*, by the Name of *Lanifera Arbor peregrina*. That this *Cotton* is not so white as that of *Clusius*, may proceed from Age, or some difference in the Tree. 'Tis rather of the colour of raw *Silk*, and hath a gloss like it; extream soft and fine, but not so long as *Cotton wooll*; and therefore unfit for Spinning.

(*b*) Lib. 3. c. 154.

Of this *Cotton* I suppose the *Chineses* make their soft thin Paper. And it is probable, That many of our *English* Plants yield a *Down*, which would be altogether as fit for the same purpose. 'Tis also used, by the *Indians*, instead of Feathers, for the stuffing of Pillows.

SECT.

SECT. II.

Of SHRUBS and ARBORESCENT Plants.

CHAP. I.

Of SHRUBS, chiefly.

THE DWARF-OAK. The Leaves ſhaped like thoſe of the *Ilex*, but not prickly. It differs not in the hardneſs of the Wood or Boughs, from the common *Oak*; nor in the ſhape of the Acorns it bears; ſome whereof are alſo here preſerved. Yet is it not above a yard in height. Sent hither by Mr. *Winthrop*, not long ſince Governour of *Connecticut*. In the Inland Parts of *New England* grow whole Forreſts of this *Oak*.

The SEED of the Male HOLLY-ROSE, called *Ciſtus, mas*; and the firſt in number, according to *Cluſius*. 'Tis included in a ſhelly Cover of a Pentagonal Figure; and is it ſelf alſo angular, about the bigneſs of the Seed of *Patience*, or *Lapathum Sativum*.

The SEED of the ſecond Male CISTUS.

The SEED of the Female CISTUS. The ſhell of this, not ſo big, nor ſo ſharp at top, as of the Male; and both this and the Seed it ſelf blacker. It may be, becauſe older.

Upon the Root of the *Ciſtus* grows a *Paraſitical* Plant, called *HYPOCISTIS:* the Juyce whereof, is commonly condenſed, and ſo formed, like that of *Liquiriſh*, into Balls, and ſold as a Drug.

The SEED of the CISTUS LEDON; being the firſt in order according to *Cluſius*.

The SEED of the fourth CISTUS LEDON.

Off of the *Ciſtus Ledon* is gathered, the Drug called *LADANUM:* which is a kind of Gummous Exudation, chiefly found upon the Leaves. 'Tis gather'd (*a*) in the *Dog-Days*, and when the Sun ſhines hotteſt, and therefore not without intollerable labour. Theſe Shrubs grow in *Cyprus*,

(*a*) *Hereof ſee* Bellenius.

Cyprus, Creet, France, Spain, &c. In *Creet*, the Principal Place for *Ladanum* is at the Foot of Mount *Ida*.

The BERRYS of the *Indian* JASEMIN with a yellow and moſt fragrant Flower. The Oil of the *Ben Nut* being impregnated with the odor or ſpirit; eſpecially of theſe yellow Flowers, and ſo mixed with *Pomatum*, is that which is commonly called *Jaſemin Buttyr*.

The FRUIT of the NAMBUGUACU, a Shrub ſo called by the Natives of *Braſile*. Deſcribed by *Piſo* and others with the Name of *Ricinus Americanus*; & *Palma Chriſti*. Curiouſly figur'd by *Tobias Aldinus*. (*a*) Where note, That in the ſaid Author, through ſome inadvertency, the Titles of this Plant and of the *Spinacia Fragifera* are tranſpos'd. The Seeds are of the bigneſs of a *Horſe-Bean*, ſomewhat long, ſmooth and gloſſy, aſh-colour'd and mixed with black ſpecks. The Kernel white and very oily. Given by Dr. *Wilkins* late Biſhop of *Cheſter*, and to him, by Captain *Hinde*.

(*a*) Deſcr. Horti Farneſiani.

The Oil expreſſed out of theſe Kernels, is not only uſed in *Lamps*, but by the Natives of *Braſile* againſt all cold Diſtempers (*b*) both outward and inward. Six or ſeven of the Kernels taken inwardly, purge and vomit with great vehemency. But a Tincture extracted out of them, is well propoſed by *Piſo* (*c*) as the ſafer Medicine. Although the Kernels themſelves work ſo ſtrongly; yet is it affirmed by Mr. *Stubs*, (*d*) That the Oil which is expreſſed out of them, hath no Phyſical (*Cathartick*) Operation, although a ſpoonful of it be taken down at once, or three put up in a *Clyſter*. The Leaves, ſaith the ſame Perſon, (*e*) are the only Remedy, which the *Indians* uſe for the Headach. Being ſteeped in Water or Vinegar, they are daily experienced to cure the *Shingles* (*f*) and other like Affections.

(*b*) Piſon. Hiſt. l. 4. c. 31.

(*c*) Ibid.

(*d*) Phil. *Tranſ. N.* 36.

(*e*) Ibid.

(*f*) Piſo, ubi ſupra.

The FRUIT of the URUCU, a Shrub growing in *Braſile*. Deſcribed by *Cluſius* and *Piſo*. *Bauhinus* ventures to call it *Bixam Oviedi*; although *Cluſius* only ſaith it is like it. In ſhape and bigneſs, ſaith *Wormius*, like an *Aurange*-Tree. This Fruit is about two inches long, an inch and ½ over; compoſed of two Concave *Valves*; below, Oval; above, Conich and ſharp-pointed; beſet all over with briſly hairs ¼ of an inch long. Within their Concaves, thirty or more little Grains, figur'd like a *Pear*, and originally of a curious bright red.

The Shrub grows wild: Yet the Natives cultivate it in *Gardens* with great Care and Induſtry. For with the ſcarlet *Grains* aboveſaid, they paint and adorn themſelves. The Tincture alſo which they extract from them, called *Orellana*, they ſell to the *Portuges*, and others which Trade with them. They likewiſe beat and make them up into *Balls* and *Tablets*, which they ſend into all parts of *Europe*. (*a*) The ſame *Grains* are ſometimes mixed with *Chacalet*, for the grateful colour and taſt which they give to it. (*b*) Of the Barque of the Tree, they make Ropes. (*c*)

(*a*) Piſo.
(*b*) Ximines
(*c*) Wormius

A ſmall Grain, in colour and ſhape not much unlike that above-ſaid, and probably belonging to a *Species* of the ſame Kind, is brought hither from the *Barbados* by the Name of *NOTTA*. Yet uſed by *Deyers*, made up in Cakes, for a Limon-colour. With whom, nothing is more uſual, than to alter the colours of their Ingredients, by the admixture of Salts, and other ways.

BEIDEL OSSAR, *i. e.* The Egg or Cod of the *Oſſar*, a kind of *Syriac Dogs-Bane* ſo called; *Beid*, being the *Arabick* word (*d*) for an Egg. Accurately deſcribed by *Honor. Bellus*. And by *Wormius* very well figur'd. Yet *Wormius* in his Deſcription, which he borrows of *Alpinus*, (with his Author) miſtakes, in giving the Name to the Plant, which belongs only to this Egg or Cod. 'Tis ſoft or skinny, with ſome aſperity. About four inches long, at the upper end ſharp, and (now) hooked backward. Filled with a company of ſmall flat Seeds, encloſed in a fine and white *Down*.

(*d*) Honorius Bellus.

This Shrub grows near *Alexandria*, upon a Branch or Arm of *Nilus* (*e*) called *Calig*. One Plant, at an Inciſion of the Barque, will yield no leſs than four pounds of Milk. A Drachm and half of this Milk, (*f*) will purge a Man to Death. But uſed outwardly, is an excellent Remedy for the *Itch*. (*g*)

(*e*) Wormius.
(*f*) Hon. Bellus.
(*g*) Muſ. Calceol.

A COD, with the Wooll and Seeds, of the COTTON SHRUB; called *Xylon Herbaceum*. Said (*h*) to have grown heretofore only in *Ægypt*; but now is ſown, and grows abundantly in *Creet*, *Sicily*, and divers other Places in *Europe*. The Cod is trivalvous, almoſt like to that of a *Tulip*, or the *Peony*. Upon the Seeds which are black Oval, and near as big as a *Horſe-Bean*, hang the greateſt part of the

(*h*) Lacuna.

the Wooll. They are compoſed chiefly of two long and thin Leaves, admirably rowled up into an Oval Figure; as I may have occaſion elſe where to repreſent. They are ſometimes an Ingredient in Peĉtoral Medicines. Some *Cotton Wooll*, though of its ſelf, pure white; yet contrary to *Flax* and *Hemp*, looſeth of its whiteneſs by being waſhed. But whether it be that of this Shrub, or that of the Cotton-Tree; or whether, according to the Climate, &c. there is not good and bad of both, I determine not.

SAVINE-BERRYS. About as big as thoſe of the common *Juniper*, and of a blackiſh blew. The little Sprigs, (of which there are ſome here) are ſquare; and not prickly, as thoſe of the other *Species*. The Shrub, called *Sabina Baccifera*, and deſcribed by *Bellonius*, grows plentifully in ſome places in *Aſia*.

The ROSE of JERICO, or CHRISTMAS-ROSE. *Roſa Hierichuntina*. Either an ignorant, or a crafty Name, agreeing neither to the place, nor nature of the Plant. For about *Jericho* 'tis no where found, (*a*) but in *Arabia*, upon the ſhore of the *Red-Sea*. A woody Shrub, but grows not above a foot or there about in height. Originally of an Aromatick ſmell. The Leaves of this are ſoft, but the Flowers remain, ſomewhat leſs than thoſe of *Cumfrey*, and ſeem to conſiſt only of two Leaves. All the Branches are cloſed up together, with ſome reſemblance to the Umbel of the Plant called *Bees-Neſt*, or ſome others of that kind.

(*a*) Belloni-us.

Being ſet in Water, its ſeveral Branches will gradually be expanded. Which ſome Impoſters knowing, chooſe *Chriſtmas-Eve* for the Experiment, and ſo make people believe that it only opens at that time.

ANOTHER of the ſame leſs globous, or with the Branches more erect.

Part of an INDIAN PLANT, in ſhape like a *Wooll-Combe*; being compoſed of a number of ſtrait black Teeth, very ſharp, near as thick as a *Cock-Spur*, and moſt of them two inches long, naturally ſet upright, as it were, in a wooden-ſocket.

CHAP. II.

Of ARBORESCENT Plants.

A SPIKE of LONG PEPPER; a ſort of *Climber* or *Winder*, after the manner of *Hops*, and other like Plants. Not much differing from the Round, ſaving in the Spike. It grows in *Malabar*, *Java*, and *Sumatra*; but eſpecially in *Bengala*, where it is called *Pimpilim*. See *Piſo* hereof. (*a*)

(*a*) Mantiſſæ Aromat. c. 8.

ÆTHYOPIAN-PEPPER, or rather the Coded-Fruit hereof. Well deſcribed by *Bauhinus*. (*b*) By *Beſler* curiouſly figur'd. Here, upon one Stalk, hang about 15 Cods, moſt of them three inches long, thick as a *Gooſe-Quill*, fibrous, and of the colour of Cloves; containing ten or twelve blackiſh and longiſh Seeds, each in a Cell by it ſelf; not half ſo big as the leaſt of *French-Beans*, which *Bauhinus* affirmeth them to equal, but more like the Seed of the *Laburnum majus*. Neither, according to the ſame Author, hath it the taſt of *black Pepper*, but rather of the *Clove*; *viz.* not much biting, yet very *Aromatick*, eſpecially being well heated at a fire.

(*b*) Lib. 15. c. 46.

POYSON-BERRYS. So they are inſcrib'd. The fruit of a Plant growing in the *Burmudas*, ſomewhat like to *Ivy*. They grow in Bunches, almoſt as thoſe of *Round Pepper*, and are much of the ſame bigneſs, almoſt of a ſtony hardneſs, yet incloſed in a thin brittle and pellucid Cover. Whether they were gather'd full ripe, appears not.

The COD of a *Weſt-Indian* Plant, called TAXOCO-QUAMOCHIT. This Cod, but not the Plant, is deſcribed and figur'd in *Bauhinus*. (*c*) 'Tis five inches long, ⅓ an inch broad, and ſharp-pointed. Divided into twenty or four and twenty diſtinct Cells, made by ſo many thin Membranes, for the lodging of as many Seeds apart, of a dark Bay, and ſomewhat like thoſe of Broom.

(*c*) Tom. 1. cap. 11.

The COD of a KIDNEY-BEAN of *Braſile*. (*d*) I find it not deſcribed. 'Tis Divided into two Cells, by a Partition ⅓ an inch thick. Each of the Cells near two inches and ½ long, and as broad, ſwelling out on both ſides the *Lobe*, which outwardly is very rough and tawny, hath two furrows along the

(*d*) Lobus Fabæ Braſilianæ Nephroideæ.

the Belly, the Back much bowed, and both of them about ½ an inch thick.

The BEAN belonging to the ſaid COD. *Bauhinus* ſeems to deſcribe and picture (*a*) under the Title of *Phaſiolus peregrinus magnus, colore Caſtaneæ, cum magno hilo, lævis.* About half as big again as a *Cheſnut*, flatiſh, and having a broad, blackiſh Seat, reaching above half its compaſs. Whereby it appears to be of the *Bean*-kind, and no *Phaſiolus*; the Seat whereof, like that of the *Lupine*, is always round. Of theſe Beans, are here preſerved both black and bay. (*a*) Tom. 2. Cap. 17.

The COD of another *Braſilian* KIDNEY-BEAN, with the Beans encloſed. It differs from the former in being black, and in the number of its Cells, which are three. The Bean is ſomewhat Oval, and wrinkled, and having a Seat which reaches almoſt its whole compaſs. See a good Figure hereof in *Calceolarius*'s *Muſæum.*

HERCULES'S CLUB. *Rubi facie ſenticoſa Planta.* A tall woody Plant, deſcribed in ſome ſort, and ſo called, by *Lobelius.* Near three yards long; how much longer, is uncertain, being cut off at both ends; almoſt ſeven inches in compaſs, ſtrait, and but very little taper'd. Originally, had two or three Branches, here cut off. Encompaſſed with a great many pointed Studs, (whence its Name) thick ſet, and ſometimes growing double, flatiſh, and about an inch broad by the length of the *Club*, after the figure of the Thorns of the *Rasberry-Buſh.* Like to which they are alſo meerly cortical, having not one fiber of wood in them, whereby they break like *Cork*, but are not ſo ſoft. The wood is as hard, as that of *Holly*, and the *Pith* but ſmall. So that notwithſtanding the ſimilitude of their Thorns, yet is it a different Plant from the *Rubus.*

The STALK of a Plant like a NET. 'Tis only the woody part of it, the Barque and Pith being both taken away. 'Tis above an Eln long; likely, when entire, much longer, for now 'tis broken at both ends. Almoſt ſix inches about. The ſpaces between the reticulated portions of Wood, are about ¼ or ⅓ of an inch over, and from two inches to four, in length. *Prince Maurice*, looking upon This as a Curioſity, upon his Return from *Braſile*, brought it thence with him.

This

This being, as is likely, an Annual Plant, and therefore having a large Pith, and very open *Net-work*, is a conſpicuous example of the like *Work* (though more or leſs open, yet) obſervable in the woody part of all other Plants whatſoever. (*a*)

(*a*) See the Author's Anatomy *Of Plants*, Ch. 2. & 3.

Several SPIKES or Heads of MAYZ or *Indian*-Wheat; with the Grains, as is not unuſual, of three or four colours. The Deſcription of the Plant, with a large Account of its Culture, and Uſe, were communicated by Mr. *Winthrop* ſometime ſince Governour of *Connecticut* in *New England*: and by me lately publiſhed, in a ſuccinct but full Relation, (*b*) with ſome alteration of the Method. The Plant grows to the height of ſix or eight feet; and is joynted like a Cane. 'Tis alſo full of a ſweet juyce like that of the Sugar-Cane. On the Spike grow ſeveral ſtrong thick Husks, which, before it is ripe, ſhut it cloſe up round about. Thereby defending it, not only from all Weathers, but alſo the Ravine of Birds, to which, the Corn, while tender, is a ſweet and enticing food.

(*b*) Phil. *Tranſ.* N. 142

The Stalks of this Corn, are good Fodder for Cattel. As are alſo the Husks about the Spike. The *Indian* Women ſlit the Husks, and weave them into Baskets of ſeveral faſhions. Of the Juyce above-ſaid may be made a Syrup as ſweet as Sugar: which probably, may alſo be made of it, by the uſual method. The *Indians* eat the ripe Corn either boil'd; or more uſually parched; of it ſelf, or, as Bread, with Fleſh. The green Corn alſo, which, as is ſaid, hath a ſweet Taſt, being boil'd, dry'd, and kept in Bags, and when they eat it, boil'd again, they account a principal Diſh. The *Engliſh*, of the ripe Corn, make very good Bread: but it muſt be mixed nothing near ſo ſtiff as our Wheat-Meal. But the beſt ſort of Food made hereof, they call *Samp*. Having water'd, and ground it to the bigneſs of Rice, and winnow'd or ſifted the Hulls from it, they boil it tender, and ſo with Milk, or with Butyr and Sugar, make it a very pleaſant Diſh. 'Twas often preſcribed by Dr. *Wilſon* to his Patients here in *London*. The *Indians* that live much upon it, ſeldom troubled with the *Stone*. The *Engliſh* alſo make very good *Beer*, both of the *Bread*, and of the *Malt*, made of this Corn. But it will not make good *Malt* the ordinary way, becauſe, not without ſprouting both

both ways to a conſiderable length: whereby it is ſo matted before it is fully malted, that it cannot be opened without breaking the *Come*. To avoid which, they pare off a Turff about three inches thick, and laying the Corn all over the bare ground, cover it with the Turff, till the Plot looks like a green Field, at which time, the Corn is well malted. Then taking it up in matted pieces, they dry it on a Kiln, or in the Sun.

The SPIKE or HEAD of the ÆGYPTIAN MAUZE. Given by Sig^r. *Boccone* (formerly *Botanick* to the Great Duke of *Tuskany*) who brought it with him from *Sicily*, where it is frequently nurſed in *Gardens*. The *Figgs* (as *Acoſta* calls them) here grow upon it in ſeveral Bunches, nine or ten in a Bunch; two inches and ½ long, and as thick as the middle Finger of a labouring man; being now ſhrunk up, and perhaps alſo dwarfed by the place of its growth.

This Plant, as it grows in *Ægypt* and the *Indies*, is deſcribed by *Thevetus*, with the Title above; by *Oviedus*, under the Name of *Platanus*, abſurdly received by ſome, as himſelf noteth; by *Piſo*, who, with the Natives of *Braſile*, calls it *Pacoeira*; by *Acoſta*, with the Name of *Muſa*, from the *Arabian Mous*. It grows three or four yards in height, and ½ of a yard (*a*) in compaſs. Yet this Trunk, ſo great, is (*b*) but annual. It hath Leaves above a yard and ½ long, and more than ½ a yard broad. The *Figs* grow toward the top of the Trunk, near the ſhape and bigneſs of a midling *Cucumer*, ſometimes one or two (*c*) hundred of them. Of a ſoft melting ſubſtance, and a ſweet and moſt delicious Taſt. In *Braſile*, either eaten by themſelves, or with their *Mandioca-Flower*; boiled, or fryed (*d*) with Butyr.

(*a*) Thevetus.
(*b*) Oviedus.
(*c*) Acoſta.
(*d*) Piſo.

Part of a ſort of MAMBU, a great *Indian Cane*. In *Bauhinus*'s *Pinax* called *Arundo Arbor*. Deſcribed by *Wormius*. But whereas his was black, This is of a ſtraw-colour: and much ſmaller, *ſc.* about ſeven inches in compaſs. Some of them grow nine or ten yards high. 'Tis hollow, quite through, excepting, that at every Joynt, 'tis cloſed up with a tranſverſe Plate or Floor. Neceſſary, for the adding ſtrength and ſturdineſs proportionable to ſo great a height.

It

It grows in *Malabar*, eſpecially about *Coromandel*, near the Sea-ſide. In the ſeveral hollows is found a curdled juyce, whereof the Natives make a ſort of Sugar, by the *Æthyopians* called *Tabaxyr*, much valued by the *Arabians*, becauſe of the Medicinal Virtue, (*a*) they at leaſt ſuppoſe it to have. In *Bantam*, the *Cane* is much uſed for the building of their Houſes.

(*a*) Wormius *out of* Garſias *and others.*

The SUGAR-CANE. *Arundo Saccharina.* In *Braſile* called *Tacomaxeé*; to which place (*b*) it was firſt tranſplanted from the *Fortunate Iſlands*. A great *Reed* about ſeven or eight feet high, with many Joynts, one at about every ½ foot, and a large cloſe *Pith*; out of which, the greateſt part of the Juyce, whereof the Sugar is made, is expreſſed. See the Deſcription hereof at large in *Piſo* (*c*) and *Ligon*; (*d*) together with the way of Planting, gathering and preſſing the ſame; and of ordering the expreſſed Juyce, for the making of ſeveral ſorts of *Sugar*, and *Brandy:* as alſo the Engines, and contrivance of Veſſels for the ſame purpoſes.

(*b*) Piſo, l. 4. c. 1.

(*c*) Hiſt. l. 4. c. 1.

(*d*) *Hiſt. of* Barb. p. 86. &c.

The principal knack, without which all their labour were in vain, is in making the Juyce, when ſufficiently boil'd, to *kerne* or *granulate*. Which is done, by adding to it, a ſmall proportion of *Lye* made with (vegetable) *Aſhes:* without which, it would never come to any thing by boiling, but a Syrup, or an Extract. But a little of that *Fixed Salt*, ſerves, it ſeems, to *Shackle* or *Cryſtallize* (which is a degree of *Fixation*) a very great quantity of the *Eſſential Salt* of this *Plant*.

In refining the Sugar, the firſt degree of pureneſs, is effected only by permitting the *Moloſſes* to drain away through a hole at the bottom of the *Sugar-Pots*; the *Pots* being, all the time, open at the top. The ſecond degree is procur'd, by covering the *Pots* at the top with *Clay*. The reaſon whereof is, for that the *Aer* is hereby kept out from the *Sugar*, which, in the open *Pots*, it hardens, before it hath full time to refine by ſeparation. And therefore, whereas the firſt way requires but one Month, this reqiures four. The fineſt *Sugar* of all, (*e*) is made with *Lime-Water* (and ſometimes Urine) and *Whites of Eggs*. *Sugar-Candy* (*Saccharum cantum*, becauſe it ſhoots into angular Figures) by placing a great many ſlender ſticks acroſs a Veſſel of liquid *Sugar*, for it to ſhoot upon. That

(*e*) *See* Barl. de Reb. Braſil. p. 119. &c.

That which *Dioſcorides* calls Σάκχαρι; *Galen*, *Sacchar*; & *Archigenes*, *Sal Indum*; is the ſame thing for ſubſtance, ſaith *Matthiolus*, with that we call *Sugar*: ſaving that, whereas this is made of the Juyce expreſſed and boil'd; that of the Ancients, as is likely, was only the *Tears*; which burſting out of the *Cane*, as the *Gums* or *Milks* of *Plants* are uſed to do, were thereupon harden'd into a pure *white Sugar*. That the Sugar of the Ancients was the ſimple Concreted Juyce of a *Cane*, He well conjectures: and what is above-ſaid of the *Mambu*, may argue as much. But that it was the Juyce or Tears of the *Sugar-Cane*, he proves not. Nor, I think, could be, if, as is ſuppoſed, it was, like *Salt*, friable, and hard. And in affirming our *Sugar* to be the ſame for ſubſtance with that of the Ancients, he much miſtakes; that being the ſimple Juyce of the *Cane*, this a compounded Thing, always mixed either with the *Salt of Lime*, or of *Aſhes*; ſometimes of Animals too.

The COD and SEED of the true Greater CARDAMUM, figur'd by *Beſler*, in *Calceolarius*'s *Muſæum*, and others with the Name of the *Middle Cardamum*. The Plant it ſelf, both Leſſer, and Greater, deſcribed and figur'd by *Bontius*; (*a*) who glories himſelf the firſt that hath done it will. The Leſſer grows about a yard high, with a joynted Stalk, like a *Reed*. But bears its Spikes, with the Flower and Seed, near the Root. The Greater grows two yards in height, the Stalk not joynted, with a Spike of Flowers at the top, ſomewhat like to that of a *Jacynth*. Both of them plentiful in *Java*.

(*a*) Hiſt. l. 6. c. 36.

The *Indians* ſeaſon all their boil'd Meats herewith, preferring it before other Spices, as not being biting.

That which is commonly received amongſt *Botanicks* for the Greater kind, from the fiery hot Taſt of its Seeds (called *Grana Paradiſi*) ſeems to be no *Cardamum*, but of another Tribe.

The PAPYR-REED of *Nile*. *Papyrus Nilotica*. By the *Ægyptians* called *Berd*. Given by Sig^r. *Boccone*, who brought it out of *Sicily*, where it grew. Deſcribed and figur'd in *Bauhinus*; (*b*) who with *Geſner*, makes it a *Species* of *Cyperus*, to which (*in Leaf and Stalk*) it is like; *but hath a more compacted Head*. This ſeems to have been no tall Plant: but upon its Native Bed, *ſc.* near the Banks of the River

(*b*) Lib. 18. c. 196.

Nile, it grows above three yards high, (as high, ſaith *Alpinus*, above the Water) and abundantly. Which *Moſes*'s Mother knowing, choſe well, to lay her *Babe* in *Pharaohs* Daughter's way, yet, in the mean time, under good ſhelter from the ſcorching Sun.

Both the Barques and Leaves of ſome Plants, are uſed for writing upon by Impreſſion. But this Plant hath its Name, not from the uſe either of its Leaves or Barque, but of its Pith; whereof, being beaten into a Pulp, the Pulp ſpread into thin Leaves, and ſeveral of thoſe Leaves clapt together, *Papyr* fit to write upon was formerly made, as now it is of Rags. It was alſo uſed by *Chirurgions*, as ſometimes *Spong*, or *Elder-Pith* is now, for the dilating of *Fiſtula's*, and imbibing the ſanious matter of ill-natur'd Ulcers.

Another *Head* of the ſame *Plant*.

SECT. III.

Of HERBS.

CHAP. I.

Of STALKS and ROOTS.

THE BULBIFEROUS GARLICK. Given by Dr. *Daniel Whiſtler*. So called, becauſe in the place of Seed, it bears Bulbs at the top of the Stalk. Deſcribed by *Bauhinus* (*a*) with the Name of *Allium proliferum*: although *Bulbiferum*, be more appoſite; for that every *Plant* which bears Seed, is proliferous; the Seed being *Plantæ Proles*, or the *Fœtus* of a *Plant*. The *Bulbs* (not fully deſcribed) are about twenty; in a round Head or Cluſter as big as a *Nutmeg*; each *Bulb* equal to a midling *Peas*; conſiſteth of four or five ſhells; of which, the outmoſt is ſhrunk up to a dry Skin, on one ſide, of a purpliſh colour; the inmoſt incloſeth that little *Particle* which in time becomes another bulbiferous Stalk, with a Root.

(*a*) Lib. 19. c. 3.

The

The STRINGY BRITHWOORT. *Ariſtolochia Polyrrhizos.* So called in diſtinction from the other kinds with tuberous Roots. Deſcribed (*a*) by *Bauhinus*. It grows in *France* and *Spain*; but this came from *Virginia*. Of all the *Species* the moſt *Aromatick*, as by taſting the Roots, although now very old, may eaſily be perceiv'd. (*a*) Lib. 32. c. 8.

The upright PENYROYAL. *Pulegium erectum, Virginianum.* It hath a Leaf almoſt as large as that of the *Pulegium montanum.* Yet ſmells rather like *Thyme.* Which is all the deſcription it admits, now wither'd.

A ſort of SNAKEWEED, growing near the River in *Connecticut.* So called, becauſe the Root is uſed for the biting of the *Rattle-Snake.* The Roots, eſpecially powder'd, are of a fragrant ſmell, and very *Aromatick* taſt. Yet ſeems a different *Plant* from the *Serpentaria* of the Shops, as having a Leaf deeply jagg'd or ſcallop'd, as that of *Ladies-Mantle.*

The ROOTS of a ſort of *Aſarum*, found about *Staniford* in the Weſtern parts of *New England.* It ſeems the ſame with the *Serpentaria* of the Shops, *i.e.* the *Virginian Snakeweed.* A *Plant* of excellent uſe in ſome Feavers.

The ROOT NINZIN, corruptly called *Genſing.* Taken from a parcel ſent over by a *Chineſe* Phyſitian, and given by Dr. *Andrew Clench.* Deſcribed (*b*) by *Guliel. Piſo.* Almoſt of the colour of a *Parſnep*, with ſomething of a yellowiſh hue. No bigger than a little *Skirret*; and of like conſiſtence. Not ſtringy, as that in *Piſo*, but divided, as often the *Mandrake* and ſome other Roots, into two Legs. Of a ſweetiſh Taſt, as *Piſo* ſaith rightly. But this here is alſo bitter; ſweet in the firſt or loweſt degree, and bitter in the ſecond. (*b*) Mantiſſæ Aromat. c. 15.

This Root is not known to grow (wild) any where, but in the Kingdom of *Corea.* In which place, as alſo in *Tunquin, China*, and *Japan*, it is much uſed, and relied upon in *Epilepſys, Feavers*, and other both Chronick and Acute Diſeaſes; either alone, or in compoſition (*c*) as the *Baſis.* In *China*, accounted ſo great a Cordial, that one pound hereof, is there ſold for three (*d*) pounds (weight) of Silver. Which ſhews, That there 'tis no Native, but only a Drug. So that if the Root or Seed be deſired freſh for propagation, or other purpoſe, it were better ſought for, where it grows wild, than from thence. (*c*) Ibid. (*d*) Phil. *Tranſ. N.* 14. *out of* Thevenot's *Voyages*, Tom. 3.

The ROOT of the *Ægyptian* ARUM. Deſcribed by *Fabius Columna*, (a) with the Name of *Arum Ægyptiacum*: but called by *Alpinus*, (b) *Colocaſia Strogulorhiza ſ. rotundâ Radice*; not rightly, as *Columna* notes. Nor do either of their Deſcriptions well reach it.

(a) Pars 2. c. 1.
(b) Rarior. Pl. lib. 2. c. 18.

This here (as it is often) is a double Root; each of them round, and ſomewhat flat. The uppermoſt like the dry'd Root of *Arum*, white and friable; but the Taſt is extinct. Full and frim, in breadth or *tranſverſly*, two inches; encompaſſed with three or four very ſmall Circles, whereupon ſeveral Leaves did once grow: underneath, are the portions of ſeveral ſmall dead Stalks; on the top and ſides, the Buds of others to come. To this, by a ſhort Neck between, hangs the lower; which being alſo the elder, is more fuzzy and ſhrunk up.

This Deſcription cannot be underſtood, without knowing that, which is very obſervable of this, and a great number of other *Plants*; and whereunto, no one *Botanick* hath adverted: *viz.* That the Root is annually repaired, or renewed out of the Stalk it ſelf. Particularly, of this *Plant*, that one of its two Roots doth every year periſh, the other is new made; not out of the other Root before it periſhes, but out of the Stalk it ſelf. The Stalk deſcending by ſuch degrees, as that part thereof which, the laſt year, was the lowermoſt above ground; this year, being ſunk (or rather by the appendent ſtrings pulled) under ground, becomes the upper Root; the next year, the under Root; and the year after, rots off; another new Root being ſtill yearly made out of the Stalk. By which way, and not as Trees by the ſame numerical Root, this and other like *Plants* are perennial.

This Root, the *Egyptians* eat very greedily, both raw, boil'd, and all manner of ways; ſuppoſing them, *prævalidè excitare venerem*. The Roots of the common *Arum* boil'd, were heretofore eaten among the *Greeks*: and may taſt as well as boil'd *Onions*.

A pair of large GINGER ROOTS; one of which, when green, might weigh four or five ounces. And is ſaid to be dug up, ſometimes, of fourteen Ounces. The *Plant* uncertainly deſcrib'd. *Acoſta* compares it to that call'd *Lachryma Jobi*; *Lobelius*, (c) to a *Reed*; *Garcias*, to a *Flag*; and

(c) Lib. de Balſ.

and *Bauhinus* pictures it accordingly with a trivalvous Cod. *Piso*, out of *Bontius*'s Papers, gives two Figures, one of the Male, the other of the Female: and supposeth, that the uncertainty of Relations hereof may proceed partly from the not distinguishing betwixt them. The Stalk of the Male indeed seems to have some little likeness to a *Flag*. But the Seed-Cod is there neither figur'd nor describ'd.

The best *Ginger* grows upon the Coast of *Malabar*. That which is *preserved* with *Sugar*, comes, or did at least in *Linschotus*'s time, from *Bengala* and *China*.

CHAP. II.

Of FRUITS.

THE great FLAGON GOURD, or rather CALABASH, for such I take it to be, and that therefore it should have been placed with that sort of Fruit. *Bauhinus* (*a*) describes a *Gourd* in shape pretty like to this by the Name of *Cucurbita Lagenaria*; but mentions neither how big, nor of what hardness the shell; in which latter respect the Fruit here before us, (as do most *Calibashes*) far exceeds all the sorts of *Gourds* that I know. 'Tis very smooth, and of a parchment-colour: near eleven inches long. That part of the Neck next the Tree three inches and ½ over; next the belly three and ½; the belly it self, nine inches; or two feet three inches about; the top depressed. The shell as hard almost as a *Plum-stone*, and at the small end above a quarter of an inch thick.

(*a*) Lib. 16. c. 1.

A LONG *Indian* GOURD. I find it not describ'd. Almost of a golden colour; in length, ten inches; in the middle, where it is thickest, three over; from thence it grows slender to the Stalk; the top Oval. Made angular with ten Ribs, or great Fibers produced by the length, in the middle about an inch distant one from another, and appearing the higher, by the shrinking down of the sides between them. The Rind not hard, within, whitish and very fibrous. The Seeds, black and rough, near ½ an inch long,

long, flat, oval, and horned, as it were, with two knobs at the Base: being chewd, of a very bitter taſt.

The WARTED GOURD. Figur'd, and in ſome ſort deſcribed (*a*) in *Bauhinus*. Probably, *Lobelius*'s *Sicyopepon Strumoſus*. This is above a foot and ½ about, near ½ a foot long, thickeſt towards the top, and there a little depreſſed as an *Apple*. Soft and brittle, and now juſt of the colour of *Buff-Leather*. The Warts or Knobs all round about it, are neither bliſters, nor ſolid, but emboſſed parts of the Rind.

(*a*) Lib. 16. c. 1.

Another of the ſame *Species*, but leſſer.

The LONG WARTED GOURD. Not deſcribed. Almoſt two feet in compaſs, and near a foot in length. In other reſpects, altogether like the former.

ANOTHER with ſmall and few WARTS. About four inches long, towards the upper end, as much over. The colour, and ſhape at the top, as of the reſt.

The BROAD TUBEROUS GOURD. Probably that deſcribed and figur'd in *Bauh.* (*b*) by the Name of *Cucurbita Clypeiformis ſ. Melopepon latus*; at leaſt of kin to it. Of a Buff colour, as the former; four inches long, four and ½ broad; ſurrounded with undulated Knobs an inch or 1 ½ over, with furrows between each Knob and by the length; depreſſed at the bottom; the top with a knob ½ an inch over.

(*b*) Lib. 16. c. 1.

The FLAT GOURD. *Melopepo compreſſus alter*, *Lobelio*. This came from *Virginia*. 'Tis three inches long, or from the Stalk to the top, and three and ½ inch broad; at both ends, compreſſed like a Bowl. Of a dusky yellow mixed with tawny.

The Little, Round, Bitter GOURD. Figur'd in *Bauhinus* (*c*) under the Title of *Cucurbita amara, fructu parvo, globoſo, colore varia*. The Deſcription lies in the Name. A ſort of *Colocynthis*.

(*c*) Lib. 16. c. 1.

The Yellow, Round, GOURD. In *Bauh.* the Fruit and Plant together, entitul'd, *Cucurbita aſpera, minima, ſphærica, crocea, variegata*. With a conjecture of its being the ſame with that which by *Tabernamontanus* is called *Pepo Indica minor*.

Not only the ſhells of *Calabaſhes*, but alſo the Rinds of *Gourds*, are uſed as Veſſels for *Gums*, and other matters better

better than Earth or Wood, as being both light, and not brittle. The little bitter *Gourd*, being eaten, worketh by Vomit and Stool. The Water distill'd from unripe *Gourds*, applied with Linnen, is most successful, and a great Experiment against that Heat, called *Syriasis*, (*a*) especially in Infants. (*a*) Bauh. lib. 16. c. 1. p 217

A FRUIT in shape somewhat like a WILD CUCUMER; yet not, as that, hairy, but smooth. The Seeds also of both are in figure, colour, and tast, altogether alike. So that perhaps it may not be improperly called *Cucumis Sylvestris glaber*.

A FRUIT, supposed by *Clusius*, (*b*) to be that of the EGYPTIAN-BEAN of *Dioscorides*, a Water-Plant. 'Tis of a brown Bay, and of a softish and light substance; the top, which is broadest, above three inches over, and flat; divided into about twenty round and open Cells, almost like an *Honey-Comb*. In each Cell is contained a *Bean* or *Nut*, alike colour'd, of an Oval shape, as big as a small *Akorn*, and in the same manner pointed at the top. See also the Figure in *Bauh*. (*b*) Exot. lib. 2. c. 13.

A slender COD of GUINY-PEPPER. *Capsici Siliqua angusta*. *Piso* (*c*) describes and figures nine or ten sorts, all growing in *Brasile*, and there called *Quiya*; of which this is the longest and most slender. 'Tis used as a great Stomachick Medicine, and in Sauces, both in substance and infusion, in *America*, *Spain*, and other Countries, and by many prefer'd before the best *Pepper*. (*c*) Hist. l. 4. c. 51.

The COD of the Broad Leav'd DOGSBANE. *Siliqua Apocyni latifolij*. Given by *George Wheeler* Esq; Described and figur'd in *Bauhinus*: (*d*) but with the Cods shorter and thicker than their natural shape. Of kin to that which *Lobelius* calls the *Scammony* of *Montpelier*. Along the middle or centre of the *Cod*, runs a slender fibrous pillar, to which, and not to the sides of the *Cod*, the Seeds are fasten'd on both sides it; and so encompassed about with *Down*, wherewith the *Cod* is fill'd up. A provident forecast of Nature to keep them warm. The said *Down* consisteth not of single Hairs, but *Plumes*, affixed to the Seeds, wherewith they are winged for their being more dispersedly wafted by the *Aer*, and prevent their falling in a ruck on the ground. (*d*) L. 15. c. 15. p. 135.

The

The CODS of the wild WOAD, (*Glasti Sylvestris*) together with the Seeds therein contain'd.

A small SPIRAL FRUIT. Above an inch long, and ½ over. It consisteth of five little *Cods*, all growing upon one Stalk, and thence twisted all together (as several strings in a Rope) are at the end united in a slender point.

The WATER-CALTROP. *Tribulus aquaticus.* Described in *Bauhinus.* A kind of shelly Fruit of a brown colour; divided into four thick and sharp-pointed Spikes, quadrangularly. In the centre of which is lodged a white and well tasted Kernel. They grow in the Rivers and Lakes in *Italy* and *Germany.* Where, in times of scarcity, the people make *Bread* of the Kernels.

Some EARS of *Tangier* WHEAT. Given by the Honourable *Charles Howard* of *Norfolk* Esq; The Plant described in *Bauhinus* by the Name of *Triticum cum multiplici Spicâ.* For it is a great broad Spike, as it were branched out into several little lesser ones; yet all closely compacted: in the middle ½ inch thick, and an inch and ½ broad; four long, and sharp pointed.

Some more EARS of the same sort, brought from *Portugal* where it grew.

CHAP. III.

Of SEEDS.

THE THICK FRENCH-BEAN. *Phaseolum maximè tumidum.* An inch and ½ long, ½ broad, and ½ an inch thick. The seat of the *Bean*, or of its *Plancentula*, that is, the part whereon it grows, as long; of a brown colour, with a black *rimm.*

The slender FRENCH-BEAN, of several sizes and colours, *&c.* Red, Black, White or Ash-colour, and the same spoted with black. Although these are quite different from the *Fabaceous* kind, yet I have retained the *English* Name, because in use.

The ROUND scarlet *Phaseolus. Abrus coccineum majus.* *Bauhinus* (*a*) describes it under the Title of *Pisum Americanum*; improperly, for that the *Peasen*, and the *Phaseolous* kind,

(*a*) Lib. 17. p. 264.

kind, are very different. And for the Figure hereof, by some oversight, is placed that of a sort of *Palme-Nut*. 'Tis a scarlet Fruit about as big as a *Rounseval Peas*, and somewhat flat.

The LESSER AMERICAN-BEAN. About ¼ of an inch broad, almost square, and very thick. The seat of the *Placenta*, black; which reaches almost half round the *Bean*. Here are preserved both Black ones, and of a Scarlet or Coralline colour.

An ORBICULAR *Indian* PEAS. A large one, *sc.* ¼ of an inch Diametre: of a shining straw-colour, mixed with yellowish *Striæ* as it were in rings: not much unlike the little round stones wherewith Children play, called *Marbles*.

Another ROUND *Indian* PEAS. About as big as the former, and also round. But somewhat flat on both sides, as a *Loaf*. And of a whitish colour.

An OVAL *Indian* PEAS. A very large one, *sc.* near an inch long, and above ½ an inch over; of a long Oval Figure, so as to resemble a *Sparrows* Egg. But of a shining blewish ash-colour, like a *Jaspis*. *Bauhinus* (*a*) figures and describes a Fruit (or Seed) pretty like to this, with the Name of *Phaseolus Ovo Columbino ferè similis*. But by his Description it is neither of the *Phaseolous*, nor *Fabaceous*, but of the *Peas*-kind; as both This, and the two precedent ones, also are. The *Characteristick* of which kind is, To have the *Placenta*, and so the *Seat* of it, always very small.

(*a*) Lib. 17. p. 276.

The GUINEY-PEAS. Described in *Bauhinus* by the Name of *Pisum Americanum coccinem s. Abrus minus*. Although the *Abrus majus* be of the *Phaseolous* kind. 'Tis of the bigness of a young *Peas*, of an Oval shape, and Scarlet colour, when fresh very pure; and adorned upon the seat of the *Placenta* with a black spot. Here are some also of the same sort, all over black. They grow in *Madagascar* and *China*; where they eat them not, but only use them for weights. In *Europe*, sometimes for *Necklaces* and *Bracelets* for the *Wrists*.

The great CICHE. *Cicer ruffus major*. In *Italy*, *Spain* and *France Ciches* are commonly sown (as *Clover-Grass*) in the Fields. In some parts of *France*, they use them not only medically, but for food.

The great LENTIL. *Leus major.* This alſo is ſown, in *France*, in the Fields, as the *Ciche.*

The great Wild VETCH. *Vicia maxima ſylveſtris.*

The CANDY VETCH. *Arachoides Honorij Belli*, *ſ. Cretica.* Deſcribed, in *Bauhinus*, (*a*) by the Author from whom the Name. The Seed it ſelf, like a little *Lentil.* Seldom more than one in a *Cod.* The *Cod* is ſhort and broad, about the bigneſs of a *Silver Half-peny*; On the outſide cancellated or favous, almoſt as in the ſeed of *Poppy.*

(*a*) Lib. 17. c. 19.

(*b*) Ibid. What *H. Bellus* affirms (*b*) of this Plant, is obſervable, *ſc.* That it bears *Cods* not only on the Stalk, but alſo on the Roots under ground.

The KIDNEY-VETCH. *Semen Anthyllidis leguminoſæ.*

The CRIMSON GRASS VETCH. *ſ. Catanance.*

The MEDICK FITCHLING. *ſ. Onobrychis.*

The EVERLASTING VETCH; ſo it ſeems to be. *Vicia multiflora perennis.*

The EVERLASTING PEAS. *Lathyrus perennis.*

The PRICKLY HEDG-PARSLY Seed. *Semen Caucalidis echinatum. ſ. Lappulæ Canariæ latifoliæ.*

The Seed of MACEDONIAN PARSLEY.

The AZORICK ſweet FENIL Seed. Shaped like that of the Shops, but much leſs.

The Seed of the ſtringy BIRTHWORT of *Virginia. ſ. Piſtolochiæ Virginianæ.*

The Seed of *Indian* SCABIOUS. Somewhat bigger than the common.

The Seed of the BUGLOSS with the yellow Flower.

The Seed of a SENSITIVE Plant. *ſ. Herbæ mimoſæ.* There are ſeveral *Species* deſcribed by *Cluſius*, and others. That of *Cluſius*, about five handful high, and hath the taſt and ſmell of *Liquiriſh.* This Seed is of a dark brown, not much bigger than that of a Purple Stock, angular, and frequently of a *Rhomboidal* Figure. It takes its Name (as is commonly known) from its Imitation of ſenſe or Animal motion. For ſo ſoon as you touch the Leaves, they preſently fall, till they lie upon the ground. After a while, they riſe again; but being touched, fall as before.

The Seed of VENUS LOOKING-GLASS. Of the

ſhape

shape and bigness of a *Fly-blow*, but of a dark glistering colour, like polish'd *Steel*. Figur'd and describ'd by Mr. *Hook*. (a)

(a) Micrographia.

The Seed of PRICK MADAM; *Sedi minoris*. In colour, shape and bigness, almost like to that of *Pancy-Seed*, or the *Viola tricolor*, but a little less.

The Seed of Wild GARLICK.

The SEED of the *Carduus* headed HAWKWEED. The Plant described by *Bauhinus*, but not the Seed. 'Tis ½ of an inch long, as thick as that of the lesser *Hawkweed*, and of a yellowish straw colour; a little crooked, with the top swell'd and pointed, and view'd in a Glass, appears wrinkled round about.

The lesser *Champaine* TREACLE MUSTARD-Seed. *s. Thlaspios Campestris.*

The Seed of the great STAR of BETHLEHEM. *s. Ornithogali fl. pleno.* Of the bigness of *Mallow-Seed*, and very black; on one side round, on the other angular.

The Seed of the VERVAINE MALLOW of *Japan*. *s. Alceæ Japonensis.* As small as that of the common *Mallow*, but longer and more like a *Kidney*; of a browniish yellow, yet cover'd with a white, thin, and very short *Down*.

Summer WHEAT of *New England*. So call'd (though less properly) because sown and ripe the same year. Whether from the Nature of the Grain, or the Soil and Climate, trial hath not been made.

SECT. IV.

Of MOSSES, MUSHROONS, &c. Together with some Appendents to Plants.

OF MOSSES here are about four and twenty *Species*. Most of them gather'd in a Wood in *Surrey*, and given by *John Evelyn*, Esq;.

The CREEPING TREE MOSSE of *America*. 'Twas found betwixt *Virginia* and *Florida*. It consisteth of several Threds, somewhat thicker than a *Taylors*, cover'd all over with little skiny Scales, hardly visible without a Glass.

The greater number of theſe Threds put forth two or three more, and ſo thoſe as many, repeating them after every two inches, all of equal thickneſs. In which manner they ſpread wonderfully both in length and breadth. 'Tis probable, that under thoſe little Scales may lie the Seed of the *Moſſe*.

The SHIELDY Tree MOSSE. *Muſcus arboreus ſcutellaris*. So called, for that it grows with ſeveral broad round Heads, from a ½ to ¾ an inch over, and a little Concave, not unlike a *Buckler*. Deſcribed and figur'd in *Bauhinus*.

The ſoft BEARDED Tree-MOSSE. *Muſcus arbor: barbat. Imperati*. Deſcribed by the Author of the Name. It conſiſteth of a great number of ſtrings in a cluſter; ſome of them at the bottom, as thick as a Knitting-pin, and ½ a foot in length; all ending as ſmall as a fine Thread; and not unaptly reſembling a Beard.

The Criſp BEARDED MOSSE. Different from the former, only in being more rough and woody.

The FISTULAR Tree-MOSSE. Deſcribed in *Bauhinus* by the Name of *Muſcus arbor: Villoſus*. By whom it is miſtakenly ſaid to be woody: it being wholly of a pithy ſubſtance, and having all its Branches hollow as ſo many little Pipes: from whence I have nam'd it.

The Dwarf PIPE-MOSSE. Different from the precedent in being ſhorter, and more ſpread thick and buſhy. That which is called *Uſnea Officinorum*.

The HORNED Tree-MOSSE; conſiſting of ſhort crooked Pipes.

The greater FLAT-MOSSE. *Muſcus arbor: ramoſus, ſ. latiramis major*. Figur'd, as if it were nothing elſe but a branched Skin.

The dwarf FLAT-MOSSE. *M. latiramis humilis*.

The CROWNED FLAT-MOSSE, having a flat Head or Crown on the top. Thus far of *Tree-Moſſes*.

The greater CAPILLARY-MOSSE. *Polytrichum majus*.

The leſſer CAPILLARY-MOSSE.

The greater BRAINCHED Ground-MOSSE. Deſcribed and figur'd in *Bauh.* with the Title of *Muſcus terreſtris repens à Trago pictus*.

The

The lesser BRAINCHED Ground-MOSSE. *Muscus terrestris ramosus minor.* Of the same *Species* with the *Skull-Mosse.* Described in *Bauhinus*, as I take it, with the Title of *Muscus Abietis facie.*

The FIRN-MOSSE. *M. filicinus*; so called from its likeness to a young *Firn-Branch.*

The TOOTHED-MOSSE. *M. terrestris denticulatus.* The several strings hereof, border'd on both sides with jagged or toothed Membrans. Figur'd and describ'd in *Bauhinus*, under the Name of *Muscus pulcher parvus repens.*

The smallest CREEPING MOSSE. *M. terr. repens minimus.*

The lesser ground MOSSE with REVERTED Leaves; that is, with their points doubled backward. So small, as hardly to be observed distinctly without a Glass.

The CROWNED Ground-MOSSE. The Branches hereof are of an ash-colour, ½ an inch log, flat and skinny, and crowned at the top with round, flat, and blackish Heads.

The greater FISTULAR Ground-MOSSE. The Pipes of this *Mosse* are also of an ash-colour, about an inch long, and as thick as an *Oaten straw.*

The lesser FISTULAR MOSSE. The Pipes of this are an inch and ½ high, and as thick as a good big *Needle.*

The FLORID FISTULAR MOSSE. *M. Tubul. Efflorescens.* The Pipes of this are also ashen, slender, an inch long, with jagged and rediish Heads, somewhat like little *Flowers.*

The CUP-MOSSE. *Musc. Pyxidatus*; so called, because its several Sprigs have Concave Heads like little Cups.

Of *Mosses*, it may be Noted, That they are all comprehended under two general kinds. One whereof, is properly to be called *WOODY*, or That, in which we find a stringy or fibrous Part, included within a *Cortical:* and are therefore to be number'd amonst perfect Plants. Of which sort, are the *Terrestris repens, Denticulatus, Ramosus, Capillaris, Filicinus, Folijs retroversis, Barbatus, Scutellatus, & Amercianus.* The other simply *CORTICAL*, whether flat or round; and therefore to be reckon'd of the Family of Imperfect Plants.

Of

Of which sort, are the *Pyxidatus, Terrestr. Tubularis, Arboreus Tubularis s. Usnea offic. Latiramis, Latiramis Coronatus, Corniculatus, Terrest. Coronatus & Tubul. efflorescens.*

The Jagged Tree-LIVERWORT. *Lichen arboreus laciniatus.*

The Curled Tree-LIVERWORT. *L. laciniatus crispus.*

A Great FISTULAR MUSHROON. So I call it. Given by Sir *Rob. Southwell.* I find no Description of this *Species.* They commonly grow upon the *Elm.* This is ½ a *Cone*, as having grown to the side of the Tree without stalk. The Diametre of the *Base*, near ½ a yard; from whence it rises above ½ of a yard in height, narrowing all the way to the top. Girded with several Rings of various breadth. Outwardly, very hard and dense. Inwardly soft and compressable, like a *Pith*, and is in substance really such. Consisting of an innumerable company of small soft *Fibers*, wrought together almost as pure fine Wooll in a Hat. The bottom is all over perforated with *Pores*; of the bigness of those little *Foveæ* in the seeds of *Poppy*; and are the extremities of as many small strait and parallel Pipes of a considerable length, probably, almost through to the top, as I have seen them in a lesser of the same kind. These *Pores* or *Pipes* may be distinctly seen without a Glass. With one, a *Slice* of the *Mushroon* looks like a piece of wood out of which *Button-Moulds* have been turn'd. Both the substance of the *Pipes*, and of the other parts of the *Mushroon*, so far as visible, is answerable only to the *Cortical*, or pithy Part of a Plant. So that it seems to be but half of a perfect Plant: or wanting the Lignous Part, by which all Plants receive their various Figures, is a kind of Vegetable *Mola*; in comparison, a rude mishapen thing.

That which hath formerly (*a*) been by me observed with the help of Glasses, by the *Pith* of this *Mushroon* is further confirm'd, and clearly represented to the naked eye, *&c.* That the Pith of a Plant, as well as the Wood, is wholly fibrous.

(*a*) See the Authors two last Books *Of Plants*, the former *Of Roots*, the latter *Of Trunks*; especially this latter.

A smaller FISTULAR MUSHROON, about four inches in diametre. In which the aforesaid Pipes apparently run parallel for the length of near two inches and ½, or from the bottom almost to the top.

A

A THIRD and FOURTH still lesser than the former.

Part of the CORK-MUSHROON. 'Tis eight inches in Diametre, exactly of the colour and substance of the best *Cork*, *sc.* light, soft, compressible and springy: from whence I name it. In the middle, an inch and ½ thick, the Circumference very thin; the upper side solid, the under divided into several Plates by the Diametre, frequently so joyn'd together, as to make a great many little Cells, somewhat like to those in a *Honey-Comb*.

The SPONGE MUSHROON. So it may be call'd, for that it is *porous* almost after the manner of some *Sponges*, particularly the *Cup-Spunge* hereafter describ'd. And is also of the same colour. But hath the substance of a *Tree-Mushroon*.

The CORAL-like MUSHROON. Described in *Bauhinus* amongst *Mosses*, with the Title of *Muscus Coralloides*. Figur'd by *Lobelius*.

The SCARLET CATSTAIL MUSHROON of *Malta*. *Fungus Typhoides coccineus Melitensis*. Given by Sig^r. *Boccone*, and by him described and figur'd. (*a*)

(*a*) Desc. Plant. Rarior.

The round Venimous MUSHROON of the *Hazle*. *F. Coryleus orb. venen.*

The HART-FUSBAL. *Tuber cervinum s. Cervi Boletus.* So called, from a false Opinion, that they are there only found, where *Deer* go to *Rut*. Described by *Bauhinus*.

A Mosse or Fungus [redacted] I find no Description hereof. 'Tis in length ½ a foot; at the lower part, half an inch thick, or in Diametre; in the middle, two inches and ½; the top, oval or elliptick; not unaptly resembling the *Boon critton-Pear*. Of a brown colour, [redacted], dense, [redacted]; and tough, almost like *Glew*. Being fir'd, it burns with much flame, melts into a good deal of Oil, and yields a smoak of a grateful *Aromatick* smell. See p. 385

The KERMES BERRY. *Coccum s. Granum Infectorium.* Commonly, but absurdly, so called; as not being a Fruit, but only a round *Ball* or *Button*, nourished on the Boughs and Leaves of the *Dwarf-Ilex*, or the *Ilex Coccigera*; a kind of *Shrub*, in *France*, *Spain*, and *Italy*, with prickly Leaves, like a little *Holly-Bush*. This *Berry* when fresh gather'd (which is at the end of *May* and the beginning of *June*) is full of a *Crimson* Juyce, or Pulp, so called, which, for the

the most part of it, is a heap of small red Mites. And containeth also, as is probable, one or more *Maggots*, which feed upon the *Mites*.

The said Juyce or Pulp (as it is called) is made use of for the Confection of *Alkermes*, and other purposes. For the *Deyers* use, the *Berrys* are spread abroad upon Linnen, and to prevent heating, turned twice a day. When the *Mites* creep out and cover the *Berrys*, they are sprinkled with *Vinegar*, and rub'd a little, and so separated by a *Searce*; repeating, till the *Berrys* yield no more. Of this Pulp, Powder, or Heap of *Mites*, are formed little *Balls*, and so exposed to the Sun to dry. The use of the *Vinegar*, is to kill or weaken the *Mites* and *Maggots*, which otherwise would turn to little *Flys* (rather *Bees*.) The empty *Husks*, being washed with *Wine* and dry'd, are put up in *Sacks*, either alone, or with a quantity of powder in the middle. This Account I have drawn up out of the Observations communicated by Dr. *William Croon* (*a*) from Mr. *Verny* an *Apothecary* at *Montpelier*, and those of Mr. *Lyster*, (*b*) which illustrate each other.

(*a*) Phil. *Transf.* N. 20. p. 363.
(*b*) Ibid. N. 87. p. 5059.

To the *Remarques* above mention'd, I shall add one more, which is, That as the Pulp or Powder, so called, is a Cluster of small Animals: so the Husk it self is an Animal Body, as it were grafted on the Stock or Leaf, whereon it grows; and so converteth all the nourishment it deriveth thence (as *Bread* eaten is turned to *Flesh*,) into its own Animal Nature. And that the said Husk is really an Animal Body, appears by that *fetid* scent it gives, like that of Horns, Hair, and the like, upon its being burnt. A property, which I find belonging to no Plant whatsoever, except to some *Sea-Plants*, as in the following *Section* shall be instanced. So that, though in compliance with the Vulgar Opinion, I have placed it here, yet ought it to be treated of amongst Animals.

English KERMES BERRYS. Observed, and sent by *Martin Lyster* Esq; Together with several *Remarques*, relating both to the Foreign kind, and to This. (*c*) This, he found upon the *Plum*, *Vine*, and several other *Trees*, especially the *Cherry*. The *Husk* of a *Chesnut* colour, containing four or five *Maggots* of the *Bee*-kind, producing a *Bee* less than an *Ant*; together with a Pulp or Heap of *Mites*,

(*c*) Phil. *Transf.* N. 71. p. 2165. N. 72. p. 2177. N. 73. p. 2196. compared with N. 87. p. 5059.

Mites, (as the other *Kermes*) on which the *Maggots* feed. The empty *Husk*, rub'd upon a white Paper, tinged it with a beautiful *Purple* or *Murrey*.

The principal difference which I note betwixt the Forreign and these *English Berrys*, now dry, is, That in those, the powder is red, and more bitter, in these white, and less bitter. But whether the powder in these also was not once red, I cannot say. For in some even of the Forreign *Berrys*, I find it white. Which I the rather note, that they may be separated by *Apothecaries* from the rest, as being stark naught.

COCHINELE. *Coccus Radicum.* The former Name, seemeth to be but the diminutive of *Coccus*. The latter, grounded upon the Opinion, That as the *Kermes Berry* grows on the Body and Leaves, so this, on the Roots, of Plants, especially on those of *Pimpinel*; yet in some places only. Further, I find no certain account. To me, thus much seems evident, That 'tis neither a Vegetable Excrescence, as some surmise; nor an *Insect*, as others: yet an Animal Body, as the *Kermes Berry*, by some *Insect* affixed to a Plant; and thence nourished for a time, but gather'd before it be fill'd with *Mites* or *Maggots*. For being held, as the *Kermes Berry*, in the flame of a *Candle*; it usually huffs and swells, but always stinks, like Hair or Horn when they are burnt.

A scruple of *Cochinele* added to an ounce of *Saccharum Saturni*, makes a most curious *Purple*; but I believe fading.

A GREAT GALL, which grew upon that sort of *Oak* described by *Clusius* in the third place; and frequent in *Spain*. 'Tis now of a dark brown, and smooth; of a *Sphærical* Figure, with a few small knobs here and there; as big as a little *Apple*, *&c.* near two inches in Diametre.

SECT. V.

Of SEA-PLANTS.

CHAP. I.

Of SHRUBS.

I Find, upon particular Obſervation, that of SEA-SHRUBS there are two general kinds. Such as are ſtrictly woody, that is, have the colour and fibroſity of Wood, and burn and ſmell like Wood. And ſuch as are, in a manner, horny, or look, bend, burn and ſmell like Horn.

A WOODY SHRUB. *Frutex marinus verè ligneus.* 'Tis here cut off from the Root. About a foot in height, with four Branches ſpread out as broad, and cover'd with ſeveral thick Knobs of a ſort of ſoftiſh white *Coral*; the ſides of which Knobs are a ¼ of an inch thick; the ſurface almoſt like that of *Poppy-Seed.*

ANOTHER, near a ½ of a yard high, as thick as the Ring-Finger, with white and hardiſh Incruſtations upon the tops of its Branches. Any ſtrong *Acid* droped on the ſaid Cruſt, cauſeth an *Effervеſcence:* ſo that it ſeems to be a Coralline ſubſtance.

A THIRD, with the Branches broken, and without a Cruſt, three or four inches high, and as thick as the middle Finger.

A FOURTH, with the Branches alſo broken, and without a Cruſt. 'Tis a ſmall one; but hath a very large Root, curiouſly ſpread all over the backſide of an *Oyſter-ſhell.*

And it may here be obſerv'd, That the Roots not only of this, but almoſt all *Sea-Shrubs*, inſtead of being Ramified, are ſpread out in the form of a Skin or Membrane, and ſo ſtick faſt to ſome hard and ſteady Body as their *Baſe.*

Another ſlender one, about a ½ of a yard high, but the Root broken off.

A FLAT WOODY SHRUB. *Frutex M. ligneus, expanſus, ramulis coeuntibus.* In all the former, the Branches are expanded every way: in this, only one way, or in breadth. 'Tis alſo of a ſofter ſubſtance, and more brittle. Of a Purple colour, almoſt like the woody part of *Alkanet Root*. Above ½ a foot high, and as broad. Several of the Branches united together, as in the *Sea-Fan*. Some of theſe *Shrubs* were found near the Straights of *Gibraltar*.

The Horny SHRUBS are alſo of two general kinds; either with the Branches looſe; or elſe united together.

A great tall HORNY SHRUB with LOOSE BRAINCHES. *Frutex Corneo-ligneus major erectior ſolutis Ramulis.* 'Tis above a yard and ½ high. Conſiſteth of five or ſix principal Branches, equal to a *Tobacco-Pipe-Stalk* where thickeſt; having ſcarce any callateral ones. Bends like *Whalebone*, and both without and within, looks not unlike to that, or *Black-Horn*. And in like manner, curles, huffs or ſwells, and ſtinks in burning. The Root cut off.

ANOTHER of the ſame, ¼ of a yard high, and more branched.

A THIRD, with more numerous Branches than the former. Cover'd with a very thick, but ſoft Incruſtation; originally of a Purple colour, but now for the moſt part turned brown; curiouſly perforated, as it were with Pinholes, all round about. Probably the foundation of one ſort of perforated *Coral*.

A great ARBORESCENT HORNY SHRUB. Half a yard High, and a foot in breadth, being ſpread in the form of an *Oak*, with great Branches about as thick as a mans Thumb. The Stock, ſix or ſeven inches in compaſs. The Root ſpread upon a ſtony *Baſe*, and of a brown colour. The Branches black both without and within; and ſwell, or huff, and ſtink, like Horn, in burning.

ANOTHER, ſpread alſo, in part, as a Tree. Half a yard high, and near as broad. Of a blackiſh colour; and ſtinks a little in burning; but ſwells not. Cover'd with a very thick, but ſoft purple Cruſt. To ſeveral of the Branches are alſo curiouſly faſten'd the WOMBS or NESTS of a certain *Inſect*, as big as a *Horſe-Bean*, of a roundiſh figure;

within, whitiſh, ſmooth and gloſſy; without, cover'd with the ſaid ſoft and purple Cruſt.

A ſmall HORNY SHRUB with LOOSE Branches. The Root is curiouſly ſpread upon a Stone like a thin skin. The Trunk of a yellowiſh brown, and thick as an *Oaten ſtraw*, divided into ſlender Twiggs, to about a foot in height; flexible, and having a ſoft and white Pith. Being burnt, they not only ſend forth a very ſtinking ſmoke, but alſo ſwell into a light and ſpongy *Cynder*, juſt like that of *Whale-bone*, *Cow-Horn*, *Leather*, or other like Animal-Body. Moſt of them are cover'd with a ſoft aſh-colour'd Cruſt. Neither Oil of *Vitriol*, nor any other, except a Nitrous *Acid*, droped upon this Cruſt, cauſeth an *Effervenſcence*. Which ſhews the *Salt* therein contained, to have affinity with that in the ſtones bred in Animals.

TWO more ſmall HORNY and incruſtated *Shrubs*.

TWO more, growing together on a ſtony *Baſe*, not Incruſtated.

A FLAT, HORNY SHRUB, with LOOSE Branches. *Frutex Corneo-ligneus, expanſus, ſolutis Ramulis.* In all the former, the Branches were expanded every way: in this, only one way, or in breadth. The Root ſpread like a Membrane, upon its *Baſe*, as in the former. 'Tis near ½ a foot high, and almoſt ¼ broad, ſhaped not unlike a *Feather-Fan*, formerly in uſe. The Trunk ⅛ of an inch over, divided into a great number of Branches round, black, ſmooth, ſomewhat flexible, and having a *Pith*. In burning they huff and ſtink, as the former. Cover'd with a ſoft and aſh-colour'd *Cruſt*, all over knobed with little Veſicles, which are ſometimes perforated.

ANOTHER more tall, and with both a White or Grey, and Red *Cruſt*; not on the ſame but ſeveral Branches. The former, knobed; the other, as it were daubed upon the Branches. Given by Sig^r. *Boccone*, and by him alſo figur'd.

ANOTHER of theſe growing Double, or divided next the Root into two ſpreading and parallel Bodies.

A flat HORNEY SHRUB, with more NUMEROUS Branches. About a foot broad, and near as high. Rooted in a kind of *Brain-ſtone*. Without any *Cruſt*. The Branches, as more numerous, ſo ſlender, longer, and more flexible, ſo as to be ſomewhat bearded.

ANO-

ANOTHER, with leſs numerous Branches, and SEMI-PERSPICUOUS, if held up againſt the light. Above a foot high, and ½ broad. It neither huffs nor ſtinks ſo much in burning, as do the former.

A Flat HORNY SHRUB with COLLATEARAL Branches. *Frutex corneo-ligneus ſiliciformis,* So I name it. In all the former, the Branches are reciprocal, or not of equal height on both ſides the great *Stemm:* in this, juſt oppoſite, as in a Feather or Branch of the *Male-Firne.* Near a foot high, and five inches broad. The ſmall or ſide Sprigs are round, as in all the former. But the middle *Stemm* is flat. Both This and the others, *Semiperſpicuous.* They ſtink in burning, but ſwell not. Cover'd with a ſoft, purple, knobed, and perforated *Cruſt.*

ANOTHER large one, with two middle *Stems,* but all the ſide Branches broken off. In height ½ an Eln. The Root of a light and skinny ſubſtance, ſpread abroad ſo, as to make ſix inches compaſs.

ANOTHER not ſo tall as the former, (about a foot high) but the middle *Stems* thicker. The collateral Branches here alſo broken off.

Another ſmall one: but with the Root curiouſly ſpread upon its ſtony *Baſe,* like a thin ſmooth Leafe. Moſt of theſe flat *Shrubs* grow in the *Mediterranean-Sea.*

A Flat SHRUB with UNITED Branches. *Frutex expanſus, Ramulis coeuntibus.* 'Tis a foot high, and ½ a yard broad. Divided reciprocally into ſeverally Branches, containing a *Pith.* In all the foregoing, the Branches are all looſe or ſeparate; in this, ſome of the ſmalleſt meet in one; as Inoſculated Veins, or as the *Fibers* in the Leaves of *Plants.* Of a blackiſh colour, and ſomewhat *fetid* upon burning. Cover'd with an aſh-colour'd, ſoft, and knobed *Cruſt.*

ANOTHER, with the Branches and Conjuctions much more numerous, ſo as to make very cloſe Work. Near a foot high, and almoſt as broad. Stinks in burning, and is cover'd with a knobed *Cruſt,* as the former.

A Great SEA-FAN. *Frutex m. maximus, RETICULATUS, ſ. Flabellum marinum maximum.* In the two former, only ſome, here all the Ramifications are united, ſo as to make one entire piece of Net-work, in the ſhape of a *Fan.* 'Tis above ½ of a yard high, and almoſt a yard and ½ broad.

The

The Root wonderfully ſpread upon its ſtony *Baſe*. For being extended every way, ſome of its Skirts meet underneath, and ſo embrace it round about. The Branches of a blackiſh brown, and ſwell and ſtink, like Horns, in burning. Cover'd with a ſoft *Cruſt*, originally *Purple*, but now for the moſt part faded into an aſhen colour.

ANOTHER large SEA-FAN, ¾ of a yard high, and ¾ an Eln broad. Incruſtated as the former. It hath this peculiar, *ſc.* out of the ſides of it, grow ſeveral other ſmall *Fans*, about a ¼ of a yard long (more or leſs) and near as broad.

TWO more large SEA-FANS, above ¾ a yard high, and as broad. Incruſtated as the former. Of one of theſe *Fans*, and about this bigneſs, ſee an elegant Figure in *Calceolarius*'s *Muſæum*. (*a*)

(*a*) Sect. 1.

THREE Midling SEA-FANS, near ¾ a yard broad, and a foot high. Incruſtated as the others.

THREE ſmall SEA-FANS. Two of them are a ¼ of a yard high, and as broad. The Third, is leſs. Yet hath ſeveral little netted *Labels* growing on the ſide. All three incruſtated, as before.

A SEA-FAN with CLOSE Net-work. Whereas the former conſiſted of more open work; as by comparing even a leſſer of thoſe herewith, is apparent. Neither hath this any *Cruſt*. 'Tis ¾ an Eln high, and a foot broad. Several of the ſmaller Ramification, thin or flat, *ſc. tranſverſly* to the breadth; looking like little *Splinters* of *Whalebone*. In burning, it ſwells, and ſtinks, as the others.

ANOTHER of the ſame, but not above a foot high, and near half as broad. This alſo is naked or without any *Cruſt*, as the former. Moſt of theſe *Fans* grow in the *American-Ocean*.

(*b*) Muſ. l. 2. c. 35. at the end.

Wormius, ſpeaking of *Sea-Shrubs* (*b*) hath this paſſage, *---Mirum profectò, quomodo hujus generis vegetabilia ex ijs* (ſaxis puta) *nutrimentum trahere valeant*. Whereas 'tis plain, That they receive no nouriſhment from them, but the *Sea-Water*, and ſuch nutritive Bodies wherewith it is impregnated. And it is therefore obſervable, That although the Trunk and Branches of theſe *Shrubs* are of a cloſe and denſe ſubſtance; yet their Roots are always made ſoft and ſpongy (eſpecially when recently gather'd) the better to imbibe their

their *Aliment*. So that the use of the Stone, or stony Body, on which they stand, is only to be a *Base* to keep them steady, and in the most convenient posture for their growth.

These, and other *Sea-Plants* hereafter describ'd, stinking, as is said, like Horns, in burning, and some of them not uneasily procur'd, it may be worth the Trial; Whether in *Hysterical, Epileptick*, or other like Cases, they may not prove more effectual, than Animal Bodies.

CHAP. II.

Of other SEA-PLANTS, *and of* SPONGES.

THE HORN-PLANT. *Tuba marina*; as it may be called from its form. 'Tis about two yards and ½ high. At the bottom, not two inches about; from whence it grows thicker all the way to the top, where it is seven inches in compass, and of an Oval Figure. Hollow quite through from the top till within about two feet of the bottom. The sides no thicker than a *Hazle-Nutshell*. Not woody, but tough, like the young Barque of a Tree, or a piece of tan'd *Leather*; and within, of a like colour; but black without. It grows in the *West-Indian Ocean*. The *Indians* cut off the top and so much of the small end as is solid, and lining the inside with a sort of Glew, or of Lacker, make themselves Horns hereof either for Hunting, or other use.

A Tuft or Bunch of CORALLINE. Described and figur'd by most *Botanicks*. I add (what I think is unnoted) That the inward part of this *Plant* is truly Ligneous or Fibrous: the outward, from whence its Name, being only a *Crust* growing upon it, as in the *Shrubs* above described. 'Tis esteemed an excellent Remedy against *Worms*.

FLAT CORALLINE, as it may be called, or *Spangle-Wort*. Described in *Bauhinus* (*a*) by the Name of *Opuntia marina*. By *Ferranti Imperato*, (*b*) with the Name of *Serotlara*. It consisteth wholly of Leaves, joyned edge to edge, as in the *Indian-Fig*; Somewhat round, and scallop'd, and not much

(*a*) Lib. 39. c. 30. and figur'd.
(*b*) Lib. 27.

much bigger than a ſilver *Spangle*. The inward part of the Leaves is fibrous, and by ſmall woody Threds are tacked together. But, as in *Coralline*, covered all over with a white *Cruſt*; which, in like manner, makes a ſtrong *Effervеſcence* with *Acid* liquors.

The BEARDED SEA-WRACK. *Fucus capillaris tinctorius, ſ. Roccella.* Figur'd *in Imperatus*; (*a*) And out of him, in *Bauhinus*. (*b*) But without a Deſcription. Neither will it admit an exact one, now dry. 'Tis three inches and ½ high, and five or ſix about. The Root, in compaſs, two inches, one in height, divided into a great number of ſmall capillary Branches or Sprigs, thick ſet, as in a *Broom* or *Beard*, very brittle, and of a faded *Purple*. It grows in the *Eaſt-Indies*. Of excellent uſe, eſpecially heretofore, for the making of *Tinctures* both for *Painting* and *Deying*.

(*a*) Lib. 27.
(*b*) Lib. 39.

A ſort of the common SEA-Wrack, called *Alga Vitrariorum*.

The BLADDER'D SEA-WRACK. *Alga Veſicaria ſ. conifera*, as it may be called; having on the tops of its Branches ſeveral Conick Bags, an inch, or an inch and ½ long, warted round about, and originally fill'd with a light and fuzzy ſubſtance.

The WARTED SEA-WRACK. *Fucus verrucoſus Imperati*. (*c*) On which grow a great many veſicular and ſoft Knobs all along the Branches, as well as on the top.

(*c*) Lib. 27.

The BROADEST SEA-WRACK. *Alga latiſſima Membranacea*. The Root hereof, ſtringy. The Stalk, round, as thick as a *Gooſe-Quill*, and about five inches high. From thence 'tis ſpread, by degrees, into a thin Skin too inches and ½ broad.

ANOTHER of the ſame *Species*, but not ſo broad.

The POUNCED SEA-WRACK. *Alga marina* πλατυκερὼς, *Bauhino. Poro Cervino, Imperato.* 'Tis wholly diſtributed into flat Branches, a ½ of an inch broad, almoſt after the manner of a *Stags* Horns. Of a ruſſet colour, and as it were all over pounced, ſomewhat after the manner of a *Rue-Leaf*, or that of *St. Johns Wort*, when held up againſt the light.

The SPIRAL SEA-WRACK. It winds about, very curiouſly, with a great many Circumvolutions, almoſt like a very deep *Skrew*. Deſcribed, figur'd, and given by Sig^r. *Boccone*. (*d*)

(*d*) De Plantis Rariorib. p. 70. Tab. 38.

The

The SEA-MILFOYLE. *Myriophyllum pelagium. ſ. Muſcus maritimus filicis folio. Cluſius* hath a Figure ſomewhat anſwerable to this Title, and out of him *Bauhinus*. Yet either it is faulty, or of another *Species*. His, repreſented with alternate Branches. Here, they are collateral, as in the *Male-Firne*. And curiouſly denticulated, in the like manner. It grows in very deep Gulfs of the Sea.

This Plant hath the ſame odd property, with ſeveral of the *Sea-Shrubs* before deſcribed; which is, that being fired, it makes a ſtrong ſtinking ſmoak, like that of burnt Bones, Horns, or other partsof Animals. And may therefore be deſervedly commended by *Cortuſus* againſt *Worms*. And 'tis probable, all the reſt of the ſtinking kind, ſome of which are much more plentiful and eaſily procur'd, may have the like Virtue.

The STEM of another *Sea-Plant*, Perhaps of affinity with that in *Bauhinus*, entitled, *Coralloides lenta fœniculacea*. The ſeveral Sprigs hereof are toothed, as in the *Sea-Milfoyle*, but with finer or ſmaller Work. It ſtinks, upon burning, as the former.

SEA-HEATH. *Erica marina*. Deſcribed and figur'd in *Bauhinus*. Who yet omits the coalition of all the Branches in a round and plain *Baſe*.

SEA-MOSSE, ſomewhat like the *Sea-Heath*. The Branches hereof are united in a ſhort Trunk. From whence they riſe up to the height of three or four inches, and are then multipli'd into others. About the thickneſs of a ſmall *Ruſh*, all over ſhaggy, with fibrous hairs or briſtles. Hath a ſtinking ſmoak, as the former.

The BEARDED SEA-MOSSE. A Congeries of tough or pliable, yellowiſh, capillary Threds or Strings, almoſt cylindrical, or of the ſame thickneſs from the bottom to the top; where the moſt part of them are as it were horned or forked. It makes a crackling noiſe, in burning, and ſtinks, but leſs than the *Sea-Milfoyle*.

The FISTULAR SEA-MOSSE. *Bauhinus* deſcribes a *Sea-Plant* (without a Figure) by the Name of *Fucus cavus*, but of a quite different kind; *ſc.* with the Leaves like a *Fillet*. Whereas this is a Cluſter or Bruſh of cylindrical, pellucid, and ſtrait unbranched Pipes, about the thickneſs of a great ſtitching Needle.

SEA-BLOBBER. *Veſicaria marina. Spuma Maris Cæſalpino. Bauhinus* deſcribes two ſorts, That, which is branched; and This, which is not. 'Tis a Cluſter of ſmall roundiſh Bladers, almoſt in the ſhape of little *Oyſterſhells*; of a light brown colour, all over veined with Fibers, like the uter Cover of a *Plumſtone*. Which makes it the more doubtful, whether it be an Animal Body, or a Vegetable. Which ſoever, it is ſuppoſed the *Matrix* of a *Sea-Inſect*.

Another CLUSTER of the ſame ſort, but conſiſting of ſmaller Bladders.

The ROPED SEA-BLADDER. I find it no where mention'd. This is alſo wrought with fibrous Veins, as the former. But the *Bladders* are of a different ſhape, not with convex, but flat and parallel ſides, and the Fibers principally running along and near the edges. Neither are they cluſter'd in a lump, but joyn'd together, one after another, with a Ligament of the ſame ſubſtance, almoſt like a Rope of *Onions*; ſaying that they are all on one ſide. They ſtink, upon burning; ſuppoſed to be the *Matrix* of thoſe Shells whereof the *Indians* make a ſort of Money, which they call *Wampanpeage*.

A GREAT SPONGE, of the common kind; of a flat Oval Figure, and almoſt a yard and half in compaſs.

The SHAGGY-SPONGE. *Spongia Villoſa.* It hath no regular ſhape. Of a Texture more rare, than of moſt if not all the other kinds. And with ſmall ſhort capillary Fibers, as it were ſhagg'd all round about.

The FUNEL-SPONGE. *Spongia Infundibularis.* Deſcribed in ſome ſort by *Cluſius*, and from him by *Wormius*. Figur'd by *Bauhinus*, without a Deſcription. This here is two inches and ½ in height; the *Rim*, near three inches over. The ſides about $\frac{1}{10}^{th}$ of an inch thick. Of a Texture far more compact and cloſe, than the common *Sponge*. Yet the Surface all over wrought with little round Pores, almoſt as in a *Poppy-Seed:* in ſome places viſible to the naked eye, but better through a Glaſs. On the inſide, they are in ſome places a little bigger, and near the *Rim* diſpoſed into ſhort Rays. Its *Baſe*, inſtead of a Root, as in *Sea-Shrubs*, is ſpread out upon a hard ſtone, to a conſiderable breadth.

The Little BRANCHED SPONGE. Of much alike Texture

Texture and colour with the common kind. But finely riſing up and diſtributed into ſeveral Branches, ſolid or not hollow, about ¼ of an inch over, like a ſprig of *Coral*. Given by Sig^r. *Boccone*.

The BRUSHY-SPONGE. This alſo is branched, and the Branches not hollow. But much more numerous. The Trunk ſomewhat denſe, two inches high, and thick as a *Gooſe-Quill*. Divided into three principal Branches, and theſe into about thirty more of the ſame thickneſs with the Trunk it ſelf, two or three inches long, perforated with ſome larger pores, as the *Funel-Sponge*, and near their tops, a little flat, and forked.

The CATSTAIL-SPONGE. This alſo is ramify'd, *ſc.* into three large Branches, not hollow, riſing up ſtrait, and immediately from the Root, to a foot in height; below, ½ an inch over; at the top an inch, not unlike the Head of the *Typha major*, or a *Cats-Tayle*. To theſe, three other leſſer Branches are appendent. All of them of a blackiſh colour, and a rare Texture, but the Fibers ſomewhat more thick and ſtubborn, than in the common ſort, and ſo woven, as to make ſome larger ſuperficial Pores. The Root or Baſe is ſpread out upon a ſtone. The *Ramous Sponges* are ſometimes found about the Iſlands of *Fero*.

The HOLLOW CONICK SPONGE. About a quarter of a yard high, and half a yard about. It conſiſteth of fiſtular Branches, of a Conick Figure, riſing higher and higher, ſmooth within, without porous, and as it were a little jagged.

The HOLLOW CYLINDRICK or PIPE-SPONGE. From the *Baſe* riſe up four or five Pipes, above an inch over, ſmooth within, and tuberated without, with ſome reſemblance to the *Corallium Verrucoſum*. Its Texture ſomewhat cloſer, than of the common *Sponge*.

The FLAT HOLLOW SPONGE. Near five inches high. Below, above two inches broad; above, more than three. Conſiſteth of two flat yet hollow pieces, above four inches deep; but without, diſtinct for the ſpace only of an inch and ½. Within alſo ſmooth, and without tuberated, as the former, but more bluntly.

All *Sponges* ſtink, more or leſs, upon burning, as the

Horny Sea-Shrubs. So that it is a property belonging to moſt of the Vegetable Productions in the Sea.

It is the Opinion of ſome, that *Sponges* have ſenſe, becauſe ſaid to ſhrink, if they are pluck'd; and are therefore reckon'd amongſt *Zoophyta*. But of that property I doubt very much. For a *Sponge* being a ſpringy Body, and ſo extenſible, and yielding a little to one that plucks at it; ſo ſoon as he lets his hold go, it will, from its elaſticity, ſhrink up again. Which motion of reſtitution, ſome probably, have miſtaken for the effect of a Cap-Senſe.

No *Sponge* hath any Lignous Fibers, but is wholly compreſſed of thoſe which make the Pith and all the pithy parts of a Plant. Yet vaſtly thicker, and their Texture much more rare or open, ſo as to be viſible to a good eye, eſpecially aſſiſted with an ordinary Glaſs. So that a *Sponge*, inſtead of being a *Zoophyton*, is but the one half of a Plant.

PART

PART III.

Of Minerals.

SECT. I.

Of STONES.

CHAP. I.

Of ANIMAL BODIES PETRIFY'D; and such like.

IT hath been much disputed, and is not yet resolv'd, of many subterraneal Bodies, which have the semblance of *Animals*, or *Parts* of them, Whether they were ever such, or no. And I am not ignorant of the Arguments offer'd on both hands. If I may speak my own sense a little, Why not? Is there any thing repugnant in the matter? Why not a petrify'd Shell, as well as wood? Or is the place? If Shells are found under ground, far from Sea, or in Hills, unchanged; as we are sure they are; then why not petrify'd? Or is the form, to which no *Species* of Shells doth answer? The assertion is precarious: no man can say, how many are known to some one or other; much less, how many are not known: I have reason to believe, that scarce the one half of the under *Species* of Shells are known to this day. And so for *Artificials:* if *Coyns* are found, every day under ground, then why not sometimes also Pictures, and other Works, in time petrify'd? And although Nature doth often imitate her self; yet to make her in any case to imitate Art, is unphilosophical and absurd: for the one, a natural reason may be given, not for the other.

On

On the other side: although Nature cannot be said to imitate Art: yet it may fall out, that the effects of both may have some likeness. Those white Concretions which the *Italians*, from the place where they are found, call *Confetti de Tibuli*, are sometimes so like round *Confects*, and the rough kind of *Sugar'd-Almonds*, that by the eye they cannot be distinguish'd. To call these *Petrify'd Sugar-Plums*, were senseless. What if we find in some Stones under ground the likeness of a *Cross*? Doth not *Sal Ammoniac* often shoot into millions of little ones? Or do we find in other Stones the resemblance of Plants? Why not naturally there, as well as, in Frosty Weather, upon *Glass Windows*? Or as *Salts* sometimes figure themselves (as Sir *Th. Brown*, (*a*) and Dr. *Daniel Cox* (*b*) observe) into some likeness to the Plants whereof they are made. Nay, why not too, a Face, or other Animal Form? Since we see that there are divers *Palm-Nuts* which have the like. That the Volatile Salt of *Harts-Horn*, will shoot it self into the likeness of little branched Horns. That of *Flesh* or *Blood*, into the shape of little flat fibrous *Tendons* or *Muscles*, as I have often observ'd. And though I have not seen it my self, yet I have been told by one (*c*) that doth not use to phancy things, that the Volatile Salt of *Vipers*, will figure it self into the semblance of little *Vipers*. But there can be no convincing Argument given, why the Salts of Plants, or Animal Bodies, washed down with Rains, and lodged under ground; should not there be disposed into such like figures, as well as above it? Probably, in some cases, much better, as in a colder place; and where therefore the Work not being done in a hurry, but more slowly, may be so much the more regular. I shall now come to the Particulars, and leave the *Reader* to judge of them.

(*a*) Relig. Med.
(*b*) Phil. *Transf.* N. 108.
(*c*) *Sir* Thomas Millington.

Part of the Upper JAW of a strange HEAD, together with some fragments of other Bones, and three very Great Double TEETH, or Grinders, all supposed to be of the same Animal. Found, about twelve years since, seventeen feet under Ground, in *Chartham* a Village three miles from *Canterbury*. The Ground within twelve Rods of the River running thither, and so to *Sandwich*-Haven. An Account hereof is written by Mr. *William Somner*: yet without a Description of the *Jaw*. But supposing it to be part of the

the Head of an *Hippopotamus*, takes occaſion thence for a Diſcourſe, wherein he endeavours to prove, That all the low Ground from the *Eaſt-Kentiſh* ſhore, to *Romney-Marſh*, was once under Water, and an Arm of the *Sea*. Publiſhed, ſince his Death, by his Brother Mr. *John Somner:* in whoſe Ground theſe Bones were dig'd up; and by whom they were beſtowed upon this *Muſæum*.

This *Jaw-Bone*, is only part of the far Cheek; about fifteen inches long, and ſeven where deepeſt: yet part of both the ends, and the *Sockets* of the *Teeth* are broken off. The *Orbit* of the Eye, neither ſo round, nor ſo big, as in the *Hippopotamus:* yet the *Teeth* far bigger. For the bigeſt *Grinder* in the Head of the *Hippopotamus* here preſerv'd, is leſs than ſix inches about: one of theſe, near eight. And 'tis much, if they belonged to that Animal, that none of the long Cutters which grow before (as is repreſented in *Tab.* 1.) ſhould be found with them.

Beſides, in that Skull of the ſaid Animal, the *Orbits* of the Eye ſtand ſo high, and the Forehead lies ſo low, that it looks like a Valley between two Hills: whereas in this Bone, the Forehead evidently ſtands higher than the Eye. The Knob alſo at the Corner of the Eye in this Bone, is ſix times as big, as in the ſaid Skull. Although this perhaps, as well as the tuberouſneſs of the Bone in ſome places, may be the effect of its lying ſo long under ground; as if it were thereby a little ſwell'd in thoſe places: for they are more rare and ſoft, than the other, and the whole Bone, than the Skull of any grown Animal not bury'd. Conſidering all together, it ſeems to me more likely to belong to a *Rhinoceros*, for the being whereof in this Country, we have as much ground to ſuppoſe it, as of the *Hippopotamus*. See *Wormius's* Deſcription of the Double Tooth (*a*) of a *Rhinoceros*.

(*a*) Muſ. lib. 3.

A PETRIFY'D CRAB. *Carcinites.* It ſeems to be of the undulated kind; whereof ſee the Deſcription in *Rondeletius*. 'Tis very hard and ſolid, and as heavy as a Pebble. Yet diſſoluble with *Acids*. There is one pretty like this in *Aldrovandus*, (*b*) under the Name of *Pagurus lapideus*. And another in *Beſler*.

(*b*) Muſæum Metallicum.

A FISH-MOLD. *Ichthyites in modum Typi.* There are ſeveral figures of Fiſhes in Stones in *Beſler*, *Aldrovandus*, and *Moſcardo*. In *Aldrovandus* alſo of the Heads of Birds,

Beaſts

Beasts and Men, in *Flints*. *Septalius* hath a Head in *Marble*. And Mr. *Boyle* (*a*) a Pebble with a *Serpent* (all but the Head) perfectly shap'd, and coyl'd up in it. All these (except perhaps the last) are either semblances on a Plain, or at least in solid Stones. But this here is hollow, and was so found in the *Island-Sea*. About five inches long; now split into two halfs, like those of a casting Mould. On the insides of which, are fairly impress'd the form of the *Spine*, with the Ribs, Fins, and Tail, of a Fish. Without, a long Plate of the same substance, grows to each side; and others cross to these: as if to the Mould of the Fish, were also added that of its Funeral Cloaths.

(*a*) Of *Gems* p. 156.

This Stone, for consistence, is like that called *Saxum Limosum*, soft, inequal, and unpolishable. Of a blewish hue, like that of *Tobacco-Pipe* Clay, with some very small glossy Grains intermixed. Not only Spirit of *Nitre*, but Oil of *Vitriol* droped upon it, dissolves it, and is excited into a violent Effervescence. But the *Saxum Limosum* stirs not with any *Acid*. So that it is to be rank'd amongst the *Gypso-limosa*, or *Calcilimosa*.

A petrify'd BONE, taken out of a *Gravel-pit* in St. *James Fields*, above eight yards deep.

A Stone like the VERTEBRA of a *Fish*. Given by Sir *Philip Skippon*. It may be called *SPONDYLITES*.

Part of the SPINE of another *Fish*, consisting of several *Vertebræ*. 'Tis hard and ponderous; yet dissoluble with *Acids*. It breaks flaky, as the *Lapis Judaicus*, and many others, or with plain and glossy sides.

The TOOTH of a TIGER, growing to a kind of *Limestone*. 'Tis about as big as that described in the First Part, and of the same shape and colour.

A square crooked TOOTH, not much unlike that of a *Bevir*.

A very great DOUBLE TOOTH or GRINDER. 'Tis about five inches long, and two broad; twice as big as a *Sea-Horse*'s. The stumps seem to have been saw'd off. The top divided into several Points and Ridges, as other double Teeth. Of a greyish colour and glossy; ponderous, and hard as a *Flint* or the hardest Pebble.

ANOTHER of the same shape, but not an inch long. *Besler* hath one like this, under the Name of *Pseudocorona Anguina*.

The

The SHARKS TOOTH. *Gloſſopetra:* ſo call'd, for that theſe Stones were fabled by ſome to be the Tongues of *Serpents*, in the Iſle *Malta* or *Melita*, turn'd into Stones ever ſince St. *Paul* Preached there. But the *Engliſh* Name, is much more anſwerable to the ſhape. Which yet is various, as well as the ſize and colour; as aſh-colour'd or black, long or broad, ſtrait or crooked, with the edges toothed or plain. Of the brown, ſtrait, indented and broader ſort here are ſeveral very great ones. One, three inches broad; and four, long: with the exerted part, ſmooth; the Root, rough. Every way, in ſhape, ſo like the Tooth of a *Shark*, that one Tooth cannot be liker to another. Yet if it be ſuch, then by comparing thoſe in the Head of a *Shark*, with This, That to which This belong'd, to bear a juſt porportion, muſt have been about ſix and thirty feet in length.

A GLOSSOPETRA, growing to a ſtony Bed. 'Tis of a lightiſh colour: and was brought as is ſuppoſed, from *Melita*.

ANOTHER, of a leſſer ſort. The Root of this is rough, as of the reſt. But not expanded with the exerted part, as is uſual, but of a globular Figure.

Theſe Stones are diſſoluble with any *Acid*. Whereby it appears, That (beſides ſuch Metallick Principles they are ſometimes tinctur'd with) they abound with an *Alkalizate-Salt*. They are found not only in *Melita*, but in *Germany*, and many other places. Figur'd by *Aldrovandus* (*a*) and by others.

(*a*) Muſæum Metallic.

DRAGONS TEETH. Given by Sir *Phil. Skippon*. *Gloſſopetræ Claviculares*. So I call them, becauſe they ſeem to be of the ſame kind; and are long and ſlender, ſomewhat like a ſmall Nail; and much more like a Tongue (*ſc.* of ſome ſmall Bird) than any of the former.

The GOATS-HORN. *Tephrites Boetij*; from its aſhen colour. *Selenites Cardani*; from its almoſt Semilunar Figure. Inwardly, 'tis of a blewiſh Grey. Outwardly, mixed with oblique and white ſtreaks. Of a bended figure, yet with one end thicker than the other, not unlike a *Goats Horn*; whence I have taken leave for the *Engliſh* Name. Broken at both ends, yet above ½ a foot long, and two inches and ½ where broadeſt. The Belly or inward *Ambit*,

an inch over, and furrow'd; the Back somewhat edged. 'Tis found in *Germany*, *Moravia*, *Silesia*, and other Parts.

(a) Boet. de Gemmis & Lapid.

A *Scruple* (a) hereof in powder, is an excellent *Sudorifick*. *Spirit* of *Nitre* droped hereon, dissolveth it with an *Effervescence*.

The FISHES EYE. *Ophthalmites*. A parcel of them given by Sir *Philip Skippon*. 'Tis a kind of *Pisolythus*. But by some of them, the Humors of the Eye, with the *Tunica Uvea*, and therein the *Iris*, are not ill represented: for which reason I have plac'd them here.

SOME other Varieties, from the same Hand.

The HERMAPHRODITE. Commonly called *Hysterolithos*. By *Pliny*, (b) *Diphyes*, more properly; as representing, in some sort, the *Pudenda* of both Sexes. Well described by *Wormius*. 'Tis a black Stone, not much broader than *Half a Crown*; very hard, and dissoluble with no *Acid*. Accounted an *Amulet* against *Hysterical Fits*.

(b) Lib. 37. c. 10.

Another of the same shape, but lesser.

A soft BUTTON-STONE. *Echinites albus*. Given by Sig^r *Boccone*. Of these Stones there is some variety, with several Names, but confounded by Authors. They all agree, in having some likeness to the shell of the *Button-Fish*. This resembles that most with all small prickles. Of a white colour. Not very hard, and dissoluble, with *Acids*. See an excellent Figure hereof in *Calceolarius*'s *Musæum*.

Another of the same *Species* and colour.

THUNDER-STONE or hard *Button-Stone*. *Brontias*. So called, for that people think they fall sometimes with Thunder. Yet different from the *Ceraunias*. This is shaped like a little round *Cake*. Very hard and indissoluble with *Acids*; being a kind of yellowish and opacous Pebble.

Another, a lesser one of the same *Species*.

A THIRD, also very hard (as all of them are) but *Semiperspicuous*.

A FOURTH, which is a whitish FLINT, stained with blew specks.

A FIFTH, a small one, and having a little flinty Stone growing to the middle of it on both sides. This particularly resembling *Gesner*'s *Ombrias*. (c) Or the Stone sent him by the Name of *Lapis Hyæniæ*. (d)

(c) De figur. Lapid. c. 3.
(d) Ibid. c. 12.

A

A SIXTH, somewhat oblong and striated all round about.

The SERPENTS EGG. *Ovum Anguinum.* From the roundness, and form of *Snakes* Tailes pointing upward, and towards the middle of the Stone. This also is an *Echinites*, and by *Ferranti Imperato* called *Histrix Marinus petrificatus. Agricola* makes it a sort of *Brontias.* It most resembles that sort of *Button-Fish*, with several Orders of great Knobs or Prickle-Bases, divided by lesser; described in the First Part of this Catalogue.

A STONE with the SIGNATURE of a *Button-Fish* upon it. So that it was once a *Bolus* or Clay.

The soft OVAL HELMET STONE. Given by Sig^r. *Boccone.* So I name it from its similitude to the shell of the *Echinus Spatagus*, (*a*) which the *English* call *Helmet--Fish.* Oval, to distinguish it from the *Conick.* Soft, as being very brittle, and easily dissoluble with *Acids.* Several of these Stones are figur'd by *Aldrovandus*, (*b*) with the Name of *Scolopendrites.* And some leaves after, divers others not much unlike, with that of *Pentaphyllites* from its likness in some part also to the *Cinquefoyle.*

(*a*) See Part I.

(*b*) Musæum Metallic.

ANOTHER of the same kind, with four narrow Furrows, composed of fine short Rays, and meeting in the form of a *Cross*; to which a fifth is added, more broad. 'Tis somewhat hard, yet dissoluble with *Spirit* of *Nitre.*

The HARD OVAL HELMET-STONE. 'Tis an opacous Flint, and of a dark colour. But figur'd as the former.

ANOTHER, also flinty, and opacous; but betwixt citrine and yellow.

A THIRD, opacous and white.

A FOURTH, with one half, opacous and yellow; the other, whitish and Semiperspicuous.

A FIFTH, somewhat rounder and more depressed than the former; and may therefore more particularly be called *Pentaphyllites.* Some of these *Ambrosinus* (*c*) hath misplaced with the *Astroites.*

(*c*) Aldrov. M. Metall.

The blunt CONICK HELMET-STONE. It hath, as it were, the Signature of the *Echinus Spatagus.* But rises up in the form of a *Cone.* Of which Figure I have not

yet ſeen any *ſhell*. The top is blunt, and of a middle height. Encompaſſed with five double pricked Rows, all meeting in the fore part of the Belly. The ſpaces betwixt which, are cancellated much after the manner of the *Sea-Tortoiſe-ſhell*. 'Tis a perfect Flint, brown without, and whitiſh within.

ANOTHER of the ſame ſort, with bigger pointed Rows.

A THIRD, of the ſame Figure, but ſoft, *ſc.* of a kind of Limy ſubſtance, or that of *Gypſum*.

The SHARP CONICK HELMET-STONE. 'Tis a *Semipellucid Flint*. Surrounded with five double pointed Rows, meeting not only on the top, but alſo at the centre of the Baſe or Belly. *Beſler* figures a ſmall *Conick Helmet*, by the name of *Echinites*: a great one, by that of *Scolopendrites*. And ſeveral *Species* hereof are alſo figur'd by *Aldrovandus*. (*a*) None of the flinty or other hard Helmet Stones make any ebullition with *Acids*.

(*a*) Muſ. Metallicum.

The HELIX or Stone *Nautilus*; as from its Figure it may not improperly be nam'd. *Cornu Ammonis*; From *Jupiter Ammon*, pictur'd with Horns. Here are ſeveral of them, both in ſize, ſhape, and ſubſtance diſtinct. I find no Author deſcribing them much broader than the ball of a mans hand. The higheſt *Boetius* reckons, about three pounds in weight. But in this *Muſæum* there is one near two yards in circumference, and proportionably thick. Of an Aſh-colour, and ſomewhat gritty ſubſtance. The ſeveral Rounds, as it were, carved with oblique waves. Given by the Right Honourable *Henry* Duke of *Norfolk*. With,

ANOTHER GREAT CORNU AMMONIS almoſt as big, *ſc.* about five feet round about.

A SMALL CORNU AMMONIS, of an aſhen colour, and ſoftiſh ſubſtance: yet diſſoluble only with Nitrous *Acids*. It maketh but one or two Rounds; ratably, far more ſwelling, than in the other kinds.

ANOTHER, of a ſoft and whitiſh ſubſtance; diſſoluble in any *Acid*, and conſiſting of ſeveral Rounds.

A THIRD, growing upon a Stone of a like ſubſtance. Figur'd in *Calceolarius*'s *Muſæum*, and that of *Olearius*; in both under the Name of a *Petrify'd Serpent*.

The CASED CORNU AMMONIS. The outer part of

of this is diſſoluble with *Spirit* of *Nitre:* of a ſhining blackiſh colour, thin, and as it were the ſhell of the far greater part within it. This alſo is very gloſſy, and tranſparent as Glaſs. Of a brittle ſubſtance, breaking into ſquare flakes, like thoſe of a flaky Spar. Yet no *Acid* will ſtir it.

The HARD CORNU AMMONIS. 'Tis a perfect whitiſh and pellucid *Flint.* Theſe Stones are found in *Germany.*

Note, that if one of theſe Stones be broken, the ſeveral Rounds will part ſo, as the ridges of one, and the anſwerable furrows of the other, are apparent.

Likewiſe, that in ſome of them, there is not only a ridge, but a round part about as thick as the biggeſt ſtring of a *Tenor Viol,* winding round between two *Circumvolutions,* as the *Medulla Spinalis* runs within the Back-Bone.

The Helick SERPENT-STONE. *Ophites Ammoneus.* See the Deſcription hereof in *Wormius,* with the Title of *Lapis Sceleton Serpentinum ferens.* 'Tis of kin to the *Cornu Ammonis;* wrought all over with *Striæ,* imitating the Scales of a *Serpent.* In ſome parts of This, rather the jagged Leaves of a Plant. Of a pale Okre colour, but ſomewhat hard, and diſſoluble only with *Nitrous Spirits.*

ANOTHER, which in the room of Scales or Leaves, is wrought all over, and as it were joynted, with ſutures in the form of an *ſ.* obliquely waved from the rim towards the centre. Which *Articulations* are not only on the Surface, but, as *Wormius* well notes, in its intimate parts. This is of a dark amber colour, and ſomewhat hard; yet maketh an *Effervеſcence* with *Spirit* of *Nitre.*

The HELICK MARCASITE. *Marcaſita Ammonea.* So I name it, for that it hath the ſame Figure with the *Cornu Ammonis,* and to the firſt of theſe in *Boetius,* is next a kin, if not the ſame. Yet appears to be a ſort of *Marcaſite* or Gold colour'd *Fire-Stone;* both by its Weight, and Copperas Taſt. And ſome of them are cover'd with Vitriolick Flowers. *Ambroſinus* (*a*) figures two of theſe under the Title of *Cryſammonites:* not ſo properly, as not having a grain of Gold in them.

(*a*) Muſ. Metall. Aldrov.

The HELICK MARCHASITE, having ſhallow Furrows on the Rim.

ANOTHER, with ſome alſo channell'd.

A THIRD, with the utmoſt round far more ſwelling, than in the other kinds; having its Centre lying deep, and its front ſpread wide on both ſides.

A FOURTH, of all, the moſt flat, and with a ſharp or edged Rim. Wrought all over, with undulated *Striæ*, almoſt as in the *Serpent-Stone*. Theſe two laſt, particularly, figur'd in *Aldrovandus*. (*a*)

(*a*) ubi ſupra.

A FIFTH, with the Rounds, on one ſide, all concave: ſo that it looks almoſt like one ſplit through the middle.

A SIXTH, beded within a tuberated *Fire-Stone*.

Several ſmall ones, of the kinds above-mentioned.

The SHORT WHIRLE-STONE. *Trochites*.

The LONG WHIRLE. *Turbinites*. There are ſeveral of them. In one, the ſeveral Rounds are hollow: a ground to believe it was once a ſhell.

The WHIRLED or SPIRAL MARCHASITE.

The CONICK SNAIL-STONE. *Cochlites pyramidalis*. Very brittle, and maketh an *Effervescence* with any *Acid*.

Divers others SNAIL-STONES; ſome of them of a Limy ſubſtance, others perfect *Flint*.

The SEA-OYSTER-STONE. *Oſtrites Cymbiformis*. Shaped almoſt in the figure of a *Boat*. In the right ſide eſpecially there is as it were the ſignature or ſeat of the *Animal*. So that one can hardly doubt of its being once a ſhell. Yet this kind of *Stone* is ſometimes found many miles from *Sea* or any great *River*.

A Petrify'd *Oyſter* and *Wilk* growing together.

A great petrify'd SCALLOP. Figur'd by *Ambroſinus* (*b*) with the Name of *Hippopectinites*. Given with ſeveral more of the ſame bigneſs, by Mr. *Wicks*. 'Tis half a foot over. Many of the ſame kind were taken out of a great Rock in *Virginia*, forty miles from *Sea* or *River*.

(*b*) Aldrov. Muſ. Metall.

The ſmaller PECTINITES, with ſmooth ridges.

ANOTHER, of a kind of Lead-colour. Diſſoluble with *Acids*.

The Coralline PECTINITES, furrow'd, and wrought all over with the *Species* of fine Needle-WORK. Alſo ſoluble with *Acids*.

A blackiſh PECTINITES, a perfect *Flint*.

A

A ſoft Stone of a blewiſh grey, with part of the *Belemnites* growing to it on one ſide, and a *Pectinites* on the other.

A petrify'd COCLE immerſed in a *Flint*.

The SMOOTH SPONDYLITES, with an Oblique Navle.

ANOTHER, with an Oblique Navle, all over ſtriated.

A THIRD of the ſame, furrow'd.

A FOURTH, alſo furrow'd, and with the Navle ſharper and more produced. So hard, as ſcarcely diſſoluble with any *Acid*.

A FIFTH, with a ſtrait Navle, and numerous Joynts.

The OXES HEART. *Bucardia*. So call'd from its figure. Deſcribed and figur'd by *Ferranti Imperato*, and others, and out of them by *Wormius*. 'Tis divided, by a ridge along the middle, into two halfs. Each of them having a prominent Knob, a little winding, ſomewhat like a Navle: ſo that it may not be improperly called *Conchites umbilicatus*. Figur'd by *Beſler* with the name of *Hyſterapetra*.

A SMOOTH CONCHITES, with an Oblique Navle, unequal ſides, ſomewhat round, and fill'd with a Limy ſubſtance.

Part of one, filled with a ſort of granulated Spar.

A ſmooth and round one, undulated.

ANOTHER, as hard as a Pebble; of a yellowiſh and pellucid red.

Another hard one, yet diſſoluble with *Acids*.

Another, with the Margins of the two halfs furrow'd and indented one into the other.

A LONG CONCHITES, of a black colour.

Another, undulated, and white; filled with a black and yellow ſubſtance, which with *Acids* maketh a ſtrong *Effervescence*.

ANOTHER, compreſſed, and the end oppoſite to the *Baſe*, pointed, like the common form of a Heart: and may therefore be called *Cardites*. 'Tis of a Limy ſubſtance diſſoluble with *Acids*.

A Broad equilateral CONCHITES, radiated.

Another, undulated, and radiated.

A Third, undulated, radiated, and circinated.

A Broad one, of a Limy ſubſtance, and fill'd with a flaky and gliſtering Spar.

The HIGH-WAVED CONCHITES; that is, where the middle of one Valve making a high and broad ridge, the other falls into it. 'Tis of a white Limy ſubſtance.

ANOTHER of the ſame, but ſhining and pellucid like a Spar. Diſſoluble with *Acids*. I meet not with any ſhell of this form.

A little BIVALVOUS MARCASITE. *Conchites Marchaſita.*

The MUSCLE-STONE. *Muſculites.* This is black and of an oblong Figure.

A Second, leſſer and rounder.

Another of the ſame, more Concave.

A Third, broader, and more expanded.

A ſort of MUSCULITES fill'd with Earth like *Tobacco-Pipe* Clay or Marle. Found amongſt the earth of a Hill that was overturn'd at *Kenebank* in *New England.*

The ſquare MUSCULITES. *Muſc. quadrilaterus.* I have not yet met with any ſhell of anſwerable ſhape. 'Tis, as it were, bivalvous: and each Valve, hath two ſides. Of the four, two are broader, and a little Convex, eſpecially towards the *Baſe*, at the other end ſomewhat ſharp: with oblique furrows, from the firſt to the laſt growing ſhorter. The other two, ſtriated and plain, joyned with the former at obtuſe Angles. Of a limy ſubſtance diſſoluble with *Acids.*

The TOOTHLESS MUSCULE. Found, of ſeveral ſizes, beded in a lump of *Iriſh Slate:* yet not petrify'd, but a perfect ſhell. It is of a rare kind, no where figured or mention'd, that I find, nor have I met with it elſewhere. The biggeſt of them two inches long, and ¼ over. That end near the *Baſe*, as it were pinched up, almoſt into the form of a Childs fore-Tooth. On the outſide of the *Baſe*, ſtands a plated piece, contiguous therewith at both ends, but in the middle, joyned to it by the intervention of other very ſmall tranſverſe Plates, like the Wards of a Lock: ſupplying the uſe of the Teeth in other *Muſcles*, which are here wanting; from whence I have nam'd it. The outſide, is adorn'd with circinated Lines, and in ſome ſort alſo radiated with very ſmall *Tuberculi*, eſpecially at the narrow end.

The

The SHEATH-STONE. *Solenites.* Like the petrify'd shell of the *Sheath-Fish.* 'Tis fill'd with a kind of limy substance.

A piece of WHIRLY-ROCK. *Turbinites Saxum.* A sort of *Gypsum* of a dark colour, with the semblance of divers kinds of turbinated or whirled shells immersed therein. Dissoluble with *Spirit* of *Nitre*, but very slowly. There is one like to this in *Besler.*

A Piece of white MUSCLE-ROCK. *Musculites Saxum.* With the similitude of little, white, furrow'd *Muscle-shells.*

Another Piece of an Ash-colour, and more soft.

A piece of spoted MUSCLE-ROCK, *&c.* with white, red and brown, in imitation of Marble. In which also are beded, as it were, several *Muscle-shells.* Although it hath the face of Marble, yet is it a kind of *Gypsum*, dissoluble with *Spirit* of *Nitre.*

A Piece of MIXED SHELL-ROCK. *Conchites miscellaneus.* Composed of petrify'd shells, both of the Turbinated, and the Bivalvous kinds, beded in a kind of gritty Lime-Stone. In *Calceolarius's Musæum* (*a*) is one like to this, in the form of a *Choping-Knife*, but without a Name. Another in *Ferranti Imperato.* (*b*) And in *Aldrovandus's Musæum*, by *Ambrosinus* called *Ostracomorphos Lapis.* Not properly, *Lapis*, as being part of a *Rock:* nor, by the former word, sufficiently expressing the mixture of shells therein.

(*a*) Sect. 3. p. 317.

(*b*) Lib. 24. c. 25.

Another, consisting of such like shells (or their resemblance) beded in a brown Stone.

CHAP. II.

Of VEGETABLE BODIES petrify'd, and other like STONES.

OF this kind, here is also great variety; being, or representing, Fruits, parts of Flowers, Leaves, Branches, Stalks, Trunks, and Roots: in which order I shall set them down. Only reserving *CORALS* with other like *Marine* Productions, to be spoken of by themselves.

A Petrify'd KATHERINE PEAR, or a Stone naturally very like one. Being, as that is sometimes, a little bended, very

slender at the Stalk or Base; turbinated next the other end; umbellated at the top of all, or depressed round about the place of the flower; and of a yellowish tawny colour.

A STONE like a petrify'd DAMASCENE-PLUM. As that of a black colour, and of the same Figure; so far as to shew the seat both of the Stalk and Flower.

The Great petrify'd STONE of an exotick PLUM. As one would think, both from the figure of it, and the production of *Fibers* by the length, round about it, (as in many *Indian Plum-Stones*) very apparent especially, near the top. The granulated part of it, being turn'd to a soft opacous *Stone*; the *Fibers* into pellucid *Flint*.

A black *Stone* figur'd like the STONE of (a *Præcock-Plum*) an *Aprecock*.

A petrify'd *NUX VOMICA*, *&c.* that of the Shops. As I call it from its figure exactly respondent; being round, and flat, on one side a little Concave, on the other somewhat Convex. In *Aldrovandus* (*a*) we have the Figure of a petrify'd *Nux Methel Officinorum*: but under the mistaken Title of *Castanites*. As also the exact figure of a petrify'd *Castanea Purgatrix*; but this too with the false Name of *Anacardites*. The same Author represents likewise a most exact figure of a petrify'd *Melopepon*.

(*a*) Musæum Metallicum.

A large JUDIAC STONE (*Lapis Judaicus*) in the form of a PEAR. 'Tis an inch and half long; stalked like a *Pear*; Next the stalk slender; turbinated upwards, to an inch in Diametre; and umbellated at the top, or depressed as a *Pear*, round about the flower. Adorned also round about with small tuberated *Striæ* which run from end to end. This *Species* not well figur'd by any Author.

ANOTHER of a somewhat like Figure, but much smaller. Best expressed by the least of the four in *Boetius*. (*b*)

(*b*) De Gem. & Lap. l. 2. c. 226.

A THIRD like an *ALMOND*; both of the same bigness, and shape, oval at one end, pointed at the other, and somewhat flat. *Besler* hath one or two like this, which he calls *Petrified Almonds*.

A FIFTH, like an *AKORNE*, being of a like thickness at both ends. Another of the same. This sort particularly called *Phoenecites*.

A SIXTH, like an *OLIVE-STONE*; being more oblong

long and oval than the precedent. *Beſler* two or three *Stones* ſomewhat like this, which he calls *Petrify'd Olives.*

A SEVENTH, of a long ſlender Figure, and knobed as the reſt, almoſt like a *Hazel Catkin.*

An EIGHTH, in ſhape like a *Peſtil.* The upper part of this is knobed, the other ſmooth, whether naturally appears not.

Theſe *Stones* either grow chiefly, or were firſt taken notice of in *Judea*; from whence their Name. They are commonly found, not in Earth, but in the Clefts of Rocks, by thoſe that work in them. They are diſſolved with *Spirit* of *Nitre*, not without *Effervеſcence*, eſpecially when reduced to powder. And may therefore be juſtly eſteemed *Diuretick*, and ſo ſometimes bring away, or (as people think) break the *Stone:* for which, by *Pliny*, (*a*) 'tis call'd *Tecolithos.* (*a*) Lib. 37. c. 10.

Theſe *Stones* always break flaky, and with a ſtrong gloſs, like a *Spar*; or the *Entrochus* hereafter deſcrib'd.

Of theſe *Stones* it is further obſervable, That being cut and poliſh'd *tranſverſly*, and then wetted, they fairly exhibit, at leaſt in colour, a twofold ſubſtance. The one, whitiſh; anſwering to the *Parhenchyma* or Fleſh of a Fruit: the other black or dark-colour'd, not only in the Stalk, but alſo thence produced, and diſpoſed into two Rings, a large one next the Circumference, and a ſmall one in the centre of the *Stone*; anſwerable to the Lignous *Fibers*, diſtributed in much alike manner in ſome Fruits.

Two ſtrait ſlender *Stones*, reſembling the COLUMNS erected in the middle of ſome FLOWERS. One, Convex at the top, and almoſt flat. The other, ſpherically triangular, ſomewhat like the *Seed-Caſe* of a *Tulip.* Beneath, of an aſh-colour; upward, of an obſcure or brown Bay. Of that hardneſs, that if ſtruck or let fall one upon another, they have a kind of Metallick ſound, like that of ſmall round *Button-Bells.*

Two other *joynted Stones* of the ſame nature with the former: looking as if they were pieces of the GENICULATED STALK of ſome Plant.

'Tis pleaſant, eſpecially with a Glaſs, to ſee the wrought Work on the ſurface of theſe *Stones.* In which the ſmall and curious *Striæ* which run by the length, anſwer to the

Lignous *Fibers*, or the warp: and those which are *transversly* as it were interwoven; to the *Parenchymous Fibers*, or Woofe of a Plant. A more particular explication of which real *Work* in all Plants, hath been by me elsewhere given. (*a*) *Calceolarius* hath one or two of these last fairly figur'd.

(*a*) See the Authors Book *Of Trunks*. And that *Of Roots*.

A *Stone* with the exact signature of a STEM of POLYPODY with the LEAVES. 'Tis softish, and somewhat brown. Stirreth not with *Acids*.

HIPPURITES. Or a *Stone* with the impressed Image or signature of the *Equisetum* or HORSETAIL. There are three stalks which very elegantly rise up from one Root.

DENDRITES. Or a *Flint* naturally adorned with the Images of several epitomiz'd or minute TREES. There is the figure of a fair one like to this in *Calceolarius*'s *Musæum*.

ANOTHER; being a SLATE about $\frac{1}{4}^{d}$ of an inch thick, representing, as it were, a plain Field, inclosed with a HEDGE of TREES; some bigger, others less; all so lively, as if it had been the curious and elaborate Work of a *Painter*; or had been cast through a Glass (as *Kepler* shews the way sometimes of taking *Lanshipe*) upon a *Tablet* in a Dark Room.

It is very observable, That the same curious Work which appears upon one side of the slate, doth also on the other. Agreeable to what *Ambrosinus* (*b*) also remarques, That if this sort of *Stones* be broken into several pieces, the like Work will appear in the intimate parts. Which plainly demonstrates, that not being superficial, it cannot be the effect of Art.

(*b*) Aldrov. Musf. Metall.

DENDROPOTAMITES. So I call it. 'Tis a piece of a kind of *Alabaster*, about seven or eight inches square, polish'd and set in a Frame. It hath much and pleasing variety both in colour and figure: shewing a mixture of brown, tawny, white, and green; and not unaptly resembling a couple of *Rivers*. One crooked or very much winding too and fro; (as the *Thames* at *Kingstone*) and garbed all along with *Trees* upon the Bank. The other strait, with a *Foot-walk* upon the Bank, and inclosed also with a little *Hedge-Row*.

A sort of ALABASTRITES, representing a *Transverse Section* of the TRUNK of a TREE. That part answering

to

to the Wood, consisting of white and black Rings one within another. The other answering to the Barque, of two or three thin ones (like that of a *Cherry-Tree*) of a russet or barque colour. Yet the black Rings, being held up against the light, are transparent. So the clearest Glass, in some postures, appears black. *Spirit* of *Nitre* droped on it, dissolves it with a vehement *Effervescence*.

A *Stone* expressing part of a *Tranverse Section* of OLIVE-WOOD. On one side, 'tis very well polish'd. By means whereof, not only the *Annual Rings* (appearing in the Trunks of all Trees;) but also the *Insertions* or *Parenchymous Rays* which run betwixt the Pith and Barque; and even the greater Vessels themselves (either for *Aer* or *Sap*) are all to a good naked eye, but especially with the help of a Glass, very fairly visible. 'Tis just of the colour of the browner sort of *Olive-Wood* well varnish'd. 'Tis as hard as a *Jasper*, and seems to be of that kind.

ANOTHER sort of *Jasper* representing a piece of WOOD. 'Tis of a green colour, and stained with blackish spots. One would take it for a sort of *Lignum Vitæ*.

A *Stone*, which in Colour and Texture, seems to resemble a piece of *YEW-TREE*.

ANOTHER, which looks like a piece of *BEECH-WOOD*.

A large piece of PETRIFY'D WOOD (as it is supposed) above half a yard long, and ½ of a yard about.

Another Piece about the same bigness.

A *Globular Stone*, which looks as if it had been a piece of *ASH-WOOD* turned in a *Lathe* into that figure. For it hath not only the colour, but the semblance of the Annual Rings, and of the *Aer-Vessels*, as in that Wood.

Small pieces of (reputed) petrify'd Wood, commonly found between the Beds of blew-Marble. Two inches long, and near as thick as ones little Finger. Almost as black as *Ebony*.

A Piece of INCOMBUSTIBLE Wood, as it were HALF PETRIFY'D. For being held in the fire, it becomes red like a Coal; but neither flames, nor smoaks in the least.

A very odd Piece of the BRANCH of a TREE as thick as a *Cable-Rope*, whereof the Barque is turned into perfect Iron, or at least a very rich Iron *Ore*; and the Wood into Stone.

The

The petrify'd Barque of a Tree. 'Tis thin, and rowled up as *Cinamon*; but rather of the colour of that called *Winterane's*. Withall, rough and knobed without.

A Piece of *Oak* BARQUE cover'd with a ſtony Cruſt. Given by *Philip Packer* Eſq; From a Stump above Ground.

In *Septalius's Muſæum*, as I take it, is mention made of *Petrify'd Wood* found an hundred and forty *Pertches* under the top of a Mountain. And by *Kentman* (*a*) of a ſort of petrify'd *Beech* (as the people call it) both Trunk, Branches, and Leaves, taken (for *Whetſtones*) out of the Ground in the *Joachimick Vale*, an hundred and ſeventy Elns depth. But what kind of Eln is here meant, is not certain.

(*a*) Foſſil. Nomenclat.

Of petrify'd Woods it may be noted, That none of them (at leaſt of theſe here deſcribed) will make the leaſt *Ebullition* with any *Acid*. Which would make one ſuſpect, That they are *Stones* originally, *ſui generis*; elſe it were ſtrange, That ſome of them ſhould not lie in places where ſuch *Stones* are bred, which with *Acids* make the ſaid *Ebullition*.

The STELENTROCHITE. By ſome, called *STELECHITES*: *Entrochites*, by moſt. But, in proper ſpeaking, diſtinct from both. For it is not only of a *Cylindrical* Figure, or near it, and containeth a ſofter ſubſtance in the Centre, anſwerable to a Pith: and alſo radiated as the Branch of any Tree cut *tranſverſly*. But moreover conſiſteth of ſeveral flat round Joynts like little Wheels, evenly pil'd, and, with the ſaid *Rays*, mutually indented, ſo as altogether to make a *Cylinder*. Deſcribed alſo by *Geſner*, (*b*) *Boetius*, (*c*) *Ambroſinus*, (*d*) and others. But we have two Accounts hereof given us in the *Philoſophical Tranſactions*, far more accurate and particular, than is elſewhere extant. The former, by Mr. *Lyſter*; (*e*) together with between thirty and forty Figures of their Varieties, with ſome other Congenerous Stones. The latter, by Mr. *John Beaumont* (*f*) *Junior*; who hath added the Deſcription of ſome more Diverſities. And the manner of their growth. In this *Muſæum* are ſeveral *Species*, which I ſhall here enumerate.

(*b*) De Lapid. Figur.
(*c*) De Lap. & Gem.
(*d*) Aldrov. Muſ. Metall.
(*e*) Num. 100.
(*f*) Num. 129.

A ROUND one, near ½ of an inch Diametre; with the Pith near a ¼, of a darker colour, hard and denſe. The

ſeveral

ſeveral Joynts, about the tenth of an inch thick; diſtinguiſhed by ſlender Circles compoſed of very ſmall knobs. With part of the Rock to which it grew, altogether irregular, but of the ſame ſubſtance.

ANOTHER, with a Pith larger and more ſoft, the Joynts thicker, and the Surface almoſt ſmooth.

A THIRD, of the ſame thickneſs, with the Pith ½ an inch Diametre. 'Tis alſo a little bended; and the Joynts diſtinguiſhed not with knobed but entire Rings.

A FOURTH, with a Pith not much bigger than to admit a little *Pin*. Yet at one end 'tis ½ an inch over. At the other ſomewhat more than ½ d. A little bended as the former. And the Joynts in proportion to its width, extream thin; not above ½ 6th of an inch. Their circumference, convex, being diſtinguiſhed not with edged Rings, as the former, but with furrows.

A FIFTH, about ½ of an inch over. The Pith anſwerable. The Joynts diſtinguiſhed with edged Rings. And as thick as in the former.

A SIXTH of the ſame thickneſs. And a little crooked. The Joynts diſtinguiſh with furrows.

A SEVENTH, with the Joynts unequal both in breadth and thickneſs; one narrower and thiner, the next broader, or ſtanding further out from the centre, and thicker, and ſo alternately: whereby it looks like ſome ſort of Turn'd-Work.

An EIGHTH, a ſmall one, yet finely ſhap'd. Firſt with a Joynt emboſſed with a knobed Ring. Next two ſmall Joynts, each of them ſcarce thicker than a *Groat*; and ſo alternately.

A NINTH, not above ½th of an inch in Diametre; yet with Joynts as thick as in the fourth: and ſmooth.

A TENTH, ½th of an inch over, and with much thiner or more numerous Joynts.

An ELEVENTH, a very ſmall one, ſcarce having any diſtinction of Joynts.

CORALLITES. As it may be call'd. With no Joynts, no Rays, nor Pith, but more like to a ſolid piece of *Coral*.

The ASTENROCHITE, or an *Entrochites* with a *Pentagonal Pith*, like the ſignature of a little *Aſteria*, a *Stone* hereafter deſcrib'd; from whence I have nam'd it.

ANO-

ANOTHER of the ſame. And alſo with a double Ring of Rays; ſo as to look like one of theſe Stones within another. And may therefore of all the kinds, be moſt properly called *ENTROCHITES.*

A FLAT ENTROCHITE. All the former are perfectly round: this compreſs'd; one way, an inch over; the other, about $\frac{4}{5}$ths.

ANOTHER, a ſmall one of the ſame ſhape.

A THIRD, not only flat, but alſo with two oppoſite edges, like the Scabbard of a *Rapier.*

The BRANCHED ENTROCHITE. Yet here the Branches, which grew alternately as Twigs on a Bough, are broken off. In one, leaving ſo many cavities in the *Trunk* on which they grew. In another, ſo many Knots. In both, radiated, and containing a *Pith*, as the *Trunk* it ſelf.

The KNOTED ENTROCHITE. A very odd *Species.* Above two inches long, and $\frac{1}{4}$ in Diametre. The Surface ſmooth, yet with an obſcure appearance of Joynts. The Knots, no way like thoſe in the laſt mention'd, as not being radiated; and looking more like the baſes of ſturdy *Thornes.* Wherewith it not unaptly reſembles a piece of a *Crab-Tree-Cudgel.* 'Tis compoſed of three diſtinct ſubſtances. The outer part, (as one would ſay, the Barque) is a flaky and gloſſy *Spar*, as in the reſt. But as black almoſt as *Jet.* The middle part is *Ore* of *Marcaſite*, or *Yellow Mundick.* The *Pith*, not unlike *Tobacco-Pipe-Clay*, when baked pretty hard.

A ſort not much unlike theſe, being found in the Iſle *Malta*, by ſome ſaith Mr. *Ray*, (*a*) are call'd St. *PAULS BATTOONS.*

(*a*) Phil. *Tranſ.* N. 100.

The SYNTROCHITE, as we may name it, to diſtinguiſh it from the reſt. It conſiſts of ſeveral Joynts as the former; yet not piled evenly one over another ſo as to make a *Cylinder:* but ſliden as it were half on and half off.

The TROCHITES. 'Tis nothing elſe but one of the above deſcribed Joynts ſingle; on both ſides radiated, and alſo containing a *Pith.* So that it looks like a ſlice of a ſtick. Theſe, ſaith Mr. *Lyſter*, being uſually hollow, or eaſily ſo made, and ſtringed, are therefore by ſome called St. *CUTHBERDS BEADS.*

The ASTROCHITES. As it were, the *Trochites* and the *Aſteria* (hereafter deſcribed) together. That

There's one which may be called an *Enthrochite*, yet not a *Stelechite*, becauſe Oval, or at leaſt ſmaller at both ends; no way reſembling a Stick or Branch. But there is no example hereof in this *Muſæum*.

The True STELECHITES, branched. 'Tis not only radiated, and furniſhed with a Pith: but is one ſingle piece without any Joynts or joynted Wheels: in which reſpect, it cannot be called *ENTROCHUS*; but very properly *Stelechites*, (from whence the *Engliſh* word *Stalk*) as more anſwerable to the *make* of a ſtick or ſtalk, than are any of the reſt. 'Tis of an aſh-colour, and curiouſly wrought all over in the like manner as a *Poppy-Seed*.

A Piece of a Rock conſiſting wholly of ſeveral *Species* of *ENTROCHI* or *Stelentrochi*, immerſed in a bed of their Mother-Clay.

Another, with two or three ſmall *STELECHITES*.

A hard Stone of the colour of a *Magnet*, with the ſignature of a *TROCHITES*.

Theſe Stones being broken, look flaky, and with a gloſs, as the *Lapis Judaicus*; but ſomewhat more obſcure. They alſo make a like *Effervеſcence* with *Acids*, eſpecially with *Spirit* of *Nitre*. And may probably be as good a *Diuretick*. That *All Foſſiles* of what figure ſoever make an *Ebullition* with *Vinegar*, is affirmed by Mr. *Lyſter*: (*a*) but was a ſlip of his, otherwiſe moſt accurate Pen. For there are many, and thoſe of ſeveral figures, which, although powder'd, yet are ſo far from making any *Ebullition* with *Vinegar*, that neither *Oil* of *Vitriol*, nor *Spirit* of *Nitre* it ſelf, (which taketh place ſometimes where the former doth not) will ſtir them: as appears in ſeveral Inſtances in this Catalogue.

(*a*) Phil. *Tranſ.* N. 100.

They are found in as great variety here in *England*, as in any other Country. By Mr. *Lyſter*, in certain *Scarrs* in *Braughton* and *Stock*, two little *Villages* in *Craven*: in ſome places of the Rock as hard as *Marble*. In ſuch plenty, that there are whole Beds of Rock made of them. By Mr. *Beaumont*, in *Mundip-Hills*; in the Rocks, from the Graſs to twenty fathome: but moſt in Beds of a grey and *griſly* Clay. In a *Grotto*, five and thirty fathome deep, he obſerved their growth: which was, from the fineſt, and the ſofteſt of the Clay. At firſt, they were whitiſh, ſoft, and ſmooth.

Afterwards, grew hard, and ridged, or divided into *Trochi* or Joynts; beginning at the top, and so descending. Being all the while in a manner quicken'd with Mineral Steams; conveyed, from the Mother-Bed, through the Pith of the several Feet of the Root (which Mr. *Lyster* figures) and of the Stock it self.

It were also further worth the enquiry, In what Time, one of these *Stones* will grow up. Whether it doth so, by *Starts*, as *Ice* often doth, and as I have seen a little *Icy-Tree* to grow level upon a Table? And whether so much as serves for the making of a single Joynt, at every *start?*

A *Stone* figur'd like a Piece of *ANGELICA Root*; with a large *Pith*, and very distinct *Rays*, as the *Cortical Insertions* in that, or other like Root round about.

TWO lesser round ones or more *Cylindrical:* one resembling the Root of *CICHORY*; the other of *TORMENTILE.*

A STONE somewhat FLAT, like the Root of *Iris:* but radiated as the former. More visible, if one end, being first polished, be then made wet; for so, both the *Pith* and *Radiation* are very distinct.

A FOURTH, as it were bared of the Rind; and having one end with a kind of *Button*, on which the *Rays* wind toward the Centre; as the Lines of a Rumb upon a Map, or the Suits of the Attire of any Corymbiferous Flower.

All these seem to be several stumps of Stone Roots, on which the above described Stones often grow.

A FIFTH, with a *Pith* and *Rays*; but CONICK and CROOKED, not unlike the young buded Horn of a *Calf.*

TWO more of the same Figure, but much less; rather resembling a *COCKS SPUR.*

Several CLUSTERS (as they appear) of petrify'd MOSSE. *Imperatus*, with *Dioscorides*, makes it a sort of *Alcyonium.*

A petrify'd TUBER, with several small papillary knobs, not much unlike that called *CERVI BOLETUS.* It stirs not with any *Acid.*

CHAP.

CHAP. III.

Of CORALS, and other like MARINE Productions.

THese having also a resemblance unto Plants, and a near analogy unto those Stones, last described in the precedent Chapter; they may therefore not unaptly be here subjoyn'd.

A Piece of CORAL, smooth, white, and solid; with its Base or Root spread abroad upon a *Chalky Bed.*

A SPRIG of solid *Red Coral.*

A knoted TRUNK of the same ½ inches and ⅝ in compass.

A Piece of solid CORAL both RED and WHITE, growing together.

The ROOT of a solid Red CORAL, spread upon the TRUNK of a White CORAL: in the same manner, as the Membranous Roots of *Sea-Shrubs* are spread upon Stones or other steady Bodies. As if it had been indeed originally one of those *Shrubs*; particularly, of the Lignous kind, which hath no *Pith*, like the Horny; but, as this *Coral*, is altogether solid.

The SHRUB-CORAL. *Corallium fruticosum.* So I call it, for its more especial similitude to a little *Shrub.* 'Tis of a browniſh colour, upright, and very much branched. Curiously adorned round about with *Striæ* running by the length; looking like the superficial *Fibers* in the stalks of some Plants. And within, radiated, as the same when cut *transversly.* In some of the greater Branches, the *Rays* being pointed or pricked, as by the laxer distribution of the *Fibers*, they are in some Plants. And many of them coming short of the Centre, so as also to form a kind of *Pith.*

The KNEED CORAL. *Corallium geniculatum. Pseudocorallium fungosum Ambrosini.* (*a*) *Madrepora ramosa Imperati.* (*b*) By which Name *Bauhinus* also describes it well. 'Tis striated without, and radiated within, almost as in the precedent. And is also ringed or knoted without, after the manner of *Canes*, or rather the upright *Equisetum*, and near of the same thickness. *Imperatus* hath another kind a kin to this, yet distinct; not only knoted, but joynted, and by him therefore called *CORALO Articulato*, in which

(*a*) Aldrov. Musc. Metall.
(*b*) Lib. 27. Cap. 4.

the Conick end of one Joynt is received into the like Cavity of another.

A Piece of the ſame CORAL found on St. *Vincents* Rock.

(*a*) Muſ. Septal. The *Matripora*, ſaith *Terzagi*, (*a*) and all Pores (as he calls them) and theſe only, are outwardly rough with *tranſverſe* Wrinkles. But this now deſcrib'd, ſeems by the *Striæ* more apparently wrinkl'd by the length. So that what he means, I do not well underſtand.

A JOYNT of the ſhallow joynted CORAL. 'Tis near an inch in Diametre, two and ½ long, ſolid, heavy and white. Streaked by the length. The two ends a little thicker, as of Bones at the Joynts: and riſing up from the Rim to the Centre into a little knob; and this it doth at both ends: whereas in that of *Imperatus*, the Joynts are deeper, and one end hollow. It was given by Sig^r. *Boecone.*

A Piece of white FIBROUS or ſtriated CORAL, but not knoted. Given by the ſame Hand.

The BUBL'D CORAL. *Corallium bulloſum.* From the ſame hand. 'Tis of an aſh-colour; and rough caſt all over, with very ſmall Bliſters or Bubles.

The COOME-CORAL. *Corallium cancellatum.* 'Tis white, and divided into ſeveral ſhort and thickiſh Branches, turbinated or knobed at the top. Wrought all over with ſmall cancellated Work, like that of an *Honey-Comb*, or the inſide of that Ventricle in a *Sheep* or a *Cow*, called the *RETICULUM.*

The FLORID COOME-CORAL. The Branches of this alſo are ſhort; and numerouſly flouriſhed. Inwardly, white and porous. The Surface of a pale yellow, and wrought, as the former, in imitation of an *Honey-Coome.*

A ſprig of Rough and POROUS Red *Coral.*

The PUMIS CORAL. *Corallium pumicoſum.* From the Perſon above-ſaid. 'Tis branched, of a grey colour, and porous, ſomewhat like a *Pumis Stone.*

The POUNCED CORAL. *Corallium punctatum.* 'Tis white, and the Surface pricked full of ſmall holes, almoſt as in the precedent.

(*b*) Lib. c. The BRANCHING POUNCED CORAL. It ſeems to be that deſcribed in *Bauhinus* (*b*) with the Title of *Corallium aſperum caudicans adulterinum.* The Branches hereof

hereof are very broad, and divided only at the top. Not only porous within, but alſo pricked full of extream ſmall holes on the outſide.

The STOOPING POUNCED CORAL. *C. punct. procumbens. Porus Ramoſus Bauhino.* In this, ſome of the Branches riſe up obliquely, and diſtinct. Others of them, trail or ſtoop, and are in ſeveral places inoſculated.

The RUSSET POUNCED CORAL. This is alſo branched; and the Root hereof, as that of a *Sea-Shrub*, ſpread upon an *Oyſterſhell*.

The WARTED CORAL. This likewiſe is a ſort of pounced and branched *Coral*; and white. The Branches being alſo as it were warted or knobed. (*a*)

(*a*) Imperatus, Lib. 27. c. 4.

ANOTHER of the ſame; MORE branched.

The White STARRY CORAL. From the Perſon before nam'd. Deſcribed and figur'd by *Imperatus*. So called, becauſe it is perforated with round and radiated Holes reſembling little Stars.

The Brown STARRY CORAL. Within, a little whitiſh. Not ſo porous, as the precedent; and with nothing near ſo many Stars. The Branches flat, like the Horns of an *Elk*; and ſpread abroad.

The OCULAR CORAL. *C. alb. oculatum Officinarum.* Very well deſcrib'd and figur'd by *Ferranti Imper.* (*b*) and *J. Bauhinus.* (*c*) This ſort is fiſtular, and hath large round holes in the ſides of the Branches, ſometimes near ½ of an inch over; ſomewhat like a *Birds Eye*.

(*b*) Lib. 27. c. 4.
(*c*) Lib. c.

A Piece of the ſame ſort, with its expanded Root.

The ſame growing on or round about ſome of the Branches of a *Sea-Shrub*. As it is probable, That all the ſorts of fiſtular *Corals* once did.

The CROWNED OCULAR CORAL. Given by Sir *J. Hoskins*. In this, which is alſo white, to the eyes on the ſides, are added little Heads crowned or radiated round about.

A CLUSTER of Red Fiſtular *Coral*.

The ſpread FOLIATED CORAL. *Cluſius* deſcribes it by the Name of *Planta Saxea Abrotonoides*. Of whom *Bauhinus* borrows his figure. His Deſcription not clear. 'Tis white, and porous; eſpecially the centre of every Branch, in imitation of a Pith. The ſeveral Branches encompaſſed

encompaſſed with little ſhort round hollow ſprigs, or, as we may call them, *Coral-Leaves*, curiouſly ſtriated round about.

The Upright FOLIATED CORAL. In all reſpects like the former, ſaving that it is leſs ſpread.

Coral is fiſh'd for from the beginning of *April* to the end of *July*. Not in the *Ocean*, but the *Mediteranian-Sea* only. In which there are eight or nine Fiſheries, among the *Rocks*, no where above forty miles from *Land*. Three upon the Coaſt of *Sardinia*; on that of *France*, two; of *Sicily*, *Catalonia*, *Corſica*, and *Majorque*, one. (*a*) Of white *Coral*, there is great abundance in *Braſile*. (*b*)

(*a*) Tavern. Ind. *Voyage*, Chap. 21.
(*b*) J. de Laet.

Of the Nature and Generation of *Coral*, it is affirmed by the Honourable Mr. *Boyle*, (*c*) That whilſt it grows, it is often found ſoft and ſucculent, and propogates it *Species*. And by *Georg. de Sepibus*, (*d*) That of thoſe who had been us'd for many years, to dive for *Coral* in the *Red-Sea*, *Kircher* learned thus much; That it would ſometimes let fall a *Spermatick* Juyce, which lighting upon any (*ſteady*) Body, would thereupon produce another *Coral*. And further, by *Wormius* and *Tavernere*, from the Relations of others, That this Juyce is white or milky. Which may ſeem the more credible, when we conſider, that the like milky ſubſtance is found in divers Mines. (*e*) Sometimes incloſed as is obſerved by Mr. *George Planton*, in great Hollows of the *Metallick Rock*. (*f*) And that Mr. *Beamont* hath found in the Hollows of ſome Stones called *Entrochi*, and *Rock-Plants*, or a kin to them, an evident concretion of ſuch milky Juyce. (*g*)

(*c*) Of the Orig. of Forms, 136.
(*d*) Muſ. Rom. p. 45. Col. 2.
(*e*) Dr. *Brown*'s Trav.
(*f*) Phil. *Tranſ. N.* 100.
(*g*) Phil. *Tranſ. N.* 129. p. 730. l. pen.

Of *Corals*, are chiefly prepar'd, The Powder ground upon a *Marble*; the *Magiſterial Salt*; and the *Tincture*. To good purpoſe, in ſome *Feavers*, and ſome other Caſes. But the Name of *Tincture*, according to the common notion of it, is a meer deceipt: it being, in truth, no more but a *Liquamen*, or ſolution of the *Magiſterial Salt*. For thoſe *Acid Liquors* which are uſed as *Menſtruums* for the making of it; by digeſtion or repeated heats, do always turn red: which not being heeded, the ſaid colour hath been believed to proceed from the *Corals*. Of the Effect of this *Tincture*, or rather *Salt of Coral*, upon a *Malignant Feaver*, ſee a Memorable Relation of *Boetius* in his own Caſe. (*h*)

(*h*) De Lap. & G. lib. 2. c. 154. p. 312.

BASTARD

BASTARD-CORAL. *Alcyonium.* So call'd, becauſe a *Marine* Production, often of a roundiſh form, like the Neſt of an *Halcyon*, and by ſome phantaſtick thought to be one of thoſe Neſts petrify'd. Hereof there are ſeven or eight ſorts here preſerv'd. As

The Great, White, FISTULAR *Alcyonium.* *Imperatus* figures a Cluſter of this under the ill Name of *Vermi Marini Impetriti.* (*a*) And *Beſler* a ſingle crooked *Tube*, with that of *Exuviæ Serpentis in Lapidem converſæ*; which is as bad. This is ſuch an one, but more ſtrait and ſmooth, as thick as the upper end of a *Tobacco-Pipe* ſtalk. But with a much greater bore.

(*a*) Lib. 24. cap. 26.

The Middle white FISTULAR *Alcyonium.* A Cluſter of *Coralline Tubes*, in ſome places, meeting in parcels; in others, divaricated, almoſt as the Veſſels do in Plants. Not equally thick at both ends; beneath, not exceeding the Quill of a *Crow*; at the top, as wide as that of a *Gooſe.* Rough all along with annular wrinkles, almoſt like the ſlough of a *Silk-Worm*, or a *Serpent.* Being hollow, 'tis probable they ſerve as the *Matrices* of ſome *Sea-Inſects.*

The ſmall white FISTULAR *Alcyonium.* By *Imperatus* (*b*) (whom *Terzagi* imitates (*c*)) called *Vermicchiara*; and *Alcyonio Mileſio*; a much better Name. A Cluſter of crooked *Tubes*, not thicker than a *Packthread*; and alſo wrinkled.

(*b*) Lib. 27. cap. 8.
(*c*) Sept. Muſ. c. 13. n. 18, 19.

The Red FISTULAR *Alcyonium.* By *Imperatus* call'd *Tubularia purpurea.* By *Beſler Alcyonium Maris Rubri.* A Congeries of ſtrait, and red Pipes, of a *Coralline* ſubſtance, about as thick as an *Oaten* ſtraw, all ſtanding parallel, as the Cells in a *Honey-Comb:* and divided into ſeveral Stories by tranſverſe Plates or Floors, at ſeveral diſtances from a $\frac{1}{4}$ to $\frac{1}{2}$ an inch, or thereabout.

The BRANCHED *Alcyonium.* 'Tis white, and of a *Coralline* ſubſtance, but ſomewhat ſoft. The Branches ſolid, and in ſome places *coaleſcent.*

The KNOBED *Alcyonium.* Of a white and coralline ſubſtance, but ſomewhat ſoft. Of ſuch a Contexture, whereby it is every way, and pretty openly, pervious throughout; ſomewhat anſwerable to that of a *Sponge.* Evenly tuberated all over the top and ſides.

Another, unequally tuberous, and of a little more open compages.

The

The LOBED *Alcyonium.* Of a like colour and ſubſtance with the former: yet not compoſed of round, but flat or lobed portions, with ſome likeneſs to *Liverwort.*

The BUBLED *Alcyon.* Given by Captain *Th. Fiſſenden.* About ½ an Eln in compaſs. Conſiſting wholly of *Plate-work*, ſo conjoyn'd, as to make ſeveral large *Apertures*, runing one into another: ſomewhat after the manner of a *Ruff.* The Plates or whole Body compos'd of moſt minute Bubles, divided by a very thin Sepiment, and ſtanding all in even, ſtrait, and parallel Rows. So that it looks not much unlike Linnen-Cloath: ſaving its brown tawny colour.

A NETED *Alcyon. Retepora Imperat.* So called from its Figure.

MUSHROON-CORAL. *Fungites.* So called from a little likeneſs it hath to a *Toad-Stool.* Here are divers ſorts.

The WAVED *Muſhroon Coral.* 'Tis round, and above two inches over; ſtriated beneath round about. The *Rim* and *Area*, both undulated. With thin Plates ſtanding all along, and on both ſides *tranſverſly* to the Waves.

ANOTHER, with DOUBLE WAVES. Circular, and about four inches in Diametre. With the top riſing high and round. With tranſverſe *Striæ*, rather than Plates. And Waves both double, and more winding than in the former; much reſembling thoſe of a Mans Brain. From whence, this ſort, moſt properly, are called *BRAIN-STONES.*

A POLISH'D BRAIN-STONE. It much reſembles a ſort of undulated Stone. Whereof hereafter.

Part of a large BRAIN-STONE from the *Bermudas.*

The PLATED FUNGITES. So eſpecially to be called, becauſe it hath no *Undulations*, but Plates only. All very thin and ſharp, and radiated, to the circumference, after the manner of thoſe in a common *Muſhroon*; excepting, that there they ſtand underneath, here above. This ſort is curiouſly figur'd in *Calceolarius*'s *Muſæum.*

A FLAT RADIATED *Fungites.* Figur'd by *Bauhinus.*

(a) Lib. 39. c. 60. (a) 'Tis ſomewhat more than two inches broad, and with the ſides as it were cruſhed together. Waved round about, and the *Rim* raiſed like a border pretty high.

A STARRY FUNGITES. Of a circular figure; beneath, a little concave; above, convex. Wrought all over with a great number of ſmall radiated Stars, every where contiguous.

A

A Piece of *Fungites* with GREAT STAR-WORK: every Star, with the Rays, being near ½ an inch over; and the Rays alſo plated.

The COOMED *Fungites*. The top hereof is circular; all over carved into radiated *Tubes*, the *Rays* ſtanding high without, and deep within. Compoſed together ſo, as ſomewhat to reſemble an *Honey-Coome*, from whence I name it.

ANOTHER of the ſame ſort, of an Oval Figure. Given by Sir *R. Moray*.

A Fragment of a great One of the ſame ſort. In which the Texture is fairly obſervable. For the aforeſaid *Rays*, are indeed the extremities of ſo many Plates which run through the length of every *Tube*; and which are likeways all the way conjoyned with an infinite number of other extream ſmall thin tranſverſe Plates: dividing the whole *Tube* into little ſquares, after the like manner, as in the Pith of a *Bull-ruſh*.

The *Fungites* is found in the *Indian-Sea*, and the River *Nilus*. (*a*)

(*a*) Cluſius.

CHAP. IV.

Of GEMS.

A ROCK of DIAMONDS. Given by Sir *R. Moray*. They grow upon their Bed (which is about three inches broad, and four in length) in *Cryſtals* Sexangularly pointed. Of ſeveral ſizes from the thickneſs of a midling Pin, to a ½ of an inch Diametre, but all of them ſhort. Not very perſpicuous, but a little greyiſh, like the *Calcedony*. Saving one ſmall cluſter of them, tinctur'd yellowiſh. They cut Glaſs very deep and eaſily.

The principal Diamond Mines now known, are four. That of *Raolconda*, in the Kingdom of *Viſapour*; diſcover'd 200 years ſince. In this Mine, the Diamonds lie in ſandy Veins in the Rocks. Of all, the *cleareſt*, and of the whiteſt *Water*. They pound and waſh the Vein for the *Diamonds*, juſt as we do ſome of our *Ores* for the Metal. A ſecond

call'd the *Gany*, about seven days journey from *Golconda*; found out 100 years since. They dig here not above 14 feet deep. Sometimes above sixty thousand Men, Women and Children at work. It affords the largest *Diamonds*, but not clear: one sometimes above 40 *Carats*, *i.e.* $\frac{1}{3}^{d}$ of an ounce. And there was one here found which weighed 900 *Carats* (*i. e.* ℥vij ﬀ.) A Third, that of *Govel*, a River in the Kingdom of *Bengala*. The *Diamonds* are found in the sand of the River, for the space of 50 Leagues. From hence come those fair pointed Stones called *Natural Points*: but not great. The Fourth, that of *Succadan*, a River in *Borneo*. But there are none come from thence but by stealth. How the *Indians* prove, work, and sell their Stones, with other particulars, see in *Tavernere*. (*a*)

(*a*) Ind. Tav. lib. 2. c. 11, 12, 13, 14, 15.

Rough *Diamonds* are often naturally figur'd into Triangular Plains: a mark to know a right one by, (*b*) as well as hardness. Many also of the best are pointed with six Angles; some, with eight; and some Tabulated, or Plain, and Square. (*c*) *Diamonds* receive no hurt, but are rather mended, by the fire. (*d*) Some, saith *Garcias*, (*e*) being rub'd, will take up straws, as *Amber* and other Electrical Bodies. And Mr. *Boyl* (*f*) speaks of one of his, which with a little friction attracts vigorously. Of another, (*g*) which by water made a little more than luke-warm, he could bring to shine in the dark.

(*b*) Mr. *Boyle Of Gems*, p. 11.
(*c*) Joh. de Laet L. de G. & Lap.
(*d*) Boet. de Lap. & G.
(*e*) Lib. 1. c. 43.
(*f*) *Of Gems*, p. 109.
(*g*) Ib. p. 112.

'Tis the property of all true *Diamonds*, To unite the *Foyle* closely and equally to it self, (*h*) and thereby better augment its lustre, than any other *Gem*. That which is called the *Foyle*, is a mixture of *Mastick* and burnt *Ivory*: The latter, being one of the blackest of colours; used by *Painters* for *Velvet*, the *Pupil* of the Eye, &c.

(*h*) Boet. de G.

The Water of those which are drawn, not from the Rock, but the Ground, commonly partakes of the colour of that Soil or Ground: (*i*) and some are found as yellow as a *Topaz*. (*k*)

(*i*) Mr. *Boyl*, *Of Gems*, p. 51.
(*k*) Ib. p. 35.

Between the Grain and the Vein of a *Diamond*, there is this difference, That the former furthers; the latter, being so insuperably hard, hinders the splitting of it. Although it seems, that a Vein, sometimes is nothing else, but a Cross-Grain. Our *European* Jewelers, when they split one, they take a very small iron Wyre, and having daubed it with

with Oil and Powder of *Diamonds*; draw it upon the *Diamond*, by a Tool, to and fro like a *Saw*, so long as is needful for that purpose.

The BASTARD-DIAMOND. *Pseudo-adamas.* Now remaining, as it was found, bred in a *Musculites*, a Stone like a *Muscleshell*. Given also by Sir *Robert Moray*. 'Tis angular, pointed, and very clear. And cuts Glass with great ease and depth. Of our *Bastard-Diamonds* here in *England*, the *Cornish* are the best; much better than those on St. *Vincents Rock* near *Bristol*.

CRYSTAL. From κρύος & γέλω: because supposed to be only Water contracted or condensed with cold. Here are several sorts.

A CRYSTAL ROCK. In which, several lesser *Crystals* Sexangular, pointed, and most perspicuous, grow round about a great one, in the form of a *Pyramid*, above eight inches about. The bottom of it being polish'd, all the sides to the top, are very pleasantly apparent through the same.

A small COLUMN of *Crystal*, also exceeding clear.

A ROCK of midling *Crystals*, growing upon a Semiperspicuous Bed, or *Grey-Mother*. They are very clear, notwithstanding that beneath they seem to be tinctur'd yellow; being there only daubed with some substance of a yellow colour. Of these *Crystals*, the two opposite sides, are the greatest: which is also observable in many others.

A small *Crystal* COLUMN, with a whitish *Base*.

ANOTHER clear *Crystal*, growing on a Semiperspicuous *Mother*, together with a kind of *Marchasite Spar*, or tessellated Stone, of an *Amethystine* colour.

A ROCK of small Grey *Crystals*, almost like a *Calcidony*.

Another of the same sort, growing upon a kind of *Limestone*.

A Third, with the Points of an *Amethystine* colour, growing to a *Matrix* of a purplish black.

A *Crystal* COLUMN, of an *Hyacinthine* colour, but dilute. An inch in Diametre, and almost ½ a foot long. The two opposite sides of this also are the greatest.

A lesser one of the same *Species*.

A THIRD, growing upon a Bed of the same colour; but opacous. Mr. *Boyle* (*a*) mentions a piece of *Crystal*, in one part of an *Emrald-green*. And *Terzagi* (*b*) another that was black.

(*a*) *Of Gems*, P. 39.
(*b*) Musæ. Sept.

A *Crstyal* COLUMN, naturally incloſing a kind of Moſs (or the likeneſs of it) at one end of the Column of a paler, at the other of a dark Green. 'Tis above ½ a foot in compaſs.

ANOTHER piece of *CRYSTAL* in which is immerſed a Moſſy ſubſtance of a rediſh colour. And there are ſome *Cryſtals* have been known naturally to encloſe a Liquor. (*c*)

(*c*) Mr. *Boyle*, *Of Gems*, p. 43. & Muſ. Calc.

A Piece of poliſh'd *CRYSTAL* in the figure of a half *Globe*. 'Tis on one ſide flaky, and hath many very ſmall *Bubles*, by which it appears cloudy.

ANOTHER Piece poliſh'd into a Sphærical Triangle, and ſomewhat Oval.

A THIRD Piece poliſh'd into a *Cone*.

A Maſſy Piece of *CRYSTAL*. Not pointed, nor angular; but of a roundiſh figure; much bigger than any mans head. One way, near a yard in compaſs; the other, above three quarters. In weight, thirty nine pounds and a ½ *Haverdupoiſe*. Yet is it very clear, beyond the cleareſt *Ice* of the ſame thickneſs. The biggeſt piece of *Cryſtal* I find mention'd elſe-where, is a Ball of ſix and thirty ounces in *Septalius*'s *Muſæum*.

Cryſtal, at leaſt ſome ſorts of it, is the ſofteſt, ſaith *Boetius*, (*d*) of all *Gems*. He ſhould have ſaid, of all perſpicuous *Gems*: for the *Turcois* is much ſofter. The moſt uſual Figure of *Cryſtal*, is *Sexangular*: yet *Terzagi* (*e*) mentions a Rock of ſquare pointed ones. But it is obſervable, That he ſaith the Bed on which they grew, ſeem'd to be *Gold-Ore*. If ſo, it might proceed from ſome governing principle in the *Ore*. For I have heard it noted, as I remember, by Sir *Chriſtopher Wren*, That *Grain-Gold* is often found naturally figur'd into *Cubes*. *Cryſtal* grows in moſt Countries, both cold and hot: the *Globous*, eſpecially in *Bohemia* and *Silecia*.

(*d*) Lib. 2. c. 73. l. 1.

(*e*) Muſ. Septal. c. 9. n. 54.

A Drachm (*f*) of the Powder of *Cryſtal*, with Oil of ſweet *Almonds*, a preſent Remedy for thoſe that have taken ſublimate. As alſo for *bilious* and *chylous Diarrhæas*. (*g*) When *Calcin'd*, by ſome called *Pulvis Cæſaris*, of excellent uſe againſt the *Epilepſie*. (*h*)

(*f*) Boet. de Gem. & L. Lib. 2. c. 74.
(*g*) Ib.
(*h*) Terzagi *in* Muſ. Sept.

An

An AMETHYSTINE ROCK. The *Gem* hath its Name from the opinion of its being an *Amulet* againſt Drunkenneſs. This *Rock* conſiſteth of angular pointed and contiguous *Cryſtals*; growing from both ſides the *Matrix*, inwards, where their Points meet, and are all cloſely indented. Some of them ſeem to be *Pentagonal*. Several are *Conick* from the Points towards the Roots. Theſe are well tinctur'd, but the Roots are all white, or rather *Diaphanous* and colourleſs. As alſo is the *Matrix*, or inward part of it; yet not ſo clear. The ſhell over all, flat, opacous, and of a rediſh brown. There is the Figure of a very fair one in *Calceolarius*'s *Muſ.*

ANOTHER, growing upon a *Matrix* or Bed ſpotted red and yellow, and croſs-grain'd, or compoſed of ſmall *Cryſtals* ſet together *decuſſatim.*

A THIRD, the *Matrix* whereof is a kind of *Amethyſtine Flint*, *i. e.* not compoſed of *Cryſtals* or *Grains*, as is uſual, but one entire maſſy Stone, Semiperſpicuous, and of a pale blew, almoſt of the colour of ſome *Cows* Horns. Of an orbicular Figure, and ſomewhat flat like a *Loaf*. The Roots of the *Cryſtals* are colourleſs, as in the former, and the points and upper parts of a pale *Purple*. With theſe, is included in the ſame *Matrix*, a whitiſh and flaky Stone, which is eaſily diſſolved with *Spirit* of *Nitre*. Which is one, amongſt many inſtances, how near together two Stones may be bred, of ſo different a nature one from another.

A WHITE AMETHYST. This is here naked, or without a *Matrix*. Conſiſteth of divers contiguous *Cryſtals*, half an inch and an inch long; their Roots grey; but their Points clear, uſually ſexangular. From the Points the Roots taper'd or conick: the Figure which doth eſpecially diſtinguiſh this Stone from *Cryſtal*, whether white, or of an *Amethyſtine* colour.

An AMETHYST of a pale Violet colour; found growing in *Scotland*. Given by Sir *Rob. Moray*.

ANOTHER, with a kind of *Chryſolite* growing to it.

The beſt of this kind, are, as *Theophraſtus* well deſcribes them, of the colour of a ripe (red) *Grape*: and are the hardeſt. Theſe grow in the *Indies*: the reſt in *Bohemia*, *Saxony*, *&c.* The beſt, being burnt, excellently imitate a *Diamond*. (*a*)

(*a*) Boet. de Gem. & Lap.

Two

Two little white or pale SAPHIRES, polish'd into a flat oval Figure. By some called *The Female:* and so the paler kinds of other *Gems*. The best, grow in *Bisnagar*, *Zeilan*, and other parts of the *East-Indies*, especially in *Pegu*. The meaner, in *Bohemia*, and other adjacent places. They are cut or fashion'd with *Emery* and *Tripoly*; and engraven with *Diamond-Dust*, as other harder *Gems*. Being burnt, they imitate a *Diamond*, as doth the *Amethyst*. (a) And *Æs ustum* and *Glass* melted together, imitate a *Saphire*. (b)

(a) Boet. de Gem. & L.

(b) Aldrov. Mus. Metall.

The *Saphire*, saith *Boetius*, (c) being applied to any bruised part, prohibits the Inflammation of it, in a miraculous manner. See also the *Salt* and *Tincture* (d) of it described and commended by the same Author.

(c) Lib. 2. c. 43.

(d) Ibid.

The GRANATE, *qu. Ingranate*, or *Ingraind*. And therefore by the *French* called *VERMEILLE:* and the *Matrix*, by *Moscardo*, *Minera de Ingranata*. The deepest, well compared by *Imperatus* to the Juyce of a ripe *Mulberry*. Here are of several sizes.

A BOHEMICK GRANATE, as big as a *Nutmeg*. With several more of the same size, or near it.

Some other Large GRANATES, polish'd with *Rhombs*. But these are cloudy.

A Bag of Lesser GRANATES, of several sizes from a *Pease* to a *Mustard-Seed*.

A BED of GRANATES from the *West-Indies*. Given by the Honourable *Rob. Boyle* Esq; Most of them as big as a large *Pease*, beded in a Stone which is friable, and easily rub'd to a redish and glistering powder; in some places a little black, and growing with cross Flakes. It seemeth, from its softness, not to have been the original *Bed* or *Matrix* wherein the Stones were bred; but that being, in pecking the *Rock* or *Mine*, broken off from that, they were afterwards casually lodged in this.

These Stones grow in *Calecut*, *Cambaia*, and *Æthyopia*. As also in *Spain* and *Bohemia*, where, contrary to what is observed of most other *Gems*, they are found exceeding the *Oriental*. (e) Many of them will abide the fire, without change of colour. (f)

(e) Boet. de Gem. & L.

(f) De Laet. de Gem. & L.

Spirit of *Salt* extracts a rich Tincture out of *Granates* calcin'd and finely powder'd. (g) And *Aq. Regis*, a rich

(g) Mr. *Boyle*, *Of Gemr*, p. 88.

solu-

solution of them, only powder'd; colour'd somewhat like a solution of Gold. (*a*) (*b*) Ibid.

The *Jewelers* TOPAZ. *Chryselectron Plinij.* This is an Oriental one. 'Tis of a perspicuous Golden colour, with some scarlet spots or like a deep Tincture of *Saffron.*

The Whiter or Female TOPAZ. Composed of several *Crystals*, clear and colourless at the top; below, clear and yellow. Growing on a white *Matrix*, with a light yellowish Tincture. They grow in *Arabia*, *Bohemia*, *&c.* The best in *India* and *Bactriana:* the *Europeans*, especially, being soft, and not without blackish Clouds. The *Oriental*, the hardest of *Gems*, except the *Diamond.* And probably the *Ruby.* Found sometimes so big as to weigh twelve pounds. (*b*) *Æs ustum*, *stannum ustum*, *Cinabar*, and *Crystal*, melted together, imitate a *Topaz.* (*c*) (*b*) Boet. de Gem. & L. (*c*) Aldrov. M. Metall.

The SMARAGDUS, growing together with a pale *Amethyst* in one *Matrix.* The *Crystals* are angular, but seem to hold no proportion.

The *Occidental*, sometimes as big as a mans fist, especially in *Peru*; but soft and cloudy. The *Oriental*, no bigger than a *Filbert.* The *Europeans*, in *Cyprus*, *&c.* the worst. 'Tis imitated (*d*) with *Æs ustum*, and half as much *Crocus Martis.* (*d*) Ambrosin. (*in* Aldrov. M. Met.) *out of* Porta.

Six Grains of this Stone, in powder, procureth sweat. (*e*) Applied entire to the Belly, stopeth all kind of *Dysenetries* in a miraculous manner. (*f*) (*e*) Musf. Wormian. (*f*) Boet. *from* Guainerius.

A CLEAR and GREEN STONE, (a kind of *Smaragdus*) which, being heated red hot, shineth in the dark for a considerable time, *sc.* about $\frac{1}{16}^{th}$ of an hour. Given by Dr. *William Crown.* I tried the experiment my self also. And at the same time observ'd, That as it grew hot in the fire, its Green colour was changed into a Sky-blew; which it likewise retain'd so long as it continu'd to shine: but after that, recover'd its native green again.

The AGATE. So called from the River *Achates* in *Sicily*, near which it was first found. (*g*) Almost of the colour of *clear Horn.* The hardest of *Semiperspicuous Gems.* They grow in *India*, *Germany*, *Bohemia.* Naturally adorned with much variety of waved and other figur'd Veins, Spots, the representation of Vegetable, and sometimes of Animal Bodies. None more memorable, than that mention'd (*g*) Theophr. de Lap.

by

by *Pliny*, (*a*) of *Pyrrhus* King of *Epyrus*, in which, without much ſtrain of phancy, one might imagine a repreſentation of the Nine *Muſes*, and *Apollo*, with his *Harp*, in the middle of them. 'Tis uſed for *Sword-Hilts*, *Knife-Hafts*, *Beads*, *Cups*, and the like. There are pieces of it, ſometimes (*b*) as thick as a Mans Arm.

(*a*) Lib. 7. c. 11.

(*b*) Muſ. Septal.

The ONYX. So called, becauſe in colour not unlike the Nail of a Mans Finger. *Ambroſinus* confounds the *Agate* and the *Onyx* together. But the *Onyx* differs from the *Agate*, chiefly, in that, inſtead of Veins, 'tis generally compoſed, ſaith *Boetius*, of *Zones*. But I think rather of ſeveral *Balls*, one within another: which, when the Stone is poliſh'd, do indeed repreſent a round ſpot in the centre, with ſeveral *Zones* or *Rings* about it. Here are of divers ſorts.

An ONYX with a white, and very broad *Zone*.

ANOTHER, of a pale Blew.

A THIRD, with *Rings* White and Bay.

A FOURTH, of a light yellowiſh colour, or of Citrine *Amber*, with aſh-colour'd *Rings*.

A FIFTH, in Figure like an Eye, with the *Iris*, White; the *Pupil*, of the colour of *Honey*.

A SIXTH, with the middle Spot or *Pupil* encompaſſed with a grey *Iris*.

A SEVENTH, with the *Iris* party-colour'd, within, White; without, brown; and the *Pupil* alſo of the ſame colour.

An EIGHTH, with an aſh-colour'd *Pupil*, the *Iris* of a pale *Amethyſtine* within, and white without. Theſe with more variety of colours, are by ſome particularly called *NICCOLI*; qu. *Onyculi*.

A NINTH, which may be nam'd, The *BINOCULAR*; as having the likeneſs of two little Eyes. The Table on which Nature hath drawn them, is of the colour of *yellow Amber*, and ſemiperſpicuous. The Eyes are white, with their *Pupils* of the colour of the paleſt live *Honey*.

A TENTH, diſtinctly called *BELI OCULUS*: the *Iris* whereof is Grey; the *Pupil*, and the reſt of the Eye, Black.

An ELEVENTH, of the colour of *yellow Amber*, with grey Girdles, not round, as in all the former, but angular.

The

The *EMBRIO* of an *ONYX*. So I name it. 'Tis a half *Globe*, poliſh'd. The outer Cruſt or Shell, Semiperſpicuous, and as hard as of a true *Oynx*. The part within, round, of an opacous liver-colour, and ſo ſoft as to be diſſoluble with *Spirit* of *Nitre*.

A PEBBLE of kin to the *Onyx*. 'Tis round or globous, and on the two oppoſite ſides, a little prominent. About an inch in Diametre. The outer Shell, yellowiſh; the middlemoſt, red; both opacous. The intimate Part, diaphanous, and of the colour of a glowing Coal. It ſeemeth to me, That as ſome *Pebbles*, ſo many more *Flints*, are a ſort of *ONYX*. The *Onyx*, amongſt other things, is uſed for the making of *Cups*; of which, King *Mithridates* is ſaid to have had two Thouſand. Sometimes ſo big, as to ſerve for *Statues*. At *Rome*, in the *Baſilica* of St. *Peter*, there are (or were in *Boetius*'s time) ſix little *Onychine* Columns. (*a*) They grow both in the *Eaſt* and *Weſt-Indies*, and in *Europe*.

(*a*) Boet. lib. 2. de Gem. & L.

The ONYCHATE. Betwixt an *Onyx* and an *Achate*. Compoſed not of *Zones*, or *Balls*, but of *Plates*, perſpicuous and aſh-colour'd, mixed.

ANOTHER, of a Globous Figure, conſiſting of *Plates* aſh-colour'd and brown: like a little turn'd *Bowl* of *Aſh-wood*.

A THIRD, conſiſting of Black, and Horn-colour'd *Plates*, mixed together, theſe latter, being alſo ſtained with red ſpots.

The PSEUDOPALUS. 'Tis of a pale blewiſh Water, like a *Fiſhes Eye*, or a drop of *Skim'd-Milk*, with ſome Rays of yellow.

ANOTHER, growing to a thin *Cruſt* or *Matrix* of an Iron-colour.

This, and the *Opalus* it ſelf, the ſofteſt of *Gems*. (*b*) They are now found principally in *Hungary*. (*c*) The *Opalus*, ſaith *Boetius*, hath its variety of colours, only by Refraction: (adds *Laet*, (*d*) like thoſe in a *Priſme*) for if it be broken it looſeth them. 'Tis true, that theſe colours are produced by Refraction: yet not as in a *Priſme*; as not depending upon the Figure, (for they will not be produced in other Stones of the ſame figure) nor ſo much as any flaw or flakineſs in the Stone; but its peculiar Texture, which

(*b*) Boet. de Gem.
(*c*) Tavern. *Voyages*.
(*d*) Lib. 1. de Gem. c. 13.

causeth those Refractions. *Tin* and *Venis-Glass* melted together, imitate an *Opalus*. (*a*) See also the *Phil. Transf.* hereof. (*b*)

(*a*) Porta.

(*b*) Num. 38.

The ONYCOPALUS. By some called *Oculus Cati*. It hath the *Zones* or *Rings* of the *Onyx*, of a pale White. The best of these are found in *Zeilan* and *Pegu*. Much harder than the *Opalus*. It might be try'd, whether this Stone doth in any degree partake of the strange property of the *Opalus*; some of which, being only steeped a while in common water, will become *Transparent* for some time. (*c*)

(*c*) Laet, ubi supra.

The CALCEDONY, *i. e. Onyx Chalcedonius*, as *Kentman* not amiss. (*d*) This is polish'd and set in a Frame. Above four inches long, and near as broad. Semiperspicuous, almost like to a piece of grey *Ice*. Consisting of white and most perspicuous parts so mixed together, as to look in some sort like a *Honey-Coome*.

(*d*) Fossil. Nomencl.

Another small one, with a pointed and sexangular polish at both ends.

This Stone is next in hardness to the *German Agate*. The cleerest, with a pale cast of blew the best. In *Germany*, being cut into thin broad *Tablets*, many have their *Arms* either engraven thereon, or painted on the back-side; preferring it to *Crystal*, as being harder, if good. Hereof also are made little Mortars for the powdering of *Emery*; likewise *Cups*, *Religious Beads*, *&c.* (*e*)

(*e*) Georg. Agric.

The SARDIUS or *Cornelian*, qu. *Carnelian*. A semiperspicuous Stone. The best, by some called *The Male*, of the colour of Flesh, saith *Boetius*, with the blood in it. I add, but of a living Animal. But this is diluted with somewhat of an *Amber*-colour. Anciently not only This, but all the smaller *Gems*, were used especially for Signets and Signet-Rings. (*f*)

(*f*) Theop. de Lapid.

The SARDONYX. As it were compounded of the *Sardius*, and the *Onyx*. This is polish'd, and so the better shews it self. It consisteth of White and Blackish Rings, one with in another. And stained both with red, and pale green Spots interjected. The *Rings*, with the help of a *Glass*, appear much more numerous, curiously representing those in the *Root* of *Taraxacum* or *Dan-de-Lyon*, cut transversly. Note also, That the said *Rings* are properly so call'd, only in the polish'd Stone; being, when entire, really so many Balls,

as

as in the *Bezoar* or *Onyx*, one within another. This Stone is found in several parts in *Asia* and *Europe*. Harder than the *Onyx*, or the *Agate*; and is therefore figur'd with *Emery*. Hereof anciently *Cups* were made, and those *Dishes* call'd *Vasa Myrrhina*. See *Worm*.

The JASPIS. An opacous *Gem*; always, saith *Laet*, (a) with some kind of earthyness. But I take this to be only the property of the *Lapis Nephriticus*. 'Tis found of most colours; of which here is some variety.

(a) Lib. de Gem.

A GREEN JASPIS, stained with White Spots.

A Flesh-colour'd JASPIS, with Blackish *Striæ*.

ANOTHER, stained with Purple and Blew Spots mixed together.

A FOURTH, stained with white and red Spots.

A FIFTH, Variegated with White, Carnation, Red, dark Green, and bright Green Veins and Spots. Very like to those, which *Boetius* saith are plentifully found in *Bohemia*.

A GEOMETRICK JASPER. It seemeth at least of affinity with the *Lapis Sanguinalis* described in *Boetius*. (b) But is certainly one sort of *Lapis Cruciformis*. (c) This here is polish'd into a plain Oval Figure, or flat on both sides. About an inch and ½ long, and ¼ thick. In the centre or middle part of both sides stands a Rhumb or Diamond-square part, of a blackish Green. From the four Angles whereof are produced as many Lines of the same colour; and from each of these, two more, at acute Angles; the extreme parts whereof compose four more green Parts, as it were half Rhumbs: all joyn'd together with a circle near the *Rim* of the Stone. Amongst these, some yellow and red Spots are sprinkled up and down.

(b) Lib. 2. c. 184. *out of* Monardes.

(c) *See* Aldrov. Musf. Metall.

A Bag of a course sort of JASPER Stones, knockt off from those in *Wilts-shire* near *Marleborough*, called *The Grey-Weathers*. Given by *John Aubrey* Esq;. So hard, that no Tool will touch them. Generally of a light Grey, some almost white, many of a dirty red.

Another, of a blewish Grey. Taken from a like shelf of Stones at *Stone-heng*. 'Tis hard enough to scratch Glass.

Another like a green Pebble, found in one of the Streets of this City. Where also, saith the fore-mentioned Person, many more are met with, and that they are a sort of *Jasper*, brought, as *Ballast*, from the *East-Indies*.

The JASPACHATES. 'Tis poliſh'd, and ſo figur'd, as to look like one half of a *Pear*, with the Stalk, Coar, and dead Flower cut out. Curiouſly beautify'd with Yellow, Purple, and Blood-red Spots, immerſed in the Horny and Semiperſpicuous colour of the *Agate*; with which alſo 'tis equally hard. This alſo is a kind of *BLOOD-STONE:* as all other *Jaſpers* with red Spots.

The JASPONYX. 'Tis poliſh'd with an Oval Figure. Compoſed of white *Zones*, beſprinkled with White, Brown, and Red Spots.

Another of a courſer kind, compos'd of Green and Aſh-colour'd Plates. Like that *Marble* deſcribed by *Imperatus* with parallel black Lines.

The JASPAMMITES. So I call it; Having the Figure of the *Ammites*, with the Colour and Hardneſs of the *Jaſpis*. For 'tis compoſed of little orbicular Stones, ſomewhat bigger than a *Pepper-Corn*; all green without, and of a dark Purple in the centre. So as they ſeem alſo to have been once little cruſted or ſhell'd Balls, as thoſe of the *Ammites*, hereafter deſcrib'd.

The *Jaſpis* grows in *India*, *Phrygia*, *Thracia*, and *Bohemia*. Next in hardneſs to the *Agate*. Sometimes ſo big, as to be uſed for Statues. Of great eſteem, as an *Amulet*, for the ſtaunching of all *Hæmorrhages*. Of its Effect herein, ſee ſome Caſes in *Boetius*; one of them a moſt remarquable one. (*a*) See alſo two others, in Mr. *Boyle*, *Of Gems*. The ſpecifick Virtues aſcribed to This and divers other Stones, ſeeming almoſt incredible unto ſome: Mr. *Boyle*, to render an intelligible Account of the ſame; doth reaſonably ſuppoſe, That all opacous Medical Stones have been, ſome *Bolus*'s, ſome *Ores* of *Metals*, or *Minerals* of kin to *Metals*, ſo advantagiouſly alter'd, as by application only to become Sanative. (*c*) The *Green-Jaſper* is by ſome prefer'd: but that which *Boetius* us'd in the Caſes abovemention'd, was wholly Red.

(*a*) De Gem. lib. 2. c. 102.

(*b*) Pag. 177, 178.

(*c*) Of the Virtues *Of Gems*, p. 171. 172.

The NEPHRITICK-STONE. Of affinity with the *Jaſpis*, and rather harder. Of ſeveral colours; but no one of two, nor any Red: for the moſt part of a pale Green. It hath ſome ſofter parts intermixed, which make it look ſometimes as if it were a little oily; and for which cauſe it admits not of a perfect poliſh. Of theſe here are two *Species*; firſt,

The

The NEPHRITICK STONE of *Braſile*. *Gemma, Geſnero, Oripendula*. Deſcribed by the Author of the Name. But this is ſmaller, and ſeems to be broken. Of a pale blewiſh Green, with ſome pores containing a whitiſh ſubſtance. Poliſh'd and ſhaped into a little Column. The better ſort of the Natives of *Braſile*, to diſtinguiſh themſelves, when they go abroad, wear this Stone (as we Rings on the Ear) upon their Lip; which is bored in their Childhood for that purpoſe.

ANOTHER, of affinity with the former. It conſiſteth moſtly of parts of a dark Green; yet gloſſy; and firmly cohering. Yet ſo as in ſeveral conſpicuous pores to contain a ſoft whitiſh ſubſtance.

This Stone, although of no beauty, yet is placed amongſt *Gems*, for that it is highly eſteemed, as an *Amulet* againſt *Nephitical* Pains, and the Stone and Gravel in the Kidneys. Of the admirable effects whereof, in divers Caſes of this Nature, ſee the Relations of *Monardes*, and from him of *Boetius*; as alſo from a Noble Perſon, his Kinſman. (*a*) The Green one with black ſpots, is commended by many. But *Laet* ſaith, (*b*) he had one almoſt of the colour of *Honey*, which, upon frequent experience, he found to do all that *Monardes* relates of it.

(*a*) Lib. 2. c. 110.

(*b*) Lib. 1. de Lap.

The TURCOIS. So called, becauſe brought to moſt places from *Turkey*, or thoſe that trade from thence. By the *Indians*, *Peroſe*; for that it is found, moſt abundant, ſaith *Cerutus*, (*c*) only, ſaith *Tavernere*, (*d*) in *Perſia*. See the Deſcription hereof in *Boetius*. This here, is all over tuberous on the top with round Knobs, of ſeveral ſizes, from that of the head of a ſmall *Braſs Nail* to that of a *Pin*; ſome of a blewiſh, others of darker Green. Within (ſomewhat like the *Onyx*) diſpoſed into *Zones*, mixed with ſpots: both of a Greeniſh Black. 'Tis two inches broad, and near three in length: a great one, if, as *Boetius* ſaith, it ſeldom exceeds the bigneſs of a *Walnut*.

(*c*) Muſ. Calceol. S. 3.

Another, about as big as a *Filbert*.

A Third, a ſmall one, like thoſe ſet in *Rings*.

The MOTHER of the TURCOIS, as is ſuppoſed. Found in the Mines of *Herngrunt* in *Hungary*; and given by Dr. *Edward Browne*. Here are two Pieces. One of them, for the greateſt part, blew; with ſome places black.

In

In which is alſo immerſed a ſort of ſmall Sand-colour'd Stones, ſo hard as to ſcratch Glaſs. The other, hath alſo a mixture of ſome parts that are Green. The Blew and the Green, are both, and they only diſſoluble upon the effuſion of *Acids*.

(*a*) Boet. de Gem. (*b*) Laet de Gem.

The beſt of theſe Stones are the Bleweſt. (*a*) They have alſo this property; *ſc.* to look blew by Day, (*b*) and Green by Candle-light. Many, ſaith *Boetius*, have judged this to be reckon'd by *Pliny*, amongſt *Jaſpers* with the Name of *Boreas*. But either *Pliny* and the Ancients, or thoſe that make that judgment of them, were greatly miſtaken. For this is a very ſoft Stone, and eaſily diſſoluble, with *Ebullition*, immediately upon the effuſion of ſome, eſpecially Nitrous *Acids*: and may be ſcraped with a *Knife*. So that I am of Opinion; That 'tis nothing elſe but a ſort of *Ærugo* in ſome meaſure petrify'd. Which alſo is further confirm'd in that it doth not only reſemble that in Colour, but, being (as it is eaſily) burnt, is of the ſame Taſt. So that it is no marvail, if this Stone, with Age and eſpecially much worn and expoſed to the Air, looſeth the beauty of its colour. And that it may be reſtored to the ſame by *Oil of Vitriol*; which eateth off its faded Surface.

CHAP. V.

Of REGULAR STONES.

AS *Gems* are diſtinguiſhed chiefly by their *Colours*; ſo other *Stones Regular*, by their external *Forms*. This is of two general kinds. Such as is *Circumſcriptive*, or depending upon the whole *Stone*, as *ex. gr.* in the *Eagle-Stone*; and this is properly call'd the *Figure*. Or ſuch as is *Accumulative*, where there is a repetition of the ſame Figure in ſeveral parts, as in *Muſcovy-Glaſs*, compoſed of parallel Plates: and ſo for the reſt, whereof in their order.

A GLOBULAR PEBBLE, an inch and ½ in Diametre, whitiſh and ſemiperſpicuous. It ſeems to be an Aſſay towards the *Eagle-Stone*, hereafter deſcrib'd.

A CLUSTER'D PISOLYTHOS. It consisteth of Globular and bay Stones, united together with an Ash-colour'd Cement: But this is very hard, and stirs not with *Acids*. *Boetius* and others figure a Cluster of these, but somewhat bigger.

This *Stone* may seem to belong to the second general kind above-said. But is really a heap of distinct *Stones* in one Bed. Which is also to be understood of others alike.

ANOTHER, composed of *Globular Stones*, consisting of a whitish, and soft or friable substance; yet gritty, and indissoluble with *Acids*. United together with a brown Cement.

A SINGLE one of the same Figure, but bigger; *sc.* as big as a Physical Pill. As also semipellucid, almost as the bay *Amber*. Very hard and indissoluble with *Acids*. *Besler* figures some of these, with the Name of *Pisa majora lapidea*.

The SINEPITES, as it may be called. Being a Cluster of small hard *Globules*, like *Mustard-seeds*; and united together with an obscure or dull Red Cement. Given by Sig^r. *Boccone*.

The MECONITES. A Cluster of other like *Globules* no bigger than *Poppy-seeds*. See one of these in *Boetius* and *Besler*. These two last, are properly of the *Hammites* kind; but not the *Pisolythos*, although accounted so by *Boetius*. Of these *Globules*, it is observable with the help of a Glass, That although they are so very small, yet are they shell'd, or composed of little *Balls* one within another, as the *Bezoar-Stone*.

The CLUSTER'D STALAGMITES. A Congeries of *Globular Stones*, like so many petrify'd Drops; of the colour of Oriental *Bezoar*; cemented together with a kind of *Gypsum*. The whole Mass, which here is polish'd, is two inches and ½ square, and an inch high. This, and the following Stones of affinity herewith, differ from the five former, not so much in figure, as in substance, these being all instantly dissoluble with *Acids*. So that they seem to be a kind of *Gypsum*, first dissolved in some Mineral *Menstruum*, and after setling in this Figure.

The CORALLINE STALAGMITES, also cluster'd. It con-

consisteth of little round Stones of the bigness of the former, but of the colour of red *Coral*. Cemented together with a sort of *Gypsum*. It is dissolved, upon the effusion of any strong *Acid*, with a strong *Effervescence*.

The POROUS STALAGMITES. 'Tis a ruder *Species*, the Stones of which it is composed, being not so distinct and round, as in the former. Cover'd all over with one common Crust. Yet most of them pounced with small or more open pores.

A SINGLE one, call'd *PISUM CAROLINUM*; because frequently bred in the *Caroline Baths*. Whitish, smooth and dense; and near as big as a *Pistol Bullet*.

Two SINGLE ones. Given by Sir *Philip Skippon*. Of a glossy Ash-colour, and very dense substance: yet easily dissolved with *Spirit of Nitre*. These are somewhat angular.

Two more, which are TWINS. These are perfectly round, except where they joyn together.

A Great TIBULINE SUGAR-PLUM. This and the other Rough sorts the *Italians* call *Confetti de Tibuli*; the place (not far from *Rome*) where they are bred. 'Tis above ⅓ an inch in Diametre, Globular, White, and Rough; exactly like a great Confet.

A Parcel of SMALL ones; white, round, and as it were granulated: just like *Carvy Confets*, and such like. *Besler* figures several of these under the Name of *Petrify'd Anise-seeds*, *Fenil-seeds*, *&c.*

The SUGAR-ALMOND, bred also in the same place. In colour, figure, size, and surface, so like to the rougher sort which *Confectioners* sometimes make, that, excepting the Taste, nothing can be liker.

Three STONES found very deep under ground near *Hartford* in *New England*. One of an Oval Figure, flatish, and having a little *Globule* standing upon its centre. Another, two half *Globes*, joyn'd edge to edge. The Third, much bigger than the former, of a circular Figure, and flat; an inch and ¼ over; almost like the *Caps* worn by *Under-Graduates* in our Universities. All soft, and fine, or not gritty, and not unlike a hard *Bole*. *Spirit of Nitre* dissolves them with *Effervescence*.

A little round, flat, and blackish Stone, resembling a Medicinal

Medicinal TROCH, or a thin CAKE of *Terra ſigillata*, having as it were the Impreſſion of a ſmall *Seal* on one ſide. 'Tis a perfect *Pebble*, not affected with any *Acid*.

The EAGLE-STONE. *Ætites*. All the former *Stones* were round and ſolid. This is hollow. Named from a vulgar opinion, That the *Eagle*, when ſhe ſits, carries it to her Neſt, to keep her Egg from being addle. And this, joyn'd with another, That Bodies operate according to their *Signature*: as this *Stone*, which often contains, or if you will, goes great with another *Stone* within it. Several ſorts hereof are here preſerv'd.

The FLORID Male EAGLE-STONE. A rare kind. 'Tis a perfect *Flint*, and ſemiperſpicuous; of a Globular Figure, and as big as a good big *Apple*, or near three inches in Diametre. Flouriſhed all round about with ſeveral ſets of *Rings* one included within another, with ſome ſimilitude to ſo many little *Roſes* or double *Crowfoot-Flowers*. 'Tis very ponderous, being almoſt ſolid. Yet hollow at the centre; containing not one, but ſeveral ſmall *Stones*, as is argu'd from the noiſe they make, upon ſhaking the *Stone*.

An ANGULAR or Ridged Male EAGLE-STONE. This alſo is about the bigneſs of a good large *Apple*. Of a brown colour, but daubed over with a kind of *Okre*; and was therefore probably bred in a Bed of the ſame. 'Tis very heavy; which argues it almoſt ſolid, as the former, and to have only a ſmall hollow in the centre.

An ORBICULAR EAGLE-STONE. About the bigneſs of a midling *Apple*. The outſide, rough and brown. Inwardly black. The Concave ſurface daubed with a ſort of *Okre*; a quantity of which, 'tis likely, it once contain'd.

An OVAL EAGLE Stone. About as big as a midling *Walnut*. Without, blackiſh and rough, as it were granulated with ſome ſemiperſpicuous Sands. Smooth within, and of a ſpruce *Okre* colour. On one ſide, it hath an oblong Aperture, with a ſmooth Lip as it were turned outward.

One half of an OVAL EAGLE Stone. 'Tis near three inches in Diametre. The inſide rough-caſt with ſmall Grains, in ſize, like thoſe of *Bay-Salt*; ſo hard as to cut Glaſs.

The FLAT round EAGLE Stone. Of a brown colour, and figur'd like a *Troch.*

The AMYGDALINE EAGLE Stone. Shaped like an *Almond.* Of a gloſſy brown, like half bright Iron. It contains a ſort of *Bole*, of the colour of *Fullers-Earth.*

The *Eagle-Stone* which containeth no *Stone*, but Earth, is called *GEODES. GEÆTITES* were more expreſs.

ANOTHER, of the ſame figure and bigneſs; but ſomewhat flatter.

A Rough and hard EAGLE Stone, the Concave ſurface whereof is daubed with a ſoft white waſh, a kind of *Gypſum*, diſſoluble with *Spirit of Nitre.*

ANOTHER Hard one, immerſed in Iron *Ore.* All theſe are Naked. Thoſe that follow have a ſoft *Coat.*

A COATED EAGLE Stone: A hollow *Flint*; one way, near two inches in Diametre, and almoſt round. Cover'd with a kind of white Earth, about $\frac{1}{4}^{th}$ of an inch thick: yet not Chalky, but *effæte*, making no *Effervеſcence* with *Acids.* Containing ſeveral ſparks or grains of *Flint*, cluſter'd in a round Lump, together with ſome of the like *Earth*, as without.

A little Flinty LUMP taken out of another of the ſame *Species.*

TWO more EAGLE Stones, of the ſame *Species*, of a midling ſize, and almoſt as round as a Ball. One of them as big as a good big *Walnut.*

A FOURTH, bigger than a *Muſket-Bullet*, and as round. Cover'd, as the three former, with a white earthy Coat; and containing the like ſubſtance in the centre. The main Body of all theſe, is either true *Flint*, or of a hard ſubſtance approaching to it. All theſe are by ſome called *Males.*

The FOEMALE EAGLE Stone. 'Tis round, and in a manner Oval. As big as a good large *Apple.* Aſh-colour'd without, and white within. Of a ſoft friable and chalky ſubſtance, inſtantly diſſoluble with *Acids.* From the outſide, to the Concave, $\frac{1}{4}$ an inch thick. Containeth a ſoft white chalky Stone, filling up its whole hollow, and anſwering to it, as the *Yelk* doth to the *White* of an *Egg.* This *Stone* is by *Pliny* called *CALIMUS.*

ANOTHER, ſomewhat harder. 'Tis alſo round, and bigger

bigger than the former, and the ſides above ½ an inch thick. Rough on the outſide, and ſmooth within. Yet ſo, as to be furrow'd with certain ſhallow Rings. To which alſo the *Calimus*, therein contain'd, exactly anſwers, as any Metal doth to the Mould in which it is caſt. Both of them make an *Effervеſcence* with *Acids*.

The *CALIMUS* of another *Eagle-Stone*, as big as a good big Gall, and knobed in the ſame manner.

Several *Species* of this *Stone* are figur'd by *Aldrovandus*.(*a*) (*a*) Muſ. Metall.

The flinty *Eagle-Stone*, and many other *Flints*, if obſerv'd when they are broken, ſeem to be an Aſſay towards the *Onyx*.

The *Eagle-Stone* is found in *Apulia*, *Germany*, *Miſnia*, &c. Much accounted of by ſome, as an *Amulet* againſt *Abortions*.

The SEMIGLOBULAR TOAD-STONE. *Lapis Bufoneus ſ. Garatronens.* It looks like the the one half of a hard flinty *Eagle-Stone*; and probably, is nothing elſe. The Diametre ½ of an inch.

The SEMIOVAL TOAD-STONE. 'Tis an inch long, ½ an inch over, of a brown colour, and flinty.

The Long SEMIOVAL TOAD-STONE. This alſo is flinty, and of a ſhining brown, or the colour of Oriental *Bezoar*, being poliſh'd. 'Tis about an inch long, and near ½ an inch over. *Beſler* figures this, with the Name of *Batrachoides*.

Another ſort of *Toad-Stone*, ſemiglobular, and ſolid, *ſc.* with a flat baſe, is deſcribed by *Geſner*. (*b*) Thus far of *Stones* more Round. I ſhall next deſcribe thoſe which are *Cylindrick*, or near that Figure. And firſt the *Oſteocolla*, of which here are ſeveral *Species*. (*b*) Lib. de Lap. Fig.

The SOLID or Pithleſs KNIT-BONE. Ranked by *Kentman*, (*c*) and not improperly, amongſt the ſorts of *Oſteocolla*. Yet obtains the peculiar Name of *ENOSTEOS*: being porous, light, ſpongy, and cylindrick; ſo as to look juſt like the inward part of a Bone, or of *Harts-Horn*. (*c*) Foſſil. Nomencl.

The KNIT-BONE with a ſmall PITH. 'Tis bended almoſt like the Letter *ſ*. Cylindrick, and three inches round. Almoſt ſolid, yet containeth a very ſmall *Pith*. The outer part, of an Aſh-colour, and gritty or fabulous. The *Pith*, like moſt white Chalk. Both of them make a conſpicuous *Effervеſcence* with *Acids*; but eſpecially the *Pith*.

The GREAT-PITH'D KNIT-BONE. This is not a ſingle one, but a Cluſter. They ſtand together parallel, equal to the thick end of a *Tobacco-Pipe-Stalk*; without exceeding ſmooth, and of a yellowiſh colour, ſomewhat like that of the Plates in the *Ludus Helmontij*, hereafter deſcribed. Filled with a very large *Pith*, anſwerable to that in an *Eldern-Branch*, hard and ſtony, and of a blewiſh colour, like that of blew *Marle*. The ſpaces between the ſeveral *Cylinders*, fill'd up with another ſort of *Stone*, of the colour of old *Elm*. The yellowiſh *Cylinders*, being rub'd hard, or ſcraped, hath a ſtrong ſtinking ſcent: but what *Species* to compare it too, doth not at preſent occur. They are preſently diſſolved with *Spirit of Nitre*.

ANOTHER CLUSTER like the former; ſaving, that the *Cylinders* ſtand together without any, or with little, order: and that the brown and blewiſh *Stones* are both mixed in Veins, and ſeveral of the *Cylinders* hollow.

The EMPTY KNIT-BONE. This is neither ſolid, nor hath any *Pith*, but a *Pipe*; yet with a very ſmall bore. Smooth both within and without. And *tranſverſly* ſtriated, as the *Belemnites*, hereafter deſcrib'd.

ANOTHER, ſomewhat more hollow. This alſo is *tranſverſly* ſtriated, as the former; but without rough and of an Iron-colour.

A THIRD, moſt hollow; knobed without, and of an Aſh-colour.

Of theſe *Stones*, ſee the Relation eſpecially of *Joh. Chryſtophorus Beckmannus*, Phyſick Profeſſor at *Frankfurt*; (*a*) who obſerves, That they grow in a ſandy, ſeldom or never in a claiy-Ground. Sometimes two mens depth; and with Branches ſide-ways. Taper'd, as in Plants; where thickeſt, equal to an ordinary Arm; the ſmall Branches, to ones little Finger. The Place where found is noted by a white fatty Sand, the reſt yellowiſh round about; and underneath a dark, moiſt, and fatty putrid ſubſtance, like rotten-Wood, running in Veins and is the Mother of the *Oſteocolla*. *So that it ſeems to grow ſomewhat after the manner of the* Entrochus, *or* Stelechites *above deſcrib'd*. 'Tis found moſt in *Saxony*, and the *Palatinate*.

(*a*) Phil. *Tranſ. N.39.*

This *Stone*, as is indicated by its Name, is highly eſteemed for expediting the *Coalition* of broken Bones; 3j hereof being

being given and repeated for above five days together. See one or two very remarquable Histories hereof in *Boetius.* (*a*)

(*a*) De Lap. & Gem. Lib. 2.

The Larger Hollow STALACTITES, or WATER-PIPE. The *Greek* Name supposeth it to grow somewhat after the manner of *Icicles*, from *Lapidifick-Waters.* Yet how it should grow hollow, as this, is somewhat hard to conceive. For hereby, it seems rather to grow or sprout upward, as the *Stelechites.* Only with this difference, That as that grows from an open Bed: this probably, from one under Water. Whence I take leave for the *English* Name. 'Tis three inches long, in thickness equal to the little Finger. Of a *Cylindrick* Figure, saving that at both ends 'tis a little more slender; whether naturally, appears not. Composed of several ash-colour'd and blackish Crusts, exceeding thin crispe and brittle, not ill resembling a rouled *Wafer.* The Bore is lined through with a small granulated *Candy.* 'Tis instantly dissolved with *Spirit of Nitre.*

ANOTHER, consisting wholly of white *Crusts* or *Wafers* one within another.

The SMALL WATER-PIPE. 'Tis a Cluster of very small *Tubes*, with the Bore so small, as scarcely to be seen without a Glass. Rough all over with a tuberous *Crust.* They are found in *Germany*, *Moravia*, and other Parts. One Drachm hereof in Powder, is a potent *Sudorifick.* (*b*)

(*b*) Boet. de Lap. & G.

A *Stone* like a *Pebble* with small TUBULAR KNOBS upon it, like the *Primordia* of a *Water-Pipe.* They are so small, that their hollows cannot be observ'd without a Glass. The *Stone* on which they grow, though very hard, yet makes a strong *Effervescence* with *Spirit of Nitre.* Thus far of *Cylindrick Stones.*

The CONICK STALACTITES, solid. 'Tis about three inches long; the top sharp, the middle ½ an inch over; the base, an inch, with four or five excentrick *Crusts.* The whole composed of several *Crusts*, one within another, as the *Water-Pipe.* Yet not hollow, as that, or rather not empty, but filled with a Red stony substance. Being kroken, it shines like the *Lapis Judaicus.* Without, smooth, of an Ash-colour, with some little cast of red. Instantly dissolved

(a) Muſæum Metallic.

diſſolved with *Spirit of Nitre*. *Aldrovandus* (a) hath one figur'd like this; but by himſelf, or by *Ambroſinus*, call'd *Stelechites Pyramidalis*; very improperly.

The CONICK STALACTITES, hollow. 'Tis three inches long; at the top, which is now open, ¼ over; in the middle, near ½; the baſe ſpread out, with ſeveral round *Cruſts* on one ſide, like half bubbles, to the breadth of above an inch. On the oppoſite ſide, with a ſhort ſingle piped one. All of them contained together within the utmoſt *Cruſt*. Smooth and aſh-colour'd without, within pure white.

The Black BELEMNITES. The generick Name is from the ſhape, like that of a *Bolt-head*. This *Species* is outwardly of an aſh-colour, but black within: and therefore by ſome called *Coraceas*. Radiated as moſt of them are, with tranſverſe *Striæ*. And bored at the thick end, which is not ſo uſual, with a *Conick* hollow. See the Deſcription of two or three ſorts in *Boetius*, *Wormius*, and others.

The WHITE BELEMNITES. 'Tis *Conick* as the former; but the Rays not ſo plain. Together with its white colour is joyn'd ſome little tranſparency.

The bigger YELLOW BELEMNITES. Particularly called *Dactylus Idæus*; for that it is in ſhape and bigneſs like a little Finger; and was firſt, or is now chiefly, found upon Mount *Ida*. 'Tis ſolid, ſemiperſpicuous, and of the colour of yellow *Amber*. They have uſually a kind of notched Ridge all along one ſide; but this hath two oppoſite ones.

ANOTHER, with a little Hollow fill'd up with a Pith of Earth.

A CLUSTER of broken pieces of the *Belemnites*.

The SHELL'D BELEMNITES. *qu. Stalemnites*. Opacous, and of the colour of grey Horn. Pointed at both ends, as the *Belemnites* is at one. And at one end, ſheweth ſix or ſeven ſhells one over another, as in the *Stalactites* above deſcrib'd. From whence I have nam'd it.

(b) Foſſil. Nomencl.

Some of theſe being rub'd, take up *Chaff* or other light Bodies, as *Amber* doth. *Kentman* (b) mentions one of an Aſh-colour, which being rub'd, ſmelt like a burnt *Cows* Horn. And a white one, which ſmelt not much unlike to white

white *Ambar*. They are found in *Germany*, and other Parts, ſometimes in *England*. They all make a ſtrong *Effervescence* with *Acids*. Thus far of *Stones* ſimply *Conick*.

The WORME-STONE. 'Tis now broken at one end, yet about two inches and ½ long. Conſiſteth of about five ſolid Rounds, winding from the bigger end (about ½ of an inch over) ſo as to make a ſpiral *Cone*. Not much unlike a Steel Worme uſed for the drawing of *Corks* out of *Bottles*.

Another of the ſame ſhape and bigneſs. This *Stone* I find neither figur'd, nor mention'd by any Author, ſaving only *Olearius*. (*a*) They were taken out of the midſt of a Rock.

(*a*) A *Dutch* Muſæum.

A NETED-STONE. *Lapis retiformis*. It conſiſteth of black and roundiſh portions, ſeverally ſurrounded with Veins, of an Okre-colour, running one into another after the manner of *Net-work*. Along the middle of each Vein (about $\frac{1}{4}^{th}$ of an inch broad) runs a ſmall Thread or Line, almoſt of the ſame colour.

Another, with the *Are'as* of the *Net-work* not ſo black, ſofter, and ſomewhat flaky.

A FLINT of a dull Red, with the Figure, almoſt, of a λ encompaſſed with ſix or ſeven Rings.

The FLAT BOLTHEAD. *Anchorites*. Of affinity with that well deſcribed by *Wormius* (*b*) with the Title of *Silex venabuli ferreum Cuſpidem exactè referens*. By *Moſcardo*, (*c*) with that of *Pietre Ceraunie*; who alſo figures it with three or four Varieties. This like thoſe, is a perfect Flint, and ſemiperſpicuous. 'Tis likewiſe in the ſame manner, pointed like a *Speer*. Having at the other end, like thoſe of *Moſcardo*, a ſhort Handle. But moreover, hath this peculiar, that 'tis pointed or ſpiked alſo backward on both ſides the Handle; with ſome reſemblance to an *Anchor*, or the Head of a Bearded-Dart: from whence I have nam'd it. 'Tis likewiſe toothed on the edges, and the ſides as it were wrought with a kind of undulated ſculpture, as thoſe before mention'd.

(*b*) Muſ. lib. 1. Sect. 2. c. 13.

(*c*) Muſ. lib. 2. c. 50.

ANOTHER, different from the former, in that it is longer, hath a deeper Indenture, but no handle. Both of them ſtrike fire like other *Flints*. That of *Wormius* was found in a Hill in the Dioceſs of *Ripen*.

Not

Not only *Moſcardo*, but others reckon theſe amongſt the *Ceraunicæ* or *Thunder-bolts*. So called, becauſe believed ſometimes with Thunder to ſhoot down with violence out of the middle Region. Amongſt other Relations hereof, that of *Terzagi* (*a*) is very expreſs; who ſaith, That the *Corps* of one ſtruck dead with Thunder, being inſpected in the preſence of *Septalius*, and ſeveral others, and a black Wound obſerved about the Hip, and ſearched to the Bone; they found therein a round and edged *Stone*, which being broken, had a very ſtrong ſulphurious ſtink. With this Author, I ſcarce think any thing of this nature incredible, to thoſe that read the Relation given at large by *Wormius* (*b*) of the *Norwegick Mouſe*.

(*a*) Muſ. Septal.

(*b*) Muſæum

Thus far of *Regular Stones*, whoſe external Form is *Circumſcriptive*, or at leaſt depending upon the whole *Stone*. I ſhall now deſcribe thoſe, whoſe Form is *Accumulative*, or where there is a repetition of the ſame figure, or near it, in ſeveral Parts.

The GRAPE-STONE. *Botrites*, *Wormio*. Here are two or three ſorts. One ſolid, of a yellowiſh colour, an inch and ½ long, knobed with ſeveral ſmall Cluſters, like a young bunch of *Grapes*.

The HOLLOW GRAPE-STONE, with high Knobs or white Berries cluſter'd all round about, as in the former, and ſomewhat thicker.

A SEMI-GRAPE-STONE, with white Drops or Berries only on one ſide. They all make a vehement *Effervеſcence* with *Acids*; and are a ſort of *Stalagmites*, next of kin to the *Confetti di Tibuli* before deſcrib'd.

The STAR-STONE. *Aſteria vera*, *Boetio*. Generally of a ¼ or ½ an inch in Diametre, conſiſting of ſeveral Joynts, evenly piled one upon another, of a Pentagonal Figure, like a *Star*, and with the ſignature alſo of another on both ſides, which is compoſed of ſhort tranſverſe *Striæ*. When broken, it ſhines like the *Lapis Judaicus*, or the *Entrochites*; to which latter it is next of kin. Sometimes they are found ſingle. When conſiſting of more Joynts, it may rather be call'd *Synaſteria*. Several both of the joynted and ſingles ones are here preſerved.

A very hard *Stone*, a kind of Pebble with the ſignature of the *Aſteria* upon it.

Mr.

Mr. *Lyster* hath given a particular Account of this *Stone*, and its varieties in several Figures; published by Mr. *Oldenburge*, (*a*) together with some Notes of Mr. *Ray* thereupon. Mr. *Lyster* found the fairest of them near *Bugthorp* and *Leppington* in *York-shire*, in a blew Clay.

(*a*) Phil. Trans. N. 112.

The STARRED-STONE. *Astroites*. So called, for that being tabulated, or polish'd to a plain, it appears adorned with little Stars, about $\frac{1}{4}$ or $\frac{1}{5}^{th}$ of an inch in Diametre. *Boetius* conjectures *Pliny* to reckon this *Stone* for a sort of *Agate*. Whether that be so or no, himself is greatly mistaken (*b*) in affirming as much: this being a very soft Stone. The same Author takes notice, as of a strange thing, That this Stone being put into *Vinegar* (*c*) will move up and down in it. Whereas it proceeds (as Mr. *Lyster* also observes of the *Asteria*, which he calls the *Astroites*) only from the *Ebullition* following upon the immersion: and happens to any other Stone dissoluble with *Acids*, if immersed in small pieces.

(*b*) Lib. 2. c. 145.

(*c*) C. 147.

(*d*) Phil. Trans.

Another, two inches long, and near as broad. This is unpolish'd, and seems to be but part of a far bigger Stone. So that although the figure which *Boetius*, and some others give, is but small, *sc.* not an inch long: yet is it sometimes of good bulk.

The ASTROCHITES; polish'd with the figure of a *Cross*. The Stars are here more round, than in the former. The spaces between the several Stars and Rays, of a dark blackish colour. The Rays or Stars themselves are pale. And also surrounded with a toothed Circle; so as not unaptly to represent the Wheel of a *Watch*: from whence I have nam'd it.

The imperfect STARRY-STONE. *Astroites Boetio* (*e*) *quartus*. In this the Stars are more obscure, and scarce radiated, but rather spots. But the Stone for substance the same as the former.

(*e*) Lib. 2. c. 164.

The WAVED Stone. *Astroites Boetio* (*f*) *tertius*; but improperly so call'd. For although it be, for substance, like the former; yet is not adorn'd with the likeness of Stars, but of Waves. The several Waves are composed of whitish transvers *Striæ*.

(*f*) Ibid.

Another, with the *Striæ* more conspicuous.

The SEIVE-STONE. *Lapis Cribriformis*. A kind of

Tophus. 'Tis of a brown colour, porous light and friable, as a *Pumice*. And perforated with many Pores more conſpicuous, about as big as to admit a large *Pin*, and regular, *ſc.* round, ſtrait and fiſtular.

I now proceed to ſeveral *Spars*; of which, although ſome belong to Metals; yet here, have no Metal adhering to them. Thoſe that have, will fall in amongſt *Ores*. And firſt of ſuch as are pointed, both ſoft and hard, reſerving the Flaked for their place.

Let it only firſt be noted, That the ſpecifick difference betwixt the *Stalactites* and the *Spar*, is, That the former, is always *Opacous*, and never *Angular*: the latter, always or uſually perſpicuous, and never round.

A *Silver-Ore* SPAR. About an inch and ½ high, and three in compaſs. It conſiſteth of ſeveral *Cryſtals* ſexangular and pointed, and compoſed into the figure of a great Bud. The four uppermoſt bigger than the reſt. All ſemiperſpicuous, of the colour of grey *Chryſtal*; and ſeem to be as hard.

ANOTHER large Piece conſiſting of hard and ſexangular *Cryſtals*, and of the ſame colour with the former. Taken from the *Coginnian* Silver-Mines. Given by Mr. *Colepreſs*.

Several other Pieces of the ſame, and given by the ſame Hand.

A METALLICK SPAR, of a pale AMETHYSTINE colour. 'Tis angular and pointed, as *Cryſtal*; but with ſides more unequal. 'Tis alſo ſoft and brittle. Yet harder than ſome others. And hath no ſenſe of *Acids*.

A SHOD. *Spuma Lupi*. The forerunner of the Load or Mother of the *Tin-Ore*. 'Tis both blacker, and harder than the *Mother-Spar*.

Another of the ſame, mixed of black, grey, and yellow.

The MOTHER-SPAR of the *Tin-Ore*.

ANOTHER, ariſing from a Whitiſh Bed, mixed with a kind of ruſty red. The *Cryſtals* are angular, pointed, and ſoft, like the ſquare *Lead-Spar*. Semiperſpicuous, yet moſtly cover'd with an angular and blackiſh ſhell.

A pretty hard Aſh-colour'd and Opacuous *Spar*, growing near the *Tin-Mines*.

A YELLOW TIN-SPAR from *Ireland*. Given by Sir *Rob. Moray*. The ſeveral *Cryſtals* are angular, pointed, and ſoft; ſemiperſpicuous like brown *Sugar-Candy*. Diſſoluble with *Acids*.

An Iron-SPAR. A Cluſter of ſmall, pointed *Cryſtals*, almoſt of the colour of brown *Sugar-Candy*; but ſader, and leſs perſpicuous. 'Tis hard enough to cut Glaſs.

ANOTHER, Mixed. In the middle, it hath many *Striæ*, of a *Lead-Ore* colour, running croſs one againſt another. Theſe are encompaſſed with other parts of the colour of yellow *Okre*. With which are alſo mixed ſome white and green ſpots. The *Stone* taſteth like white *Vitriol*.

A large Copper-SPAR. Given by Mr. *Langerman*. 'Tis a ½ of a yard long, and near as broad. Conſiſting moſtly of ſexangular Points, upon a grey Bed, which is alſo mixed with Granulated *Spars*. The other ſide, all beſprinkled with yellow Mundick.

A MUNDICK-SPAR; conſiſting of tabulated or flat and ſquare *Cryſtals*, of the colour of Citrine *Amber*, and growing to a whitiſh *Matrix*.

Note, That almoſt all *Spars* of this kind, are compoſed of tabulated, and ſquare *Cryſtals*.

ANOTHER, conſiſting of black ſhining *Cryſtals*, of the colour of *Jet*, and as broad as a *Dice*; and ſome of them almoſt Cubical. Being broken, the fragments are of an *Amethyſtine* colour. There are alſo, underneath, ſome whitiſh *Cryſtals*; above, ſome of yellow *Mundick*.

ANOTHER, partly plated, and partly pointed; of a black ſhining colour, like that of poliſh'd *Steel*. 'Tis very ponderous, and maketh no *Effervеſcence* with *Acids*. Yet ſoft and brittle. Which three Properties, belong to moſt, if not all, *Mundick-Spars*.

A SPAR with CONICK CRYSTALS. They are moſt of them an inch and ½ long. All very cloſe and continuous, excepting at their Points, as in the *Amethyſt*. Semiperſpicuous, and exactly of the colour of the beſt brown *Sugar-Candy*. Very ſoft; and eaſily diſſolved with *Spirit of Nitre*. It was taken out of a *Portland-Stone*; and given by Sir *Rob. Moray*.

A SPAR with CRYSTALS TRIANGULARLY pointed. 'Tis a pretty round Lump. The *Cryſtals* ſo placed, that

the Angle of one, for the moſt part, anſwers to the ſide of another. Of a pale and ſemiſperſpicuous colour, coming near to that of white *Sugar-Candy*. In which alſo ſmall parallel *Streaks* of a brighter colour, are obſervable. Very ſoft, as the former, and diſſoluble with *Spirit of Nitre*.

The STYRIATED STALACTITES. Of the ſame kind with the *Styriæformis* deſcribed by *Wormius*. It is a congeries of ſtrait, round *Styriæ*, ſomewhat parallel, and as thick as a *Cherry-Stalk*, or ſmall *Packthred*. Each *Styria* is compoſed of ſmall, pointed and loſe Grains, as big as thoſe of *Salt*, piled in a ſtrait line one over another. It makes an *Effervеſcence* with *Spirit of Nitre*.

The MOSSE-STALACTITES. Conſiſting alſo of Granulated *Styriæ*; yet not ſtrait and parallel, but winding too and fro, and the Grains with bigger points; ſo as to reſemble petrify'd *Moſſe*.

I NEXT proceed to PLATED-STONES; and firſt ſuch as are of a Rhomboid Figure.

A CRYSTAL of TALK. *Wormius* deſcribes *Talk*, to be a *Stone* diviſible into flat *Plates*, variouſly intricated, and diviſible like *Silver*, which is all he ſaith of the form, and his words unintelligible. Far from a definition of that form, which, ſo often, as its Concretion proceeds freely on all ſides, or without hinderance from any adjacent Body, it doth obtain: being then, a Congeries of flat, and perſpicuous *Plates*, ſomewhat pliable, and figur'd into a kind of double Rhomboid; or as it were two Squares, with unequal Sides and Angles, clapt together, with the edges produced, to diſtinguiſh them: ſo, as to obtain twelve Angles, and ten Sides, *ſc.* eight leſſer, and two greater ones. A piece thus figur'd, I call *A Cryſtal of Talk*. And of this the form is both *Accumulative* and *Circumſcriptive*: the difference betwixt which is ſhewed in the beginning of this Chapter.

An HALF-CRYSTAL, having only ſix ſides, four leſſer, and two greater ones; as if it were a perfect one, ſplit.

A piece of FOLIATED TALK. It conſiſteth of ſeveral pieces, pellucid, cleveable, and ſomething pliable, of a Rhomboid Figure, and compoſed together ſo as to reſemble the indented leave of *Wild Clary*.

A large Piece of TALK, above ½ a foot ſquare.

A Piece of TALK taken out of the Ground in *Wiltſhire*.

A

A lump of the TALK-ROCK near *Spiral*, in the upper *Carinthia*. Given by Dr. *Edward Brown*. It consisteth of broken pieces, like those of the *Selenites*, immersed in a white glossy Stone, stained with purplish spots, and so hard as to scratch Glass.

Talk, although flexible, and regularly figur'd, yet feeleth no *Acid*; and is of that obstinate nature, as neither to melt, nor scarce loose its colour, in the fire. Considering which, and that all *Salts*, yet known, will flow: I am induced to think, That it hath not its Figure from any *Salt*; but is almost a simple Earth *sui generis*. And that there are earthy Particles, as well as *Saline*, which are regularly figur'd, and of which this and some other *Stones* are composed. Hereof is prepared a wash for the Face, which some *Chymists* cry up for the best in the World.

A GREEN TALK-SPAR. The whole piece, is here of a rude Figure; but is easily broken into Rhomboid Plates, resembling those of *Talk*, from whence I have nam'd it. 'Tis tinged with a pale Green. It stirreth not with any *Acid*. Yet is not flexible, as true *Talk*, but brittle as *Glass*.

A great *Crystalline* TALK-SPAR. So I call it. Sent by Dr. *Erasmus Bartholine*, together with a large account of it, published in a the *Phil. Transactions*. (*a*) And by the Dr. (*b*) himself in a distinct *Treatise*. 'Tis a foot long, ½ a foot broad, and two inches and ½ thick. Of a Rhomboid Figure, and the narrow sides likewise sloaped, as in the *Crystals of Talk*. It breaketh also into parts of the same Figure, or near it. Yet not flexible, but brittle. Polite, colourless, and transparent, as the cleerest *Chrystal*. Yet soft and dissoluble especially with Nitrous Spirits; and by a strong fire reduceable to a *Calx*. Of a very different nature from *Crystal*, although the said Dr. is pleased so to call it. When heated, it is of an *Electrick* Nature, or like *Amber*, taketh up straws and other light Bodies. That which he principally Notes is, That the Objects seen through it, in certain positions, appear sometimes single, sometimes double, and sometimes sixfold. Which he ascribes to a *Refraction* peculiar to this *Stone*. And to me, it seems probable, That this various Refraction depends upon the structure of the *Stone*, *&c.* as it is not one piece absolutely entire, but composed of several *Plates*; and those not all in

(*a*) Num. 67.

(*b*) Experimenta Crystalli Islandici Disdiaclastici.

in a like manner, but differently contiguous; ſo, as in ſome places, ſeveral *Plates* may make but one *Refraction*; in others, two or more. It was dug out of a very high Mountain in *Iſland*, one whole ſide whereof conſiſteth of this *Spar*.

TWO PIECES of the ſame Stone, about two inches and ½ long, broad, and thick. Thus far of Rhomboid Stones.

The RHOMBICK LEAD-SPAR. Frequently found in the *Lead-Mines* in *Derbyſhire*, and in others. By ſome called *Engliſh Talk*. But very improperly. For though it conſiſteth of ſeveral *Plates*, yet not flexible, but brittle as Glaſs. Beſides, 'tis not of a Rhomboid, but Rhombick Figure, that is, a Diamond-ſquare, or with the Angles unequal, the ſides equal. Nor doth *Talk* feel any *Acid*, but this with *Spirit of Nitre* is eaſily diſſolved. It breaks into pieces, which, though never ſo ſmall, yet retain the ſame Figure. Being burned, it yieldeth a Lixivial Salt.

A clear FLINT, of the colour of yellow *Amber*, with *Striæ* on the ſides ſhaped into little Rhombes.

A RHOMB of MUSCOVY-GLASS. This Stone is by moſt called *Selenites*. By ſome *Mariæ Glacies*. By *Agricola*, and *Kentman*, *Magnetis*. By *Ambroſinus*, (*a*) confounded, under the ſame Name, with *Talk*. 'Tis indeed the neareſt of kin to that of any Stone, being inſenſible of *Acids*; and conſiſting of very thin, perſpicuous, gloſſy, parallel, and flexible *Plates*. Seldom found figur'd. But when it is, I ſuppoſe always, as it is here in this piece, *ſc.* into a Diamond-ſquare, *i. e.* with unequal Angles, and equal ſides; whereas in a *Talk-Cryſtal*, both are unequal. It was taken out of Mount *Hæmus*.

(*a*) Aldrov. Muſ. Metall.

A very white Piece of *Muſcovy-Glaſs*.

ANOTHER, of a pale Green colour, with a kind of ſilver gloſs, and ſemiperſpicuous.

Another, of the colour of tarniſh'd *Copper* mixed with black.

A lump of *Selenites*. 'Tis immerſed in ſmall pieces in a whitiſh Stone, a little *Diaphanous*, and ſo hard as to cut Glaſs.

This Stone grows in *Cyprus*, *Sicily*, *Saxony*, and many other places; eſpecially in *Muſcovy*, whence the *Engliſh* Name. Uſed in *Saxony*, and other places in *Germany*, in *Windows*,

Windows, instead of *Glass*. *Ambrosinus* (*a*) mentions a Lead-colour'd sort so big, as to make not only *Tiles*, but *Tables*. (*a*) Ubi supra.

The BONONIAN STONE, Prepared and given by *Fr. Willughby* Esq;. 'Tis somewhat fissile, and may be here ranked. Now of a greyish colour, and in some places like the *Rombick Lead-Spar*. No *Acid* will touch it. Its quality of shining in the Dark, after its being exposed a little while to the Sun, is now lost. See the manner of its preparation in *Wormius*. Given in Powder, (*b*) or the infusion of it, after calcin'd, is a strong *Emetick*. (*b*) Mus. Wormian.

An odd SPAR, Green by day; by Candle-light of an *Amethystine* colour. Softer than to cut Glass, yet harder than the common *Rhombick Lead-Spar*.

A FLORENTINE SLATE. A sort of *Saxum fissile*: Hereon is naturally represented the PROSPECT of a City, Houses, Churches and Steeples, standing in length. To make them all visible, it must be wetted.

ANOTHER, with the PROSPECT of a TOWN, lying round upon the side of a Hill.

Another with the like PROSPECT; but shewing it, as at a much greater distance.

Another, with one half of the TOWN on a Rock, the other in a Plain. There are some of this kind in *Septalius's Musæum*.

A SALTRAM SLATE. Very like to *Efford-slate* (used for Writing, and Mathematick Schemes) but not all out so good.

An odd SLATE with yellow *Mundick* in small Grains or Sparks immerced throughout the body of it.

RUMPLEY-STONE. A common blewish Slate, for colour and substance. But excelleth, in that it rises large enough for Building. It may be cleft as thin as you please.

A kind of whitish Slate, mixed with a rusty Iron-colour: plentiful in some Mines.

Some others; one grey and spotted with tawny. Another, of a brown Purple. A Third, Red. These abound in the High-Ways about the Mines in *Cornwall*. With these may be placed.

The WAXEN VEIN. *Ludus Helmontij*. A Stone composed of two distinct Bodies. One, and the far greater, is

of

of a dirty ash-colour: in substance, not unlike the *Lime-stone*. The other, somewhat harder; runs through it in several *Veins*, or rather *Plates*, as being usually plain, as thick as the back of a slender *Knife*, and exactly of the colour of yellow Wax; for which cause I have plac'd it amongst the *Plated Stones*, and taken leave for the *English* Name. Both of these two Bodies make an *Effervescence* with *Spirit of Nitre*, but the ash-colour'd, the greater.

The PIPED WAXEN-VEIN. So I call it, for that the greater ash-colour'd Body inclosed within the yellow *Plates*, is stuffed top full of small *Cylinders* and *Tubes* irregularly placed: most of which seem to be of the same yellowish substance, as the *Plates*. This *Species* hath some affinity with the piped *Osteocolla* above describ'd.

The STARRED WAXEN-VEIN. Given by Sir *Rob. Moray*. Found in the Isle of *Sheapy*. On one part of the Stone grows a fair Star, with many Rays, about an inch long, white and glossy: from whence I name it. This Star is of a quite different nature from the Stone on which it grows, as making no *Effervescence* with *Acids*, and in figure agreeing rather with the *Pyrites*.

A Piece of WAXEN VEIN, with doubled *Plates*; in some places, as it were efflorescent with several little protuberances consubstantial.

From the Description of this Stone above given, it appears, that *Wormius* was mistaken, in reckoning it amongst *Flints*. This is that, which *Paracelsus* so much extols for a *Lithontriptick*. And thus far I believe, that 'tis a very good *Diuretick*; and may therefore sometimes be very well used for the carrying off of *Gravel*. But let all that have any Stone too big to be voided, take heed of such Medicines.

PLATED MARBLE. It seems to have been originally a striated Bole. Now a Stone as hard as Marble, composed of Portions, of an inch thick, [redacted] colour'd, growing parallel, or as it were *stratum super stratum*; from whence I have nam'd, and here plac'd it.

Several soft PLATED STONES, found in the same place, and of the same colour and substance, with the *Fish-Mould* formerly describ'd. One of them, Globular, a little compressed on the two opposite sides: but composed of

of *Plates* or *Crusts* narrowed from the middle of the Stone both ways, so as to make that Figure. A second, Oval, with three Hemispherick knobs appendent; all plated, as the Globular. A fourth and fifth figur'd almost like a Finger.

THUS FAR of *Plated Stones*. Next of those which we may call *Fibrous*. In the former, the Parts are answerable to the leaves in a piece of *Past-board*. In these to the *Bristles* in a *Brush*, or the *Threads* in a *Skeine* of *Silk*.

THRUM-STONE, as I call it. *Amianthus Lapis & Asbestinus*. It grows in short Threads or Thrums, from about a ¼ of an inch to an inch in length; parallel, and glossy; as fine, as those small single Threads the *Silk-Worm* spins; and very flexile, like Flax or Tow. Nothing answers it better, than the hard fibrous part of a large *Oyster*, when 'tis stew'd. Here are several pieces, both of White and Green. Of which, the latter hath the longest Threads, and the most flexile.

A piece of AMIANTHUS-ROCK; in which the *Thrums* (about ¼ of an inch in length) lie in *Layers* between several Beds of a Green Stone, in some places of a redish brown.

Another, with *Veins* or *Layers* between Beds of a blewish colour.

A BASTARD-AMIANTHUS. It grows in Veins in a Claiy and Mundick Load, between Beds of a Greenish Earth. The Threads ½d or near ½ an inch long, of a glossy black, and brittle. Given by Mr. *Colepress*, who obsery'd it amongst the *Cornish Mines*.

The best is found in *Cyprus* and *India*. Of late, very good in some *Mines* in *Italy*. Of which see the *Philos. Transactions*. (*a*) It was anciently spun, like *Tow*, into Sheets; in which the Bodies of Princes, laid on the *Funeral Pile*, were wrapped up, to keep them entire, when they were burnt, from the other ashes. These Sheets were made clean, not by washing, but by burning them; as being insuperable by the fire: from whence the Name of the Stone. The Art, as well as the Use, is thought to be gone. But not so; for *Septalius* (*b*) hath or lately had both *Thread*, *Ropes*, *Paper*, and *Netted-Works* all made hereof; and some of them with his own hand. *Boetius* describes (*c*) an Oyntment made of this Stone, which he highly com-

(*a*) Num. 72.

(*b*) Musæum.

(*c*) Lib. de Lap. & Gem.

mends againſt the Sore on Childrens Heads, uſually called *Tinea Puerorum*; and Ulcers in the Legs. It hath no ſenſe of *Acids*.

The FIBROUS BLOOD-STONE. *Hæmatites.* This I take to be that particularly, by *Pliny* call'd *Androdamas*. It hath affinity with the *Amianthus*, not only in being diviſible into *Fibers*; but in that theſe *Fibers* are alſo ſomewhat flexile, and of a greeniſh colour. Yet here, they ſtand not juſt parallel, but rather ſo as to tend towards one point; like the *Styriæ* in ſome ſorts of *Antimony*. This Stone is alſo altogether inſenſible of *Acids*. Found in *Germany*, *Bohemia*, *Sileſia*; among the Iron Mines; of an Iron colour, a dull red, yellow, and ſometimes black. Much celebrated againſt an *Hæmoptoe*. *Trallianus* preſcribes it ground to an impalpable powder, from ℈j to ℈iiij for a Doſe.

A Piece of SPAUD or TARRAS. *Schiſtus Capillaris*; as I call it. It conſiſteth of white, gloſſy, and parallel *Fibers*. But different from the *Amianthus*, in that they are very brittle; nor ſo eaſily divided. From the *Schiſtus* deſcribed by *Wormius*, (*a*) which is diviſible into *Plates*. And that which *Boetius* deſcribes, which is yellow. This is pure white, almoſt like poliſh'd Silver, and in a thiner piece, ſemiperſpicuous. Being rub'd between ones Fingers, it divides into an infinite number of Hairs, twenty times ſmaller than the ſmalleſt Needle. It ſtirs not with *Acids*: and therefore ſeems neither to be any kind of *Gypſum* properly ſo call'd.

(*a*) *In fine*, Cap. de Amiantho, &c.

Another Piece of the ſame, from *Warwick-ſhire*. Given by Sir *John Hoskins*.

A Piece of HARD TARRAS, from *Stinchcombe* in *Glouceſterſhire*. Given by the ſame Hand. 'Tis more cloſe and firm than the former, rather like thoſe in *Sal Armoniac*; the *Fibers* not altogether ſo regularly pild; nor ſo white, more reſembling the *Mother of Green Vitriol*.

The ſame Analogy as is between *Talk*, *Muſcovy-Glaſs*, and *Amianthus*: is alſo between the *Rhomboid Spar*, the *Saxum Fiſſile*, and the *Tarras*.

CHAP.

CHAP. VI.

Of STONES IRREGULAR.

AS GEMS are chiefly distinguished by their Colours, and all other *Stones Regular*, by their Figures: So these, by the different degrees of Hardness.

EMERY. *Smiris.* Of a kind of blackish Iron-colour. The hardest of unfigur'd Stones. And is therefore used for the polishing and cutting of all *Gems*, except the *Diamond*. For the hollowing of flinty Mortars, together with Sand. (*a*) For the brightening of Armour, and all *Metallick Equipage*. And for Moulds or Forms for the casting of *Medals* and other *Coins*. Yet Mr. *Boyle* (*b*) hath open'd it with a Corrosive *Menstruum* so far, as to make an infusion of *Galls* therewith to turn blackish.

(*a*) Mus. Metall. Ald.

(*b*) *Of Gems*, p. 160.

A FLINT of the colour of yellow *Amber*. It alludeth to a *Topaz*.

A polish'd FLINT, not unlike a *Calcedony*.

A rough FLINT naturally perforated with several large Cavities running one into another. It seems to be an assay towards an *Eagle-Stone*, which is commonly a *Flint*.

Flints are of all colours. Some so clear, that some *Jewelers* cut and sell them for *Bohemick Diamonds*. (*c*) They are also used for factitious *Gems*, with the mixture of Metals, in fusion. For making of Glass. For Mortars for the powdering of the Fragments of *Gems*. And sometimes added to melted Metals, to keep them, as is supposed, by the *Metallists*, from spending. (*d*)

(*c*) Boet. de Gem.

(*d*) Ambros. in Aldrov. Mus. Metal.

A BALL of SERPENTINE MARBLE; called *Ophites*, from the winding of the Veins. Near four inches in Diametre. Of the noblest sort; consisting of White, and Red or Murrey Veins, in Black.

ANOTHER MARBLE-BALL, two inches and ½ in Diametre, Veined, and spoted with Red, Sand-colour, and White.

A THIRD, Veined and spoted with Black, Sand-colour'd, and White.

A Ball of ONYCHINE MARBLE, about the same bigness; on one side Sand-colour'd, on the other Grey. That which is observable is this, That instead of winding Veins,

it hath ſeveral Circles one within another, as if drawn with a pair of Compaſſes on a *Slate*; or as in the *Onyx*; from whence I have nam'd it. The bigeſt Circle is about an inch and ½ in Diametre.

Two pieces of ÆGYPTIAN MARBLE. Conſiſting of a blackiſh Ground, as it were inlaid with little Green pieces, moſt of them of an oblong ſquare Figure.

A Piece of the worſt ſort of CORNISH MARBLE, uſed for *Lime*. A blewiſh Stone, mixed with ſome whitiſh ſparry Veins; and ſome of a rediſh-flat, of the colour of *Terra Lemnia rubra*. Marbles, beſides the places mention'd, are found in *Italy*, *Germany*, *Cappadocia*, *Hetruria*, *Numidia*, and other parts. The uſes are as known, as great.

LAPIS LAZULI, *i.e.* Blew-Stone; *Lazuli* being the *Arabick* word for a blew colour. Whence alſo the corrupt *Italick*, *Azure*. It conſiſteth of parts of a full Blew (uſually with ſome yellow ſpecks) immerſed in a dull Bed, bordering upon the colour of *Fullers-Earth*. On this here, grow ſome pieces of *Spar*, ſo hard as eaſily to write in *Glaſs*.

Another Piece growing to an aſh-colour'd and ſoftiſh Stone, diſſoluble with *Spirit of Nitre*.

This Stone is uſually found in Gold Mines in *Africa* and *Aſia*. Of two kinds; The fixed, which being put in to the fire, keeps its colour; The Not fixed, alſo in *Germany*. (*a*) Hereof are ſometimes made *Knife-Hafts* and *Spoons*. But eſpecially that moſt excellent BLEW, called *ULTRAMARINE*. The manner of preparing it, is very largely and exactly deſcribed by *Boetius*. (*b*) The powder hereof given to the quantity of 3ß (or more or leſs) is an innocent and uſeful *Cathartick*. (*c*) It will ſometimes work by Vomit. Hath been ſucceſsfully uſed in *Quartans* and *Malignant Feavers*. And yields a *Narcotick Oil*. (*d*)

(*a*) Boet. de Lap. & G.

(*b*) From Cap. 123. to 137. & 141.

(*c*) Braſſavolus.

(*d*) Fioravantus.

The Fading BLEW-STONE. *Lapis Armenius*. This piece conſiſteth of Blew and Green parts mixed together. And the blew parts themſelves, at leaſt, the colour made of them, will in time turn green. 'Tis ſofter than *Lazuli*, and not inſenſible of *Acids*; and of *Oil of Vitriol* more, than of *Spirit of Nitre*.

Another Piece of *L. Armenius*; conſiſting of Blew parts immerſed in a hard and rediſh ſand-colour'd Bed, with a Green piece growing to one ſide. Given by *Henry Oldenburge*

burge Esq;. It grows in *Germany*, *Hungary*, and *Transylvania*. It makes also an excellent Blew, but, as is abovesaid, not holding. The way of making it, see in *Boetius*. (*a*) Given in Powder, unwashed, to the quantity of ℥j or ℈iiij, it works by Vomit: washed, to the quantity of ℈v or ℥ij, works by Stool; highly celebrated by some, not only for its Innocent, and most easie; but also most effectual Operation, in such Diseases, as are supposed to depend on Melancholy. (*b*)

(*a*) Lib. 2. c. 144.

(*b*) *See* Trallianus, Guainerius, *and others.*

The LOADSTONE. *Magnes*; from *Magnesia*, a Country between *Thessaly* and *Macedonia*, where, it's said, it was first found. For the most part of an Iron-colour, tending to Blew, by some called *The Male*; if Black, *The Female*. Here are several both great and small. One weighing about sixty pounds. Given by Dr. *Edward Cotton*. Dug out of the Ground in *Devonshire*. Although it takes up no great weight, yet moves a Needle nine feet distant. Some part hereof, which was broken off, being put in its proper place, adds much strength to it. Here are likewise some other great Pieces from the same place.

Part of a LOADSTONE ROCK in *Anglesey*. Of a rusty Iron-colour, and in some parts of a dirty slat-Blew.

Two Orbicular LOADSTONES, one of them with an *Axis*.

TWENTY SEVEN Lesser LOADSTONES: whereof eleven are Arm'd and Coated. They are usually found in *Germany*, *Italy*, *Misnia*, *&c.* in the Iron-Mines; and sometimes yield Iron. See the History hereof in *Kircher*, and *Vincent Leodaud*, who have published what is said both by our own Country-man *Gilbert*, and by others.

The admirable and known Properties of this Stone, are, in general, these, That it attracteth Iron; or any Body, if small, which hath Iron in it. That it hath no perception of any other Body, though never so light. That it maketh the Attraction according to its Poles. And that it Communicateth to Iron both the same attractive power; and a Verticity to the *North-Pole*. In which last, lieth its Great use, as applied to *Navigation*. Although by Observations made from the Variation of the *Needle*, Time may produce further Discoveries in *Astronomy*. Those that travail through the vast Deserts of *Arabia*, have also a *Needle* and *Compass*, whereby they direct themselves in their way, as *Mariners* at *Sea*. (*c*)

(*c*) Majoli Colloquia.

The

The power of the *Magnet* dependeth not on its Bulk; the ſmaller, being uſually the ſtronger. *Tergazi* (*a*) mentions one, that would ſuſpend ſixty times, and Mr. *Boyle*, (*b*) another, eighty times, its own weight. But the beſt, in time looſe very much of their ſtrength; as theſe here kept have done: None of them now taking up above ℥vj ℔. Of what they would have done formerly, I find no Regiſter.

(*a*) Muſ. Septal.
(*b*) *Of* Efluv. p. 33.

Some means have been propoſed for preſerving the ſtrength of a *Loadſtone*. But there is none mentioned by any Author, that I know of, comparable to That, experimented by Mr. *Theodore Haac*, Fellow of the *Royal Society*; not only for Preſerving, but alſo Recovering, and Encreaſing the ſtrength of the *Loadſtone*. For he having One weighing about ℥iiij ℔ arm'd, which would take up ſixteen times its own weight: and having laid it by for the ſpace of ſome years unus'd, found it to have loſt $\frac{1}{4}^{th}$ part of its ſtrength, ſo that it would now take up but about ℔iij. And, upon ſearch, meeting with no means effectual to recover it; conſidered with himſelf, That as in Morals, the exerciſe of Virtue, makes it more generous; and that Animal Motions, by uſe, become more vigorous: ſo it might poſſibly prove alſo as to ſome Properties of Inanimate Bodies. Whereupon, he hung as much at his Stone, as it would bear; and ſo left it for the ſpace of ſome Weeks. Then, returning to it, and applying more weight to the former, it very eaſily held the ſame. And repeating the addition of more weight, at ſeveral periods in the ſpace of about two years; he at laſt found, That his Stone had not only recovered its former ſtrength, but encreas'd it; for whereas before he had never known it to take up more than ſixteen, it would now take up twenty times its own weight. And he is now continuing the Experiment, to ſee how far it will go further.

A GRITTY-STONE, from the Forreſt of *Dean*; with which they there make the inſides of their Iron Furnaces; wherein their fire is ſo vehement, that it either breaks or melts down any other Material. The Grains of the Stone muſt therefore be inſuperable; yet not ſo united, but that it is ſomewhat ſoft and crumbly: of a dirty colour, near that of *Fullers-Earth*. Given by Sir *John Hoskins*.

ANO-

ANOTHER, from the same Hand, more gritty, harder, and of a brown colour.

A Stone like a pure white *Pebble*, to which another lesser of the same colour, by mediation of a clean Red, and also stony Cement, is affixed. Hard, yet dissoluble with *Acids*.

A little Red Oval Stone, on one side obliquely furrow'd; on the other, pounced, and stained with a stony Blot. This also is hard, yet easily dissolved with *Spirit of Nitre*.

A piece of Soft ALABASTER. *Alabastrites.* 'Tis white and crumbly, an infinite congeries of *Chrystalline* or shining Grains, no bigger than fine sands. It grows in *Warwick-shire*. And is like to that which comes from *Holland*. Given by Sir *John Hoskins*.

Another piece, from *Shepston* near the *Seaside*.

Another piece of a YELLOW colour, almost like to that of expressed Oil of *Mace*. It hath some of a blewish Clay upon it; but might rather casually fall into such a Bed, than be bred therein.

A FOURTH, of VARIOUS colours, in spots, *&c.* White, Yellow, Red, Leaden, Brown, and Black, mixed together.

A FIFTH (in a Frame) consisting of Ash-colour, Black, and Tawny, mixed in Spots and Veins.

'Tis found also in *Caramania*, *India*, and other places. Io hath been more used than now for the preserving of some more precious Oyntments. But why, rather than Glass or Glased Vessels, I know not, unless for shew. A Scruple hereof given in *Milk*, is affirmed by *Boetius* (*a*) to be a certain Cure of a *Dysentery*. Yet I would have no man to trust to this, who may have other Remedies.

(*a*) De Gem. & Lap. lib. 2. c. 270.

BASTARD-ALABASTER, spoted. *Gypsum variegatum.* Here are Examples of several Colours. One Black, with white spots. Another, consisting of parts some Black, and some of a pale Green. A Third, of a dark Green, mixed with White and Red Veins and Spots. A Fourth, consisting of White, Brown, and Yellow. A Fifth, of White, Red, and Yellow. A Sixth (in a Frame) of Ash-colour, Citrine, Red, Black, and pellucid Spots. A Seventh, of White, Green, and a dark *Purple*. All these Stones make a strong *Effervescence* with Nitrous Spirits. They are found in *Misnia*, *Burgundy*, *&c.*

Of

Of these lightly burnt, is made that which is properly called *Gypsum*. And *Statues* of any desirable bigness, yet very light.

A LIME-STONE (*Saxum Calcarium*) having greenish Veins mixed with a silver gloss. This being burnt, is that commonly called *Quick-Lime*. *Pliny* mentions a mixture of *Quick-Lime* and *Hogs-Grease*, usually call'd *Maltha*: whence our *English* word *Mortar*. 'Tis also used for the Trying of *Ores*. (*a*) *Boetius* describes an *Aqua Calcis*, mixed with *Sal Armoniac*, as an admirable Remedy for *Burns*, *Fistulas*, *Cancers*, and *Spots* in the *Eyes*; he adds, and *Spots* in *Cotton-Cloaths*. (*b*)

(*a*) See Agricola.

(*b*) De Lap. & G. lib. 2. c. 293.

FLAKED DROPSTONE. *Stalactites Laminatus*. Found in the top of the Hills near *Wooten Underridge* in *Glouceſter-ſhire*. In *Aldrovandus* (*c*) are several of these called *Succi Concreti*.

(*c*) Musæum Metallic.

ANOTHER, digged from under the Root of a Tree in *Cre-Forrest*. Given by Dr. *Edward Brown*.

A SPONGY DROPSTONE, of an ash-colour, as the rest.

A piece or two of small *Dropstones* sent from *Pendennis*-Castle: said to to have had a strong scent; but now hath none.

Yellow GREAT-GLIST. *Ammochrysos*, *Boetio*. So call'd, for that it consists of a great number of glossy sparks almost of the colour of Gold, immersed in a gritty Bed. And by *Wormius* and others therefore called *Mica*.

White GREAT-GLIST. *Ammargyros*, as I call it, the sparks in this being of a bright silver-colour.

Kentman (*d*) ranketh both these with *Muscovy-Glass*. And 'tis plain, That the said sparks are flaky, and flexible, as that Stone: and is therefore either the same broken to small pieces, in digging for it; or, at least, an assay of Nature towards it. But surely no Metallick Body, as *Wormius* supposeth it; unless he means, that 'tis sometimes found in Metallick Mines.

(*d*) Fossil. Nomencl.

A Red DAZE, or small GLIST, from *Cornwall*. It differs from the *Mica*, chiefly, in the smallness of the sparks. For they seem to me, to be altogether of the same nature.

A Brown DAZE (from the same place) with an angular Vein of yellow *Daze* in it; and both mixed with very small

ſmall ſparks of a yellowiſh *Spar*. Of kin to theſe, ſeems to be.

A piece of Gold-colour'd Stone, from a Vein of the ſame, found in digging a Trench in *New England*.

SOAP-STONE. *Steatites*. Given by Dr. *Richard Lower*. Taken from a Rock of the ſame in *Cornwall*. Somewhat different from that deſcribed by *Boetius*. Conſiſting of parts white, red, purple, and green mixed together, as in *Caſtile-Soap*; and ſeeming, like hard *Suet*, greaſie to the touch: whence the reaſon of both the Names. Yet is it not at all diſſoluble either in *Oil* or *Water*. Nor in any indifferent Fire; by which it only becomes ſomewhat harder and whiter. It ſeems to me to be much of the nature (for ſubſtance) of the *Lap. Amianthus*; and that it is the Mother of it.

A ſoftiſh Dirt-colour'd STONE (*Saxi Limoſi Species*) from *Staffordſhire*. Of which thoſe *Pots* are there made, wherein they melt their *Glaſs*.

The Red CAULE (a *Stone* ſo call'd about the *Tin Mines* in *Cornwall*) beaten to powder, and made up into a Ball with water. Of a faint red like that of a wither'd *Pink*. Another of a purpliſh Brown, with black ſhining ſparks.

A baſe *Slate*, *i. e.* neither of one colour, nor good Grain.

An aſh-colour'd PUMIS STONE. There are alſo whitiſh ones; and ſome Black, as in *Sicily*. Where, and at *Veſuvius*, amongſt other places, they are frequently found. The ſmootheſt are, or heretofore were, uſed by the *Germans* to rub the skin, in their Baths. (*a*)

(*a*) Boet. de Gem. & L.

A CYNDER from *Mount Ætna*; of a blackiſh colour, homogeneous ſubſtance, and ſomething metallick. Quite through full of great *Bubles*. 'Tis ground to a long Oval Figure.

ANOTHER, much more denſe, and ponderous like Iron *Ore*. Given by Sig^r. *Boccone*.

A THIRD, in ſome part vitrify'd. Of the Burning and Eruptions of this Mountain we have a copious Hiſtory given us by *J. Alph. Borelli*.

A Vitrify'd CYNDER, taken out of the Ruines of this City by the late general Fire, and kept as a Memorial of it.

SECT. II.

Of METALS.

CHAP. I.

Of GOLD, SILVER, and COPPER.

GOLD ORE of HERNGRUNT, holding Silver. Given by Dr. *Edward Brown.* It consisteth of sparks of a shining Gold-colour, together with some Black ones, alternately immersed in a white and pretty hard Stone.

GOLD ORE of *Chremnitz.* Given by the same Hand. Here are several pieces. One white, and semipersicuous. Another, blackish, not much unlike some *Flints.* The others, mixed of both. All so hard, as to write upon *Glass.* Yet *Spirit of Nitre* droped on them, in a little while, will sink into them, almost as Water into a *Bolus.* Which perhaps may depend upon some invisible Cracks in the *Ore.*

That with black spots in white, is accounted the best. (*a*) In an 100 *l.* weight of *Ore*, is contained about ℥j of Gold, holding one third part of Silver. (*b*) In this Mine, sometimes are found pieces of pure (*c*) *Virgin-Gold.* This, by some, is called *Aurum Obryzum:* qu. *Ophrisum*, like that of *Ophir.* Of several particulars of the Working here, and of separating the *Gold* from the *Ore*, with the Engines, &c. See the forementioned Doctors *Travails.*

(*a*) Dr. Brown's *Travails*, p. 99.
(*b*) P. 103.
(*c*) Ib. p. 99.

GOLDEN SAND, from the River *Tagus.* 'Tis very fine, and ponderous; consisting of Grains of a redish Iron colour mixed with black.

A lump of pure GOLD of the bigness of a *Peas*, melted out of the forementioned sand.

GRAIN GOLD, or Golden Sand from the River *Danuby.* Given by *John Bembde* Esq; taken thence with his own hand. Very fine as the former. Consisting mostly of black Grains, wherewith are mixed some of a pure Gold colour; in the proportion of about one to twenty.

SAND

SAND out of a River near *Conimbria*, in which there are some few sparks of GOLD. Together with a Knob of Gold fus'd out of it. Given by Sir *Robert Southwell*.

Gold hath the least variety of regular figure, in the *Ore*, of any Metal. Because, more solid, and therefore, less wanton, than the rest. 'Tis a rare *Specimen*, mention'd by *Georgius de Sepibus*, (*a*) which he calls *Aurum Rameſcens*. The Ductility of *Gold* is admirable: one Grain, in Leaves, is extended to above fifty inches square: and one ounce employ'd in gilding small Hair-Wyre, will be extended to almost an 100 miles in length; as Mr. *Boyle* hath obſerv'd. (*b*)

(*a*) Muſ. Roman.

(*b*) *Of* Ffluv. p. 13. & 14.

The Uses of *Gold* for Vessels, Coins, Armour, Garments, &c. are infinite. The Luxury of *Galienus* the Emperour, taught him to powder his Hair with the Dust of *Gold*. Some *Painters*, saith *Ambrosinus*, (*c*) hang plated *Gold* over *Vinegar*, whereby is produced a pure Blew (as *Ceruſs* out of *Lead*) which they prefer before the *Ultramarine*. Of the Art of Refining, see the *Phil. Transactions*, (*d*)

(*c*) Aldrov. Muſ. Met.

(*d*) *N.* 142. Communicated by Dr. *Christ. Merret.*

Chymically manag'd, it is reduced to several forms, called *Aurum Potabile*, *Aurum fulminaus*, *A. Vitæ*; as also, *Auri Calx*, *Crocus*, *Sal*, *Sulphur*, *Tinctura*, *Oleum*, *Vitriolum*, *Flos*: of which see *Libavius*, *Crollius*, *Schroder*, and others. One principal use of *Gold* in Medicine is, for the Correction of *Mercurial Medicines*. The original use of *Leaf-Gold* in *Electuaries*, and divers other Preparations, was not only for better grace, but from the opinion of its adding Virtue to them. And Plates of *Gold*, anciently, have been us'd, especially for Children, as an *Amulet*. Which I take to be the true reason, why the Kings of *England* hang a piece of *Gold* upon those they *Touch*.

Pure SILVER, naturally BRAINCHED in the Mine. From a Silver-Mine in *Suecia*. Some of the Branches are blackish being tarnished; the rest of a clear silver colour. Some pieces of a white *Spar*, dissoluble with *Spirit of Nitre*, stick to them.

A piece of CAPILLARY SILVER, or with smaller Branches, also from the Mine: whith a kind of white Rhombick *Spar* growing to it. *Ferranti Imperato & Aldrovandus*, (*e*) both give an Example of this kind.

(*e*) Muſ. Met.

PLATED-SILVER from the Mine. *Argentum nativum Bracteatum*. It lies in thin Plates, of a clear silver colour,

between the Flakes, or in the Grain of a hard white Stone; as the yellow *Plates* in the *Ludus Helmontij*, described in the former *Section*. The several *Plates* are curiously wrought with *Striæ*, which obliquely decussate each other, and make their Impression all along upon the *Stone*. This *Stone* is insensible of *Acids*. In some places, the Silver also lies crude in a black *Ore*.

Pure Native SILVER, FLAKED, or as it were the *Plated* broken into several thin pieces; lying also in the Grain of a white *Spar*, but dissoluble with *Spirit of Nitre*.

Thick PLATED SILVER from the Mine; with a mixture also of Crude *Silver Ore*; both in a white *Stone* dissoluble with *Spirit of Nitre*.

WHITE SILVER ORE, or of a silver-colour, from *Cremnitz* in *Hungary*. There are also some parts of Black *Ore* mixed with it. And some *Cinnabar*; partly of a Scarlet or Vermilion colour, and partly of the *Lapis Hæmatites*. Given by Dr. *Edward Brown*.

Another piece of WHITE SILVER ORE, growing in a white *Stone*, having a blackish cast in some places, with the hardness of a *Gem*.

YELLOW SILVER ORE, or near the colour of *Gold*, from *Kottenberge* in *Bohemia*. 'Tis granulated in a hard white *Stone*. In some parts, also blackish.

ANOTHER Piece, rather of the colour of *Copper*, from the same place. It grows in a hard, black and white *Stone*.

BLEW SILVER ORE, from the *Silver-Mine* of *Berre Ferris*. Not Granulated, but Flaked. In some positions especially, of a curious blew, like that of *Cichory-Flowers*, or some blew *Glass*, but much fairer. Some yellow *Mundick* also, with a piece of Green *Spar*, grow to it on one side.

PURPLE SILVER ORE, with *Cinnabar*.

GREEN SILVER ORE, The colour is somewhat obscure, but lies not only in the surface, but inward parts of the *Ore*. Here are growing to it some of the *Lapis Armenius*, and yellow *Okre*.

BLACK SILVER ORE, for the most part Granulated; from the *Silver-Mine* at *Schemnitz*. Given by Dr. *Edward Brown*. This sort is the best. An 100 *l.* of *Schemnitz Ore* yields

yields from an Ounce of *Silver* to twenty Ounces. Some hath been found to yield half *Silver*. (*a*) Moſt of it holds ſome *Gold*; the beſt $\frac{1}{4}^{th}$ part in proportion to the *Silver*. (*b*)

(*a*) Dr. *Brown's* Travails, p. 91. (*b*) Ibid. p. 93.

GROGUNNION ORE; alſo Black, and Granulated. It holds fifty *lib.* (ſterling) *per* Tun.

CUMBSIMLOCK ORE, Black, and moſt of it Granulated, immerſed in a blackiſh Stone, diſperſed throughout It holds twenty eight *lib.* ſterling *per* Tun. This, and ſome other *Welſh Ores*, given by Sir *Rob. Moray*.

COGINNIAN ORE, holding fifteen *lib.* ſterl. *per* Tun. It runs in *Veins* or *Layers*, rather Grained than Flaked, together with yellow *Mundick*, between two ſorts of Beds; one of whitiſh Clay, the other of brown Stone.

A BLACK and FLAKED SILVER ORE, with ſome pieces of the *Lapis Hæmatites* growing to it.

ANOTHER Piece FLAKED, from the Forreſt of *Cre*, not far from St. *Veit* in *Carinthia*. With ſome adhering *Cinnabar* of a brown *Purple*. Given by Dr. *Edward Brown*.

BLACK FLAKED *S. Ore* from *Freyberge* in *Miſnia*. Here are two pieces: one ſimple; the other, mixed with white *Ore* and *Cinnabar*.

The SCORIUM of the FREYBERGICK *S. Ore*. Porous, of a blackiſh gloſſy colour, and brittle: *qu. Vitrum Argenti*.

B. FLAKED *S. Ore* from *Kottenberge*.

B. FLAKED *S. Ore* from *Cummuſtwith Rock*. It runs in *Veins*, through a blewiſh Grey *Stone*, together with a white, hard, and granulated *Spar*. 'Tis alſo immerſed in Grain, in the Grey *Stone*. Both the *Stones* are ſo hard as to cut *Glaſs*.

CUMSUMLOCK ORE, holding twenty *li.* ſterl. *per Tun*. 'Tis much like to that of *Cummuſtwith*.

ANOTHER like *Ore* from *CORNWALL*. Given, with ſeveral others, by *Sam. Colepreſs* Eſq; It grows together with *Mundick* and green and yellow *Spar*.

Black and ſmall FLAKED *S. Ore*, from the ſame place. 'Tis immerſed in a *Slate*, with yellow *Mundick*.

A Piece of Bl. FLAKED *S. Ore* growing to a very hard *Spar*, white within, and rediſh without, and incruſtated

cruſtated with ſparry Grains, not much bigger than *Poppy-ſeeds.*

Another Piece, with Red *Cinnabar* growing to it.

A large Piece of SILVER ORE, with MUNDICK; running between Beds of White, Yellow, and Green *Spar.* The White, ſo hard as to cut *Glaſs:* The other two, ſoft. The *Ore* runs in a *Vein* obliquely, ſo as to make an Angle. By which, the Underlying or Dipping of a *Load*, may be well conceiv'd.

The Preparations of *Silver*, are made in moſt of thoſe Forms, as of *Gold*, and deſcribed by the ſame Authors before mention'd. *Goldſmiths* ſometimes give a ſilver-waſh to *Copper*, with that which is called *Oleum Lunæ.* Soder (from the *Italick*, *Saldatura*) of *Gold* is made of *Silver*, and half as much *Braſs.* *Painters* make a pure Blew here-of with *Sal Armoniac.* (*a*) Of the *Silver-Mines* in *Mexico*, and the way of ſeparating the *Silver* from the *Ore*, ſee the *Phil. Tranſactions.* (*b*) And of the Art of Refining, *Num.* 142.

(*a*) Ambroſ. in Aldrov. Muſ. Metal.

(*b*) Num. 41.

Pure CAPILLARY COPPER from the *Mine* at *Herngrunt.* Given by Dr. *Ed. Brown.* 'Tis very ponderous, the ſeveral *Styriæ* or Capillary parts but ſhort, of a rediſh Golden colour, growing together almoſt like thoſe of the little *Stone-Moſs.*

Another Piece of the ſame *Species.*

Pure GRANULATED COPPER, from the *Mine.* Of a rediſh colour, mixed with a ſad purple, and ſome green. Grows to a *Stone*, outwardly of a Liver-colour, within Whitiſh; not very hard. This ſort of Native *Copper*, by *Chiocco*, is call'd *Æris Flos verus.* (*c*)

(*c*) Muſ. Calceol.

An Iron-Chain and Heart, at leaſt, cover'd with a Cruſt of pure GRANULATED COPPER; by lying in one of the two Springs in the *Copper-Mine* call'd the *Ziment* in *Hungary.* Given with the next by Dr. *Edward Brown.*

Pure Native COPPER, both CAPILLARY, and GRANULATED, in one piece. The Capillary part, above two inches broad; and ſurrounded, like a Wood, by the other. *Aldrovandus* (*d*) hath a ſort that is pointed, or at leaſt angular; which *Ambroſinus* calls *Æs nativum figuræ pangoniæ.*

(*d*) Muſ. Metallicum.

BULLATED COPPER, Native, or from the *Mine.* Given by Sir *Rob. Moray.* 'Tis pure and of the colour of the beſt concocted. Whether this piece was not fluxed by ſome ſub-

ſubterraneal fire may be queſtion'd. Of the reſt, 'tis plain to the contrary.

Pure MASSY COPPER from the *Mine*. Given by the ſame Hand. It grows to a white and ſemiperſpicuous *Spar*, which cuts *Glaſs* eaſily, and deep.

YELLOW COPPER-ORE, from the *Mine* at *Herngrunt*. Given by Dr. *E. Brown*. 'Tis of a rediſh yellow, mixed with ſome ſparks of the colour of *Gold*, both without and within. It yields ordinarily, $\frac{1}{5}$th part *Copper*: ſometimes $\frac{1}{3}$ths or above half. See his *Travails*. (*a*) (*a*) P. 108.

Another piece of YELLOW COPPER ORE. Given by Mr. *Oldenburg*. 'Tis immerſed in ſmall ſparks in a brown Stone; to which adhere ſome very green Flakes of the nature of the *Turcois*.

BLACK COPPER ORE, holding SILVER. There are ſome Grains of a dark *Purple* mixed with it. Given by Dr. *Brown*.

Another Piece, with ſome efflorescence of *white Vitriol* upon it; perceived eſpecially by the Taſt.

A Third piece, with natural *Verdegriece*.

BLACK COPPER ORE, immerſed in a Blackiſh Stone, which is flaked ſomewhat like *Lead-Ore*; probably a courſer ſort of *Cinnabar*. Given by Sir *Rob. Moray*.

Of *Copper*, with the addition of *Calamy*, is made *Braſs* with increaſe, in the proportion of $\frac{1}{3}$d or more, according to the Stone, and manner of operation. Of the making of *Braſs*, ſee *Agricola*.

Of *Copper* are prepared, the *Calx*, *Crocus*, *Quinteſcens*, *Tincture*, *Oil*, *Vitriol* and *Flowers*. Some of them much, and well uſed outwardly againſt ill natur'd *Ulcers*. And alſo juſtly to be reckon'd among the beſt Remedies for the Eyes. That the Labourers in the *Copper-Mines*, have them always good, is an obſervation of *Macrobius*.

CHAP.

CHAP. II.

Of TIN, LEAD, and IRON.

A Piece of pure TIN, refined in the *Furnace.*

Pure TIN, Native, or from the *Mine.* It lies as it were in bright drops in a brown Stone.

CRUDE TIN powder'd, conſiſting of ſhining black and Iron-colour'd Grains.

TIN-ORE, holding *Silver.*

FAT TIN LOAD, of a great Grain, in a blewiſh Clay. 'Tis a Cluſter of *Cryſtals* like black *Glaſs.*

Another piece alſo very FAT, but ſmaller Grain'd; conſiſting rather of ſparks.

A SHOAD, a FAT TIN-Stone ſo call'd; of an Iron colour, with ſome gloſs where it is broken. Very ponderous.

A ſort of TIN ORE, with its Grewt. That is, a Congeries of *Cryſtals* or Sparks of *Spar* of the bigneſs of *Bay-Salt*, and of a brown ſhining colour, immerſed therein. They are ſo hard, as to cut *Glaſs.*

TIN ORE, conſiſting of extream ſmall black Sparks or Grains, immerſed in a green and yellow Grit.

TIN ORE, of an *Okre* colour, with a mixture of black ſhining Sparks.

A *Specimen* of GRAIN-TIN ORE of ſeveral colours; *ſc.* blackiſh, browniſh, purpliſh, rediſh, and yellow. So good, that they need little or no preparation, by ſtamping or dreſſing for blowing: neither is there any conſiderable waſt in the melting.

A SLAG, remaining in the bottom of the *Tin-Floate.* Sent by Mr. *Colepreſs.* Of a bright colour next to *Silver.* Yet contains (ſaith he, moſtly) Iron; which he accidentally perceiv'd, by applying the *Magnet* to it, both quickly uniting. But note, that now, at leaſt, they will not, unleſs you take ſmall Sparks only, and theſe will leap up to it. He alſo ſaith, That one Dr. *Stall* a *German Chymiſt*, affirmed, the *Dutchmen* make good *ſpelter* of it.

SCUM taken from melted TIN. Of a blackiſh brown, with

with ſome ſparks of Metal. It ſeems near as heavy as the pure *Tin* it ſelf.

CHIMNEY-TIN, forced up from the Herd. 'Tis black ſhining and heavy; almoſt like very fine black ſand.

A *Metalline Slat* from the *Tin-Mines*.

See a large Account of the *Tin-Mines* of *Cornwall* and *Devonſhire*, in the *Phil. Tranſactions*; (*a*) communicated by a Perſon much converſant among them. As alſo another accurate one particularly of thoſe in *Cornwall*; communicated by Dr. *Chriſtepher Menet*, and by Me publiſhed in the ſaid *Tranſactions*. (*b*)

(*a*) Num. 69

(*b*) Num.

Tin is mixed with *Copper*, in the making of Metal for *Bells*, *Organ-Pipes*, *&c.* the proportion of *Tin* to *Copper*, as two to ſeven, or thereabout. If under, it will be too ſoft; if over, too brittle. The Metal uſed for *Concaves* and *Speculums*, is likewiſe a Mixture of *Tin* and *Copper*. Of *Tin*, with *Lead*, and the *Marchaſite* of *Antimony* of each $\frac{1}{4}^{th}$ part, is made one ſort of *Printing Letters*. Of this Metal is made that ſort of *Ceruſs*, called *Spaniſh White*; one of the beſt, uſed either by *Painters*, or by Women. *Stannum uſtum*, the beſt preſervative of the poliſh of *Metallick Concaves*, and the like. *Riverius* (*c*) highly commends his *Bezoardicum Jovis* againſt *Malignant Feavers*. A Mixture againſt the *Bitings* of *Mad Dogs*, conſiſting chiefly of *Mithridate* and the *Filings of Tin*, is much uſed and relied upon by ſome *Huntſmen*.

(*c*) Obſerv. Cent. 4. Obſ. 56.

CRYSTALLINE LEAD, from the *Mine*. So I call it, not that it is clear, but conſiſteth for the moſt part of *Hexagonal Points*. Of the bigneſs of a midling *Apple*.

LEAD ORE, rich in SILVER. Given by Sir *R. Moray*. 'Tis of the uſual colour, but mixed with white *Spar*, ſo hard as to cut *Glaſs*. And I ſuppoſe, that moſt *Lead Ores* with ſuch a *Spar*, have *Silver* in them.

LEAD ORE holding SILVER, and growing together with *Iron Ore*.

LEAD ORE, probably alſo holding *Silver*. It lies in a whitiſh *Spar*, which is not ſo flaky as is uſual, and will cut *Glaſs*.

LEAD ORE holding SILVER, with a large *Cryſtalline Spar* conſiſting chiefly of *Hexagonal Points*, and of the

colour of a *Calcedony*. *Ferrant. Imperato* hath one which he entitles *Ingemmamento di Piombo*; and seems to be like this.

SPARKS of LEAD ORE in the *Caulk*. One of the Sparks is branched almost like a small Leafe. The *Stone* or *Caulk* is a Congeries of white *Crystals* of *Spar* laid cross every way. They will cut *Glass*.

A large piece of LEAD ORE, flaky, and lying in spots in a white perspicuous, flaked, and soft *Spar*.

Some other pieces of *Lead Ore*, *English*.

LEAD ORE, from *Freiungen*, called *WEISSER FLIES*. It consisteth of a soft and friable *Spar*, of a pale colour, near that of the *Diaphanous* natural *Sulphur*; together with a reddish substance intermixt.

LEAD ORE, from the same place, called *Schlich*. 'Tis a fine grey Sand, like that used for Writings: with some few black Grains; which is, I suppose, the true *Ore*.

A large piece of LITHARGE (of *Silver*.)

See a large and accurate Account of the *Mendip Lead Mines* in the *Phil. Transactions*; (*a*) communicated by Dr. *Jos. Glanvile*.

(*e*) Num. 28. & 39.

Lead (besides the uses commonly known) is also employed for the Refining of *Gold* and *Silver* by the *Cupel*. Hereof is made common *Ceruss* with *Vinegar*. The way briefly, yet perspicuously set down by *Theophrastus*. (*b*) Of *Ceruss*, *Red Lead*. Of *Plumbum ustum*, the best yellow *Ochre*. Of *Lead* and ½ as much *Tin*, *Solder* for *Lead*. Hereof are also made the like Chymical Preparations, as of other Metals, as the *Oil*, *Tincture*, *Salt*, *&c*. Some of which, many bold *Chymists*, without Discretion, give inwardly, and also extol them. But those that are careful of their Health, will beware of them. I do not deny, but that 'tis possible this Metal, as well as *Mercury*, may be so order'd and given, as to be innoxious.

(*b*) Lib. de Lap.

BRUSH-IRON, Native or from the *Mine*. It consisteth of strait, round, long *Styriæ*, about the thickness of a small *Kniting-Pin*, bolt upright, like the *Bristles* of a stiff *Brush*, or the *Teeth* of a *Wooll-Comb*. They grow on a double-Bed, the uppermost of an Iron-colour, the undermost of a dark yellowish red.

BRUSH ORE; From *Doward* in *Herefordshire*. Given by

by Sir *John Hoskins*. A rich sort. It consisteth also of strait and almost parallel *Styriæ*, most of them as thick as a strong *Kniting-Pin*; incrustated with very small Grains of *Spar*, of the colour and bigness of the Corns of *Bay-Salt*, but very soft.

MIXED BRUSH ORE; from *Clower-Wall* in the Forrest of *Dean*. By the same Hand. It consisteth of several *Piles* of round and parallel *Styriæ*, and *Layers* of unfigur'd *Ore*, a *Pile* of the one, and a *Layer* of the other, crossways; seven or eight in this piece, within the extent of betwixt four and five inches.

A piece of IRON ORE, from *Doward*, of kin to the former. By the same Hand. 'Tis rich, yet hath only some few *Styriæ*.

ANOTHER piece, from the same place, and by the same Hand. In this the *Styriæ*, or figur'd pieces, are flat, and irregularly cluster'd. *Aldrovandus* (*a*) gives the figure of an Iron *Spar* (*Ore*) ramify'd.

(*a*) Mus. Metall.

A piece of RICH IRON ORE, from a Hill of the same in *Wiltshire*, upon which is scituate a Village called *Seen* or *Send*, about nine miles from the *Bath*. Given by *J. Aubrey* Esq; Who saith, It is so good, that the *Smith* there can make that which he takes up in the street, to melt in his *Forge*; which that in the *Forrest of Dean* will not do.

The same Person observing there was great abundance of it, conjectur'd, it might Impregnate some Neighbouring Spring. And upon trial, found one, amongst others, in the middle of the street very strong, beyond that of *Tunbridge*. For upon the affusion of a *Tincture* of *Galls*, it immediately became as black as *Ink*. The Village is well built, and standing so near the *Bath*, may be very convenient for those who drink *Chalybiate Waters*, either before or after they go thither. Mention also is made of this place by Dr. *Christopher Merret*. (*b*)

(*b*) I think in his *Pinax*.

MIXED IRON ORE, from *Doward* in *Herefordshire*. Given by Sir *John Hoskins*. It consisteth of four or five substances. The best part, both brown and red, or brick-colour'd. Wherewith is mixed a white and soft spar. With a blackish, shining, and crumbly Body, knobed on the top, after the manner of the *Turcois*.

Ordinary IRON ORE, from *Clower-Wall*. By the same

Hand. Almoſt of a Brick-colour, or that of the *Colcothar* of *Vitriol.*

IRON BALLS, about the bigneſs of *Muſquet Bullets.* Made by the rowling of Iron-Sand off the Banks among the *Iron-Mines* near *Senneck*, eſpecially after rain.

TWO BONES, (part of a Mans Foot) turn'd into Iron-Stone.

A Piece of *Drop-Stone* turn'd to Iron.

An IRON ORE riſing near the *Silver-Mines* (in *Wales.*) In ſome parts of a brown *Cinnabar*-colour, and mixed with *Slate.* The *Loadſtone* takes up little Corns of it no bigger than Sand.

An odd IRON ORE, ſcarce fixable. In a white *Spar*, almoſt like a *Calcedony*, hard enough to cut *Glaſs.*

A ſort of BLACK CAULE, holding IRON. Yet ſo little, that the *Loadſtone* will not take up any part of it, bigger than *Pins head.* It hath a black, ſhining, and very croſs Grain; with white *Spar* interſpers'd, which cuts *Glaſs.*

Another IRON-SPAR, conſiſting of little white and umber-colour'd Columns, laid together croſs-ways.

An IRON BODY, that rubs away in gloſſy Duſt; with part of its Wall, (a brown *Spar*) in which it lay inclos'd.

A Piece of the OLD CYNDER, which now they uſe as a Flux for the *Iron Ore*; ſomewhat bubly. From the *Iron-Mines* in *Monmouth.*

Another, from the *Forreſt of Dean*, by Sir *John Hoskins.* 'Tis run into *Styriæ*, ſomewhat like thoſe of *Ice*, brittle, ponderous, opacous, gloſſy, and of the colour of the courſeſt ſort of *Crocus Metallorum.*

A Vitrify'd *Cynder*, of no uſe; like a piece of courſe green *Glaſs.*

An IRON STONE, with a *Spar*, on one ſide, conſiſting of pellucid ſquares; on the other, of white flakes ſet croſs-ways, almoſt at right Angles one againſt another.

A Piece of RUSMA or crude *Zernick*, almoſt of the colour of *Crocus Metallorum*, or ſome ſorts of the *Hæmatites.* Given by Mr. *Lannoy*, a *Conſul* at *Smyrna.*

See a very good Account of the *Iron-Mines*, and *Iron-Works* in the *Forreſt of Dean.* Communicated by *Henry Powle* Eſq; and by Me publiſhed in the *Philoſoph. Tranſactions.*

actions. (*a*) Some of the ways of giving a due Temper to *Iron*, according to the uſe made of it, are ſet down by *Ambroſinus*. (*b*) For one Temper is requir'd for drawing it into Wyre; another, for a *File*; another, for a *Chiſel*; another, for a *Sword*; another, for the *Edge* of a *Sword* in particular; and the like. For the hardening of *Iron* for *Files*; one of the Kings *Farriers*, upon my enquiry, commendeth this following way.

(*a*) Num. 137.
(*b*) Aldrov. Muſ. Metall.

Take *Horſe Hoofs* or *Rams Horns*, and hang them over the fire till they drop like *Glew*. Take alſo pieces of *Leather*, and burn them black. Powder them both, and put to them ſtale *Urine*, and *Bay-Salt*. Let them ſtand together; the longer the better: at three or ſeven years end it will be excellent. Caſe the *Iron* with this Mixture, and give it a ſtrong heat, ſufficient to fuſe the Mixture, for three hours; and then cool it. The ſurface of this *Iron* will be as hard as the hardeſt *Steel*, and will make excellent *Files*: but the hardening reaches not to the heart of the *Iron*.

Of *Ruſma* (a brown and light Iron ſubſtance) with ½ as much *Quick Lime* ſteeped together in Water, the *Turkiſh* Women make their *Pſilothron*, to take off their Hair whereſoever they pleaſe. There are many Medicinal Preparations of *Iron* or *Steel*: But none, that I know of, equal to the *Tincture* made without *Acids*; eſpecially in Obſtructions, and to ſtrengthen the Tone of the parts, as in *Lienterick*, and other like Caſes. Againſt all outward and inward *Hæmorrhages*, *Quercetan* highly extols his *Oleum Martis*. A *Tincture* of *Steel* made with *White Wine*, ſaith *Ambroſinus*, (*c*) is a ſtrong *Cathartick*. What he means, I know not. Perhaps he might find ſome ſuch effect upon himſelf, from that, as one I know in this City, doth from *Mithridate*, which commonly gives him a Stool extraordinary. And another, upon whom *Marmalad* hath the like effect.

(*c*) Androt. Muſ. Met.

CHAP.

CHAP. III.

Of ANTIMONY, MERCURY, and other METALLICK BODIES.

STYRIATED ANTIMONY, from the *Gold Mines* of *Chremnitz*. Given by Dr. *E. Brown*. The *Styriæ*, in this, are very fair, many of them as thick as in that which is factitious.

STYRIATED ANTIMONY, alſo Native, from *Cornwall*; called ROSCARROCKS. A Congeries of ſtrait, long, ſlender, and edged *Styriæ*, of a bright Steel-colour, almoſt like a cluſter of ſmall broken *Needles*. *Aldrovandus* (*a*) hath a ſort of native *Antimony*, which *Ambroſinus* calls *Plumoſum*.

(*a*) Muſ. Met.

GRAINED ANTIMONY, or rather *Antimonial Ore*, from *Hungary*. Given by Mr. *Oldenburge*. It looks like black grained *Silver Ore*. Immerſed in a Stone, although of a ſcurvy opacous and ſandy colour, yet ſo hard as to cut *Glaſs*.

ANTIMONIAL ORE from *Tranſylvania*. Given by Dr. *E. Brown*. It grows in a ſoft Bed, almoſt like *Lead Ore*.

ANTIMONIAL ORE, holding Iron, from *Cornwall*. Almoſt of the colour of *Amber*: yet with a Grain ſomewhat gloſſy and very croſs.

A Metallick (probably an ANTIMONIAL) *Corniſh* Stone, black, hard, and ponderous. It conſiſteth of a great many Cluſters of ſhort gloſſy *Styriæ*, radiated almoſt as in the *Belemnites*. But becauſe irregularly broken and heaped together, but difficulty obſerv'd.

Antimony is of excellent uſe for the Refining of *Gold*: ſee an accurate Proceſs, communicated by Dr. *Jonathan Godard*, and by Me publiſhed in the *Philoſph. Tranſactions*.

(*b*) Num.

(*b*) An $\frac{1}{8}^{th}$ part in proportion to the *Copper*, is by ſome added with the *Tin*, for the beſt *Metallick Speculums*. *Founders* add a little to their *Bell-Metal*, to make it more ſonorous. And ſo *Pewterers*, to their *Pewter*, to make it ſound more clear like *Silver*. 'Tis alſo uſed in the caſting of *Iron Bullets*, to make the Metal run the better. The *Spaniſh*

Spaniſh Women rub their Eye-brows with it, to give them an acceptable Black. (*a*)

(*a*) Ambroſinus, *and others.*

The *Cathartick* Property of *Antimony*, was firſt taken notice of by *Paracelſus*. And ſeveral Preparations hereof both *Cathartick*, and *Diaphoretick*, are now much celebrated. Of the Virtue of it alſo taken Crude, ſee the *Phil. Tranſact.* (*b*) The *Red Oil*, called *Stibij Sanguis*, admirable in *Malignant Ulcers*. (*c*)

(*b*) N. 39.

(*c*) Wecker.

MERCURIAL ORE. Given by Mr. *Oldenburge*. 'Tis all of one colour, much like that of the *Hepatick Cinnabar*, but ſomewhat ſadder. In the *Weſt-Indies*, all their ſilver is refined, or elſe melted down with *Quick-ſilver*. (*e*) A Paſt made hereof with *Gold*, is ſometimes uſed for gilding of Braſs Veſſels; which being daub'd with the ſame, and held to the fire, the *Gold* adheres, and the *Mercury* exhales. With this the *Tin-Foile* is made to ſtick cloſe to the backſides of *Looking-Glaſſes*. Of *Sublimate*, *Ceruſs*, *Juyce of Limons*, and *Roſe-water*, mixed like an Oyntment; is made That *Paint*, which is both the beſt and the worſt in the World.

Dr. Popes *account of the Mines.*

(*e*) Kirch. Hiſt. Ind. l. 4. c. 3.

In Medicine, the great uſe of *Mercury* is in the *Lues Venerea*; ſometimes in the *Cholick* and *Iliac Paſſion*; and for *Wormes*, eſpecially thoſe ſmall ones, called *Aſcarides*; againſt which, if duly prepar'd, there is no Medicine ſo effectual, or more ſafe. Being prepar'd, and mixed with convenient *Catharticks*, 'tis alſo very properly us'd in divers Chronick Diſeaſes.

A rich piece of Native CINNABAR, from *Carinthia*. It weighs above ℥ij and ʒij, and is entirely of a Scarlet colour.

Another Piece of CINNABAR, of a Scarlet-colour, from *Tyrol*.

A Piece of Native CINNABAR, of a purple colour, almoſt like that of fine Lake. Given by Mr. *Oldenburge*.

A piece of BLACK CINNABAR. Given by Dr. *Walter Pope*. Hard and ponderous, about as big as a *Lambs* Heart. Where it breaks, of a ſhining black.

Another piece, of a ſhining Black, mixed with a ſad *Purple*. By the ſame Hand.

The beſt *Cinnabar* in the *Schemnitz* Mines, ground with *Oil*,

Oil, makes a *Vermillion*, equal to, if not surpassing, that made by sublimation. (*a*)

(*a*) *Dr.* Brown's *Trav.* p. 91.

YELLOW MUNDICK. *Marchasita. Pyrites Aureus*; not for that it hath any *Gold* in it, but is both within, and without, of a shining Metallick yellow. As heavy, as most *Ores*. Here are of various Figures; as

The ORBICULAR MARCHASITE; tuberated, about the bigness of *Hand-Ball*.

Another, lesser, and a little compressed.

The GRAP-MARCHASITE. *March. Botryidea.* It consisteth of small *Globules* growing together in the form of a young Bunch of *Grapes*. There is one like this in *Ferr. Imperato.*

The APPLE MARCHASITE, as it may be call'd. 'Tis round, excepting on one side, where it falls in, and hath a stalk, like a young *Apple*.

The FLORID MARCHASITE. So I name it. For it looks like a Cluster of Buds ready to flower.

The YELLOW BUD. *Marchasita Phylloidea.* For it looks like a single Bud composed of several small leaves.

Part of a CYLINDRICK MARCHASITE, radiated from a Vitriolick *Pith* or *Centre*.

The TABULATED MARCHASITE. Broad and plain, or flat like a *Tablet*. Consisting of flaked and small Cubick knobs, growing on a rough Stone.

Another, only Flaked, growing to a blackish Stone.

A Third flaked, but of an irregular form.

The GRANULATED MARCHASITE. It grows on a brown Stone, in a Crust of about $\frac{1}{12}^{th}$ of an inch thick, with the surface all over grained. This kind is found near *Hindon* in *Middlesex*.

Not only the greater Flakes of which the other Varieties consist, but even the smallest and almost invisible Grains, are all either *Squares*, or at least pointed with *Right Angles*. Whereas the *Pyrites*, simply so call'd, is always Radiated. Which, and not the colour, according to others, I take to be the principal difference between them.

The CUBICK *Marchasite*, about $\frac{1}{4}^{d}$ of an inch square. The *Marchasite* seems to attain the perfection of its Figure, in a *Cube*; that is, a Square upon a Square. But sometimes it consisteth of parts neither *Cubick* nor *Square*; as in

The

The PENTAGONATE *Marchasite*. About the bigness of a little *Gall*; somewhat round, defined with several sides, each with five Angles.

A Tuberated *Marchasite* with a Green *Spar*.

A MARCHASITE growing to its own *Spar*, together with a white one pointed and semiperspicuous.

A Mixed MARCHASITE. It consisteth of yellow pieces partly cubick, and partly flaked: with *Lead-Ore* holding *Silver* growing to it on one side; on the other, several sets of ash-colour'd Flakes growing together in the form of little *Roses*.

As all *Metals*, so *Marchasites* have their SPARS, called *Fluores*. Both because they melt in the fire; and make the *Ores* to which they belong, to melt the better. The reason whereof is, For that in all *Spars*, there is a certain *Salt* which lies more loose and open, and which in mixing with the *Ore*, frets and tears it all to pieces.

A Piece of WHITE MUNDICK.

WHITE MUNDICK ORE, immersed in Grains in an ash-colour'd *Stone*.

GREEN MUNDICK, or *Mundick Ore*, running in Veins in white Clay.

A large sphærical and knobed FIRE-STONE, or *Pyrites*, about two inches in Diametre.

Another, of the same Figure, as big as a *Walnut*, and of an Iron-colour.

A Piece of a large one of the same Figure, and with a black surface. The whole Body is radiated from a Vitriolick Centre or *Pith* about ¼ of an inch in Diametre. Which radiation is also seen in most *Fire-stones*.

Another whole of the same form, a little lesser.

A Round PYRITES, compressed. Another lesser.

A PYRITES, partly Cylindrick, and partly Oval; *Cylindrovalis*. 'Tis two inches long, and near an inch and ¼ over; Cylindrick in the middle, and Oval at both ends. The Surface, smooth, and of a shining black.

MUNDICK ORE, as it may be call'd; having the same Analogy to that which is figur'd; as the *Ores* of *Metals*, have to such as are pure and perfect. This is for the most part of a greenish ash-colour, not very hard, and somewhat gritty.

Yellow *Mundick* GRAIN-ORE; immerſed in a *Spar* of an *Amethyſtine* colour.

Another ſort, like Silver Grain-Ore, in a *Spar* of the colour of that of *Tin*. So hard as to cut *Glaſs*.

A piece of *Mundick-Ore* in a white *Spar*, both Grained and Vein'd.

A piece or two of Veined *Ore* from a *Silver-Mine*.

Mundick Ore and *Vitriol* mixed with a White and Green *Spar*.

Mundick Ore, and *Black Daze*, mixed with a Vein of White and Green *Spar*; all lying between two firm Beds or Walls. Theſe *Ores*, by ſome are called *Mock-Ores*.

A MOCK-FIRE-STONE. *Pyrites ſtirilis*. Outwardly, of the colour of poliſh'd *Steel*. And radiated from the Centre, as the true *Pyrites*. But of a light and uſeleſs ſubſtance.

No ſort of *Mundick*, that I find, either in the *Ore*, or perfect, ſtirreth with *Acids*. Every Metal hath its *Marchaſite*: which is ſometimes added to them, inſtead of *Lead*, (*a*) to make them flow the better. But if too much, it robs them, by over volatilizing them (*b*) in the Furnace. Out of moſt *Fire-ſtones*, may be made both *Vitriol* and *Sulphur*.

(*a*) [Boet. de Lapid. l. 2.
(*b*) Dr. *Brown*'s Travails.

SECT. III.

Of Mineral Principles.

BY *Mineral Principles*, I mean, neither ſuch imaginary ones as ſome have talked of: nor ſuch as may poſſibly have a real exiſtence, yet were never ſeen ſolitary or uncompounded: but thoſe which come within the cognizance of ſenſe, *ſc. Salt*, *Sulphurs*, and *Earths*; and ſuch Bodies as are reduceable to theſe *Tribes*. For it ſeemeth to me, That moſt ſubterranial Bodies are either compounded of theſe Three, or are hereinto reſolved. So *Copperas* is the ſalt of a Metal; either as an ingredient in its Generation; or reſulting from its Corroſion by ſome Natural *Menſtruum*, equivalent to ſuch as are applyed by Art. In like manner, a *Bolus*, as it ſeems to be the Baſis of moſt Stones and Metals;

ſo,

ſo, upon the Reſolution of the ſame, to be nothing but their *Caput mortuum*. There being a Circulation amongſt *Minerals*, as amongſt *Plants* and *Animals*; the ſame Principles paſſing from one to another. And ſo, probably, amongſt all Bodies, at leaſt between the *Atmoſphere* and the Centre of the Earth.

CHAP. I.

Of SALTS.

A Parcel of NATURAL SAL ARMONIAC. (Rather *Ammoniac*, from its ſuppoſed ſimilitude to that of the *Ancients*, bred under the *Sands* in *Africa*.) This I call *Natural*, as being found ſublimed, by the ſubterraneal Fire, in a *Cole-Mine* near *New-Caſtle upon Tyne*. Given by Dr. *L. Hodgſon*, who firſt made experiment of the nature hereof. And hath anſwer'd ſeveral *Quæries* about it, propoſed by Mr. *Boyle*. (*a*) Here is ſome of it lying upon and between Beds of a light and ſooty Earth; and ſome pure and white as Sow. It hath the perfect Taſt of the Factitious; conſiſteth of the like Fibers or *Styriæ*; and may be eaſily ſublimed into Flowers. (*b*) *Cerutus* hath alſo deſcrib'd a *Sal Ammoniac*, as he calls it, ſublimed by the ſubterraneal Fires of *Puteoli*; but This is of a different kind, as appears from his Deſcription of it. (*c*) Hereof are made ſeveral Preparations of great Uſe to *Phyſitians*, *Alchymiſts*, and others, as the *Spirit* Simple, Aromatiz'd, and Tinctur'd; the Tinctur'd Flowers, &c.

(*a*) *See* Phil. *Tranſ.* N. 130.

(*b*) *See* Part 4.

(*c*) Muſ. Calceol. S. 2. p. 149.

A parcel of SALT taken from *Tenariffe*, 1674. and given by Dr. *George Trumbal*. 'Tis very white, and light like flowers of *Sal Ammoniac*, or the Earth call'd *Agaricum Minerale*. Taken by ſome to be a kind of *Nitre*. But not rightly. For it hath the perfect Taſt of a Lixivial Salt. Makes an *Effervеſcence* with *Aqua Fortis*, as thoſe Salts will, but *Nitre* will not do. Hath, as thoſe, a fixed Body: neither will it flow, or flame, though expoſed naked to the ſame fire, wherein *Nitre* will do both. Yet hath it ſomewhat of a nitrous Taſt intermixed; as have alſo many Lixivial Salts. I conclude it therefore to be a fixed *Alkaly*, or, in nature, a kind of Lixivial Salt.

Another parcel of the same sort of SALT, taken out of the Cave or the Pique of *Tenariffe*, 1674. by the same Hand. Different from the former, only in being of a purer white.

A Third parcel of the same, taken, I suppose, from another quarter of the said Mountain.

A square piece of Crystalline *Sal Gemmæ* (rather *Gemmeus*) weighing almost twenty Ounces.

A Ball of Crystalline *Sal Gemmeus*; with another piece of the same Species.

A piece of styriated *Sal Gemmeus*, tinctur'd with some Rays of yellow. It grows almost in the form of *Sal Ammoniac*.

A piece of styriated *Sal Gemmeus* tinctur'd with partly an *Amethystine*, partly a Saphirine Blew.

Ambrosinus gives a Figure of *Crystal* of this Salt, much like that of the Corns of common Sea-Salt; from which it differs no more, than Pit-Salt.

Sal Fossilis properly so call'd, is, as it were, the *Ore* of the *Sal Gemmeus*. Yet This, as well as Metals, is sometimes found native. The principal *Mines* are in *Poland* and *Calabria:* of which, see a Relation in the *Phil. Transactions.*(a) In the lesser *Poland*, saith *Comer*, (b) are some pieces of this Salt (he means the *Ore*) like huge Stones; so hard, that Houses and even whole Towns are built with them. Near *Eperies*, a City in *Upper-Hungary*, is a *Salt-Mine*, in which are pieces Ten thousand pounds weight. (c)

(a) N. 61.
(b) Descript. Polan. lib. 1.
(c) Dr. Brown's *Travails*, p. 112.

Of This as of common *Salt*, may be distill'd that *Acid* Liquor commonly, but absurdly call'd the *Oil*. This moderately taken, but especially if it be dulcify'd by Cohobations with a simple, or rather with an aromatiz'd Spirit of Wine, is sometimes of excellent use to restore the Digestive Faculty to the Stomach. But the common sort, taken, as it often is, without discretion, really breeds more Diseases, than it pretends to cure. See several Preparations of *Salt* in *Schroder* and others. *Ambrosinus*, I think it is, who reports, (d) That in the Province of *Canicla*, in the *Great Cam's* Dominions, the people melt and cast *Salt* into a round Form, for Money. But who ever knows the nature of common *Salt*, must also, that this Report is a great mistake.

(d) Aldrov. Mus. Metal.

BLEW

BLEW VITRIOL, Native, and cryſtalliz'd, from the *Copper-Mines* of *Herngrundt* in *Hungary*. Given by Dr. *Edward Brown*, together with the ſeveral *Species* following.

GREEN VITRIOL, Native; from the *Silver-Mines* of *Schemnitz* in *Hungary*.

Native GREEN VITRIOL, mixed with ſome Rays of a pale Blew; from the ſame place. With its aſtringent and ſweetiſh Taſts, is joyn'd ſome Acritude. It grows to its own *Ore*, of a purpliſh aſh-colour; and of a milder Taſt.

A parcel of the ſame *Species*, from the *Copper-Mine* of *Herngrundt*.

Native VITRIOL of a pale *Purple*, and conſiſting of pointed *Cryſtals*. This alſo hath ſome Acritude. From the ſame *Mine*.

Native WHITE VITRIOL. It grows in gloſſy Grains like *Nitre* groſly powder'd; and not without ſome Acritude. From the ſame place.

Made WHITE-VITRIOL of *Chremnitz*.

WHITE-VITRIOL *Ore* of *Chremnitz*. Of a pale Okre colour, and meanly aſtringent.

A ſort of Native VERDEGRIESE, from the *Copper-Mines* of *Herngrundt*. It conſiſteth of flat and parallel *Plates*, as in a *Slate*; of a blewiſh Green, yet not ſo blew, as the factitious. 'Tis alſo of a much milder Taſt. It maketh a ſtrong ebullition with *Spirit of Nitre*. Theſe from the above-mention'd Perſon.

A rich ORE of Green *Copperas*, from *Cornwall*. Of a kind of Brick-colour, crack'd a little with lying in the Air, and hath upon it ſeveral efflorеſcent lumps of *Copperas*.

A poorer ſort of Green *Copperas* ORE. On one ſide, being ſcraped, of a blewiſh aſh-colour; and with little Taſt. On the other, of a yellowiſh Green, and taſteth ſtrong as *Vitriol*. Maketh an *Effervеſcence* with *Spirit of Nitre*.

A Fibrous or STYRIATED ORE of Green *Copperas*. 'Tis white, and form'd almoſt like *Sal Ammoniac*; but hath the perfect Taſt of Green *Vitriol*. *Acids* ſtir it not.

Beſides the places mention'd, and others, Green *Copperaas* is plentifully made here in *England*, as at *Debtford*, and elſe where. The *Copperas* Stones or Fire-Stones are found on the *Sea-ſhore* in *Eſſex*, *Hamphire*, and ſo Weſtward; the beſt of a bright Silver-colour. For the making of *Copperas*, they

they make Beds sometimes an hundred feet long, and fifteen broad at top; well ram'd first with *Clay*, and then with *Chalk*. In these Beds the said Stones are laid about two feet thick: which by *Sun* and *Rain*, are gradually dissolv'd; and in five or six years time, begin to turn into a kind of *Vitriolick Earth*, which will swell and ferment like levened-Dough. And once in four years, the Bed is renewed with fresh Stones. In a Boyler containing about twelve Tuns of *Vitriolick Liquor* running from the Bed, they put in by degrees, about fifteen hundred pounds of old Iron; which both quickens the boyling, and prevents the setling and melting of the *Copperas* at the bottom of the Boyler, and of the Boyler it self. Sometimes, in stirring the Earth on the Beds, they find pieces of *Native Copperas*. See a particular and exact account of these Works at *Debtford*, communicated by Mr. *Colwal*, the Founder of this *Musæum*, and by Me published in the *Philosophical Transactions*. (*a*) Of the Nature of *Vitriol*, see several considerable Observations grounded on Experiment, in the same *Transactions*. (*b*) Amongst other particulars, an excellent way of purifying it from its Okre.

(*a*) N. 142.

(*b*) N. 103. & 104.

The three principal Parts hereof are, an *Acid Spirit*, fixed *Salt*, and *Sulphur*. The last, a good *Hypnotick*, in some Cases, where *Opium* is not safe.

Native *Vitriol*, saith *Ambrosinus*, (*c*) given to the quantity of 3i in any convenient vehicle, is a great Remedy in *Germany* and *Hungary* for the *Plague*. Blew *Vitriol* of excellent use against *Venereal Ulcers*. Both of this, and the Green, is made the Powder called *Sympathetick*; the Description whereof may be seen in *Papinius*, and out of him in *Wormius*. I doubt not, but that the *Stiptick Liquors* of Mr. *Lyster* and of Mr. *Deny*, are both made of *Vitriol*.

(*c*) Aldrov. Mus. Met.

A sort of ALUMINOUS Earth, found near the River *Patomach* in *Virginia*. 'Tis soft and very light; of an ash-colour, and acid-astringent Taste, almost like that of *Alum*. Whether the people there make *Alum* of it, or use it in *Deying*, we have no account.

Of the Nature of *Alum*, see a very good Discourse in the *Philosophical Transactions*. (*d*) Of the *English Alum-Works* an accurate Account, communicated by *Daniel Colwal* Esq; and by Me published in the same *Transactions*. (*e*)

(*d*) N. 103. and continu'd, N. 104.

(*e*) Num. 142.

The

The *Alum-Stone* (of a blackish colour, and flaky, like *Cornish Slate*) is found in most of the Hills between *Scarbrough* and the *River of Tees* in *York-shire*. As also near *Preston* in *Lancashire*. Of these Stones calcin'd, is made a *Lee*; and of the *Lee*, *Alum*. The *Lee* after the first shooting of the *Alum*; is called *Mothers*. In which, certain Nitrous and other parts call'd *Slam*, being predominant; to precipitate the same, they add the *Lees* of *Kelp*; made of *Tangle*, a Sea-Weed commonly among *Oysters*. And then, a certain proportion of *Urine*, both for the same purpose, and to keep the *Kelp-Lees* from hardening the *Alum* too much. The *Mine*, before it is calcin'd, being exposed to the Air, will moulder in pieces, and yield a Liquor whereof *Copperas* may be made.

Fallopius's Aq. Aluminis Magistralis, is of good use against untoward *Ulcers*. *Deyers* boil their *Cloaths*, or *Yarn* in *Alum-Water*, that they may take both a better, and more durable colour. It is used, likewise, for the making of a Leather soft and white, or fit to take a clear colour, which the Tan'd, will not do. And I little doubt, but that to wash the Skins of Beasts or Fowls herewith on both sides, or perhaps on the Feathers, only strewing *Alum* in fine powder, would be a good way to keep them from the *Moth*, and growing dank in moist Weather, and so to preserve them for ever.

CHAP. II.

Of SULPHURS.

A Piece of Opacous yellow AMBER half a foot long. Given by *Thomas Henshaw* Esq; Found, with several lesser pieces, in digging of a Ditch under the Walls of *Rensburge* in *Holstein*, eighteen feet under ground. Which place is at least five and twenty miles both from the *Baltick* and *German* Seas.

A Piece of AMBER of the colour of *Honey*.

A Piece of clear yellow AMBER. Given by Captain *Tailor*.

Another yellow Piece, semiperspicuous; from the same Hand.

A

A Ball of yellow and opacous AMBER.

A Piece of clear yellow *Amber*, with a *CICADA* drowned in it.

A Piece of Citrine *Amber*, with ſeveral GNATS immerſed.

A little Ball of citrine *Amber*, with an immerſed *Emmet*.

A Heart of yellow *Amber*, with two FLIES.

Two or three more Pieces, with ſome other INSECTS.

In *Septalius*'s *Muſæum*, is one ſo large as to bury a *Frog*. And *Boetius* (*a*) affirms that Pieces are found ſometimes as big as a mans Head.

(*a*) De Gem. lib. 2.

Found in great quantity in *Pomerania*, and upon the Coaſt of *Pruſſia* in the *Baltick-Sea*. The *Elector* of *Brandenburge*, Soveraign of that Coaſt, farmes it out (*b*) for twenty Thouſand Crowns yearly. Alſo plentiful on the Coaſts of *Soffala*, *Moſambique* and *Melinde*.

(*b*) Tavarn. Ind. *Voyage.*

Boetius deſcribes a Powder, (*c*) in which *Amber* is the chief Ingredient, and which he highly commends for the *Epilepſie* both in Children and grown perſons. The two Salts of *Amber* united, ſaith *Terzagi*, (*d*) make an admirable Specifick for that Diſeaſe.

(*c*) De Dem. lib. 2. c. 160.

(*d*) Muſ. Septal.

Take *Yelks* of *Eggs* ſixteen, *Gum Arabick* ℥ij, *Gum* of *Cherry-Tree* ℥j. Diſſolve them, and ſet them in the Sun for an Artificial *Amber*. Amongſt the many Opinions of the Original of *Amber*, I put this queſtion, Whether it is not a kind of harden'd *Petroleum*?

FLAKED STONE-COAL. *Lithanthrax ſciſſilis.* By ſome called *Black Amber*; not properly. For, when fir'd, it hath ſcarce any taſt or ſmell. Neither doth it yield any *Oil*, or melt, as *Amber*. Only makes a very weak and thin Flame, which preſently vaniſhes; and little ſmoak. Yet keeps fire for a conſiderable time. 'Tis black, gloſſy, and pretty hard. Yet being ſtruck, eaſily breaketh into Flakes of a ſquare Figure. Found in *Miſnia*, *Bohemia*, &c. In ſome Pits two Hundred paces deep. (*d*)

(*d*) Boet. de Gem. & L.

A STONE taken out of the *Dead-Sea*. Blackiſh and ſomewhat flaky. Diſſoluble with *Spirit of Nitre*. When fir'd, it yields a ſulphurious ſcent. Yet the barbarous *Arabians* uſe it for fewel.

A Piece of *Jet*. *Gagates*, from *Gaza* a River of *Lycia*, where

where first found. Given by Sir *Rob. Moray*. Of a shining colour, and in some places, flaky. It cracks when held to the fire; and in it, burns with a thick flame and smoak, and very stinking. If rub'd till its warm, it takes up pieces of Feathers, and such light Bodies. 'Tis found in *France*, *Sicily*. And in this *Island*, in *Cleaveland*, on the top of *Huntley* and *Whitby Clifts*, where the Sea-water never comes.

Pit EBONY. *Ebenum fossile*. Very brittle, and when held in a flame, breaks into Flakes; it burns, with a sooty smoak, into ashes; but with scarce any flame.

A parcel of ORPMENT. *Auripigmentum s. Arsemicum croceum.*

Native SULPHUR or BRIMSTONE, crystalliz'd, of a pale Golden colour, and semiperspicuous. Sent from *Peru*. The like is described in *Calceolarius*'s *Musæum*, and by *Wormius*.

ANOTHER Piece, of such a like colour. Found in the *Pike* of *Tenariff*, and given by Dr. *George Trumbal*.

A Lump of Native SULPHUR of the colour of some *Olibanum* Drops, or opacous yellow *Amber*. From the same Hand, and Place. As also,

Two Pieces of SULPHUR ORE. One, *Earth*, of a brown colour; the other, *Stone*, of a Sand-colour and gritty.

Native SULPHUR of *Island*. Of the colour of the common factitious *Brimstone*; and immersed in a stony Bed.

SULPHUR, of a curious Orange-colour, extracted out of *Gold-Ore*. Given by *Henry Oldenburge* Esq;.

SULPHUR ORE of *Freyberg*. Here are three Pieces. One, almost of the colour of *Cinabar*. Put into the fire, it smells like *Brimstone*, but flames not. The other two, consist of blackish and ash-colour parts mixed with the red; together with some grains of *Mundick*. If fired, they smell like the first, but not so strongly; nor make any flame.

GREEN SULPHUR-ORE. Like that in the *Copper-Mines* of *Suecia*, mention'd by *Wormius*.

SULPHUR-ORE of *Island*. Opacous, and immersed in a blewish *Glebe*. If burnt, it hath the scent of *Brimstone*; but yet weak, and flames not.

Of the nature of *Sulphur*, *Copperas*, and *Alum*, see a very good Discourse in the *Phil. Transactions.* (*a*) Of the Uses, see *Agricola*, *Libavius*, *Grollius*, *&c.* I have seen a *Tincture* of *Sulphur* of Mr. *Boyls*, brought over the *Helm*, which will fume all away. I remember not where he describes it, but as I take it, 'tis made with *Sal Ammoniac.*

(*a*) Num. 104.

CHAP. III.

Of EARTHS.

TWo Parcels of EARTH RAINED on the *Archipelago*, upon the Eruption of *M. Vesuvius*, *Dec. 6th* 1631. Given by *J. Evelyn* Esq;. One, is gritty, and of the colour of *Amber*. The other a soft *Bole*, and looks like powder'd *Jalap*. I dropped some *Oil of Vitriol* on them, but they stir not. This *Earth* began to rain about Ten of the Clock at Night, and continu'd till two next Morning: So that it lay two inches thick on the Deck of Captain *W. Badily*'s Ship, who sent this Relation. While it rain'd, no Wind stirring. It fell in several parts a hundred Leagues distant. (*b*)

(*b*) See *Phil. Transf.* N. 21.

A parcel of EARTH, RAINED lately upon *Tenariff*. Given by Mr. *Joseph Bowles*, a Merchant in this City. Of a pale Clay-colour, and insipid. Yet upon the affusion of *Oil of Vitriol*, makes a suddain *Effervescence*; herein different from the former.

FINE SAND, from a Sand-Pit near *Bruley* in *Kent*. Given also by Mr. *Evelyn*. Of this is made the clearest and best *English* Glass. It consisteth of some Grains, as clear as *Crystal*: with which others obscure, being mixed, give a whitish ash-colour to the whole Mass.

A Sandy substance of a Gold-colour, found in a Vein of Stone in *Hartford* in *New-England*.

Black SAND of *Virginia*.

Black SAND found on the shore near *New-Haven* in *New-England*; with some Grains of red and white.

The like out of St. *Christophers* Island.

Fine white SAND of *Saco* in *New-England*.

Of

Of BOLES and other EARTHS, here are examples of all colours, as White, Ash-colour'd, Yellow, Red, Green, Blew, Brown, Black. Of which in their Order.

A parcel of MELITA EARTH. Given by Sir *Phil. Skippon.* By some called *St. Pauls Earth.* 'Tis of a white colour, but inclining to that of *Mortar.* Not gritty, yet less soft than many other *Earths.* Makes a strong *Effervescence* with any *Acid. Cerutus* (*a*) extols the use of it in *Pestilential Feavers*, and against Worms in Children, and not unjustly. Not only the *Earth* it self, but the Images, Vessels, and the like, made hereof, are fabled to derive these and other Virtues, as against the bitings of *Serpents, &c.* from St. *Paul*, who liv'd sometime there, and miraculously preserv'd himself from the Venome of the *Viper.* And *Wormius* (*b*) hath given himself the trouble to transcribe a printed Paper hereof.

(*a*) Mus. Calceol. Sect. 2. p. 130

(*b*) Mus. l. 1. c. 4.

SAMOS EARTH. 'Tis white, and softer than the former. Maketh an ebullition with any *Acid*; but very weak and slow. It hath somewhat of an aromatick Taste, like that of calcin'd *Harts* Horn. Of this also Vessels were antiently made of great esteem.

STONE MARROW. *Stenomarga Agricolæ*, i. e. *Saxi Medulla:* because found between the Commissures of great Stones. *Agaricus Mineralis, Imperato*; from its likeness to *Agarick* in colour; but no further. For between the Teeth it feels somewhat like fine sand or grit; and hath no Taste. Nor is it sensible of *Acids.* 'Tis sometimes used by *Chirurgions* for the drying of *Ulcers.*

A BOLE like that of WHITE (*c*) *Terra Lemnia.* Very close and heavy, and when scraped, of a pale white, smooth, and glossy; almost like to white Wax. 'Tis but slowly dissolved in the mouth.

(*c*) Mus. Worm. l. 1. c. 4. p. 9.

This and other like smooth *Earths* are commonly called *Pingues*, or *Fat:* absurdly, for *Læves* or *Subtiles.* Their seeming *Pinguitude* proceeding only from the exquisite fineness of the Particles of which they consist.

A smooth BOLE, almost of the colour of *Castile Soap.* More easily dissolved than the former, so as it seems to melt in the mouth like Butter.

A parcel of very white, light, and soft EARTH. Taken out of the Cave opened at the *Royal Fort* at *Plymouth*;

where it lies in little Veins containing much water. Supposed to be the *materia prima* of white *Marble*.

A White EARTH lying in a *Load* degenerated from *Tin*. very gritty, and insensible of *Acids*.

A White EARTH, with a Ray of Red; very soft, without any grit, and inaffected with *Acids*. Nor hath it the common Taste of *Boles*, but is altogether insipid. Found in the same place, as the former; but in different Veins. Supposed to be the *Embrio* of white and red *Marble*.

A BOLE of a yellowish sandy colour; somewhat gritty and friable.

SILESIAN BOLE. Of a reddish yellow, exactly like the paler *Emplastrum de Minio*. As dense as any other, crackling a little betwixt the Teeth. Yet without the least Particle of Grit; feels as smooth as *Castile-Soap*; scrapes with a gloss; and breaks like *Bees-Wax*, or the Salve above-said. Tasteth like other *Boles*.

The BOHEMICK sealed BOLE. It agrees in all properties with the former; saving that it hath somewhat more of red.

The HEPATICK BOLE of LEMNOS. Of kin to the red *Lemnian*. And answers to that which *Wormius* describes by the Name of *Terra sigillata hepatica*. It stirreth not with *Acids*.

ANOTHER of the same more PALE. Somewhat harder than the *Armenian Bole*. It makes a small ebullition with *Oil of Vitriol*, and with *Spirit of Nitre* a very strong one.

I take the principal Difference between *Earths*, as applied to Medical Use, to be this, That some are not affected with *Acids*; others are: Those, *Pauperes* or *Fatuæ*; coming nearer to simple or meer *Earths*; These *Saline*, or impregnated with a Mineral *Alkali*, and therefore of greater energy.

A smooth and pale reddish CLAY, lying in a little vein, running *East* and *West*, through a great Pillar of Sand, in a firme *Marble-Rock*. Supposed to be the *Embrio* of the red *Marble*.

Red LEMNOS EARTH. As red as *Radle*; but much more close and coherent, and so colours not the Fingers.

(a) Lib. de Lapid. *Theophrastus* (a) reckons up three sorts of *Terra Lemnia*; *sc.* the Deep Red, the Pale Red, and the Whitish.

Celebrated

Celebrated by ſome of the Antients againſt Poyſon, which, if right, it expels by Vomit. Yet *Theophraſtus* ſaith, That in his time, it was uſed only for *Painting*.

ARMENIAN BOLE. From that part of *Armenia* next to *Cappadocia*. Both of a deep and a pale Red. Very ſoft, and eaſily rub'd to powder. Never makes any ebullition with *Acids*. Firſt brought to *Rome* in *Galen's* time, when the *Plague* was there. In which, and other *Malignant Diſeaſes*, it hath generally been eſteemed of good uſe. *Joubertus* relates, as a Teſtimony of its Virtue, That four men preparing ſome *Cathartick* of *Antimony*, were all well nigh ſuffocated. And that upon his giving them each ℈ij of this *Bole*, they became very well. But the queſtion is, Whether ſo ſoon as they were got out of the reach of the *Antimonial Fumes*, (from which we may be ſure he took them), they would not have been well without it?

An *Engliſh* BOLE, like the *Armenian*. From Sir *J. Hoskins*.

A Red MINERAL EARTH, with ſome little gloſſineſs in ſome places. Of the colour of the deepeſt *Armenian Bole*.

Red *Corniſh* MARLE, uſed in *Agriculture*. It hath ſome grains of fine Sand, which, through a Glaſs, looks like Metal. A piece alſo of common *Radle*.

A BOLE conſiſting of Red and White Plates, thin and parallel; ſo as to look like ſtriped Work.

BERG-GRUN; a Green *Earth*, the ſediment of a green Water in the *Copper-Mine* at *Herngrundt*. Given by Dr. *Ed. Brown*. 'Tis uſed by *Painters*.

A VERDAZURINE BOLE. So I call it, for that it is on the out-ſide of a blewiſh green, like *Verdegrieſe*. Within, of the colour of a *Leek*. It ſticks to the Tongue, as the *Armenian*, or *Lemnian*, and hath the like Taſt. Stirs not with *Acids*. Not unlike to that, which is deſcribed by *Wormius* with the Name of *Creta Viridis*. Yet cannot be the ſame, unleſs that Name be ill given: for *Chalk* properly ſo call'd, maketh a ſtrong *Effervеſcence* with any *Acid*.

A GREEN EARTH like that which *Kentman* (*a*) calls *Saponariam ſ. Fulloniam*. (*a*) Foſſil. Nomencl.

A BLEWISH Grey MARLE mixed with Red. Uſed in *Agriculture*.

A BLEWISH EARTH, with the ſignature of an *Eſcallop* upon it. It gently diſſolves with *Acids*.

Earthen

Earthen BALLS, about as big as mounting Stones, of a Blewiſh colour, or that of *Tobacco-Pipe-Clay.* With other irregular Lumps of the ſame nature: found among the *Earth* of a Hill overturn'd at *Kenebank* in *New-England.*

A Piece of IRISH-SLATE, ſo called. Given by Mr. *Rob. Hook.* Of the ſame colour as the *Corniſh*, only ſomewhat paler. But as ſoft as the *Terra Lemnia*, and ſeveral other *Boles.* And is therefore to be reckon'd amongſt them. Beſides the common Taſt of *Boles*, it hath a little Aſtringency. Yet not alike perceived in all, for there is better and worſe: which *Apothecaries* will do well to obſerve.

(a) Ibid. *Kentman* (a) mentions a ſort of very white *Earth* near *Padoa*, which in a ſhort time would turn Blew, only by being expoſed to the *Aer.*

A ſort of BROWN EARTH, very light; lying in Veins, incompaſſed with a Body of greeniſh Sand. From *Cornwall.*

A BLACK EARTH, taken out of a ſpot encloſed in the ſame Sand, without any Vein iſſuing from it.

PART

PART IV.
Of Artificial Matters.

SECT. I.

Of Things relating to CHYMISTRY, and to other Parts of NATURAL PHILOSOPHY.

ALL Arts are referred either barely to the Obſervation, Or alſo to the Command and Management of their Object, for the Uſe of Man. But I muſt ſpeak of thoſe Particulars here preſerv'd, in that Order, as they will bear: and ſo ſhall reduce them to four General Heads, *ſc.* ſuch as relate to *Chymiſtry* and other parts of *Natural Philoſophy*; To the *Mathematicks*, *Mechanicks*, and *Antiquity*.

The *Phlegme*, *Oil*, *Spirit*, *Volatile*, and fixed *Salts*, both of the Serous, and Grumous Parts of HUMANE BLOOD. Together with the *Oil*, *Volatile*, and fixed *Salts*, of that of an OX. Prepared, and given by Dr. *Walter Needham*. By whom alſo was read a Diſcourſe before the *Royal Society*, in which, as I take it, the proportions between the ſaid parts, with divers other Remarques were deliver'd. But I meet with no *Regiſter* hereof. The different Proportions of the ſaid parts, as they are obſervable in the ſeveral *Viſcera*, I may have occaſion elſe where to repreſent. I ſhall now only note, That the fixed *Salts* of *Blood* above mention'd, are three of them Grey, and all but weak. The fourth, *viz.* that of the ſerous part of an *Oxes*, although calcined to whiteneſs; yet is not ſo ſtrong, as That of moſt Vegetables.

The OIL of TOBACCO diſtilled *per deſcenſum*. The notable effect hereof upon a *Cat*, was try'd ſome years ſince before the *Royal Society*. One or two Drops of it being

ing put upon her Tongue, she fell immediately into horrid *Convulsions*, and dy'd within the space of one minute of an hour. This very *Oil* I have several times prescribed to my own Father (who takes *Tobacco*) in *Lint* to be held betwixt his Teeth, against the *Toothach*, with a good effect, and no ill one. But I, who take none, having once us'd it, my self in the same manner, although I swallow'd not so much as any of my spittle, yet it made me extremely sick, and vomit once or twice.

The Stillatitious OIL of LAWANG BARQUE. Sent from *Java major* by Sir *Phil. Vernatti*. It partaketh much of the colour, smell, and tast of That of *Sassafras*; but is much more fragrant. The *Oil* of *Sassafras* is distill'd only from the Wood. But if one were distill'd from the Barque, it might equal This.

An *Oil* distill'd *per Alembicum*, from the ROOTS of the CINAMON-TREE resembling *Camphire*. From the same Hand and Place. The Roots being only bruised, and steeped in Water, are then distill'd. The Tree is about the bigness of the *Olive*. Described by *Linschot*. (*a*) Grows in *Cavit* and *Subanin*, but the best and most in the Island *Seylon*; there in whole Woods.

(*a*) Lib. 1. c. 63.

The LIQUID OIL of MACE, by expression. 'Tis made of fresh *Mace*. Hath some few curdled parts, as sometimes in that of *Olives:* but the most part of it is liquid without heat, which the best expressed *Oil* of *Mace* in the Shops, is not. Almost of the colour of a Tincture of *Saffron*, and very fragrant. Confirming what *Linschot* saith, *&c.* That the original colour of *Mace*, is Scarlet.

The FIXED SALTS of *Carduus* bened. *Garden* and *Sea Scurvy-Grass*, *Ash* and *Oak Barques*, *Rosemary*, *Mint*, *Mugwort*, *Agrimony*, *Wormwood*, *Sorrel*, *Mallows*, *Liquorish*, *Anise-Seeds*, *Sena*, *Jalap*. By Me prepared and given. Together with a Discourse read before the *Royal Society* concerning the same, which I purpose to publish ere long. I shall here only Note, that although Many think and affirm, That all the Fixed Salts of Vegetables are alike: yet by These, duly managed, it doth appear, That there is a great difference, both as to strength, and otherwise, between divers of them, even when they have been equally calcin'd. So far, that the promiscuous use of some of them, in Physick, is unsafe:

unsafe: as, for instance, of *Tartar* and *Wormwood*; half a Scruple of the former, being as strong as one whole Scruple of the latter. Of the Fixed Salt of Vegetables, see a Discourse in the *Phil. Transact. N.* 107, & 108. *Of the Volatile Salt*, *N.* 101. (*a*)

(*a*) Both communicated by Dr. *Daniel Cox.*

An *East-Indian* Composition (as it seems of Vegetables) called CATO. Very astringent, and infus'd in water makes it yellow. Us'd by the *Indians* against the Inflammations of the Mouth or Throat.

SAL AMMONIAC sublim'd in a Sugar-Mould from Beds of the same taken from a *Coal-Mine* near *New-Castle* upon *Tyne*; of which, see the foregoing part of this Catalogue. Prepar'd and given by Dr. *Luke Hodgson.*

SPIRIT of *Sal Ammoniac* distill'd from the said *Salt* mixed with *Quick-Lime.* By the same Hand.

The Parts of the Medical WATERS of SCARBROUGH. Prepared and given by Dr. *Witty:* together with an account of them. But this I find not. The Preparations are these, The *Phlegm*, and *Acid Spirit*, not strong. The Sedement upon evaporation, of an ash-colour, a bitterish and nitrous Tast. The *Precipitate*, upon the mixture of *Gall-powder*; black, and of little Tast. One or two Grains will precipitate ʒj out of a Gallon of the Water. The Nitrous or Essential *Salt*, as I take it, before the Precipitation be made. The like *Salt*, after the Precipitation is made. These *Salts* have also somewhat of a Nitrous Tast, but mixed with a smatch of a Vitriolick: And the latter, I take notice, is figur'd into long square *Crystals*, or little square *Bars.* The Black Precipitate calcin'd. The Lixivial *Salts*, made, as I take them, from the Precipitate, and from the simple Sediment or Extract both before and after Precipitation made: somewhat like to that of *Vitriol.*

What ever Ingredients, as *Niter*, *Vitriol*, or other known *Salts*, may go to constitute these aboveſaid; I am of Opinion, That the predominant is some Metallick Principle different from them all.

A Solid HERMETICK PHOSPHORUS; a mixed Matter, which being expos'd for about half a minute of an hour to the Sun, or only to Day-light, or to a bright Fire or Candle; will shine in the dark for some minutes. Made by Dr. *Fr. Slare*, and by him given to the *Royal Society*,

Apr. 3. 1679. The first of this kind was made by Monsieur *Baldwin*, a *German* Lawyer who gave it the Name above, but with no direction for the making of it. Nor doth he so much as mention the Materials.

I call it *Solid*, to distinguish it from two Liquid kinds. The Author of one, supposed to be Mr. *Dan. Krafft.* The other invented by the Honourable Mr. *Boyle*; which He calls the *Aerial Noctiluca*; and whereof He hath lately published an excellent *Discourse*. In whose *Laboratory*, the solid kind was also made by his direction, several ways.

Of the Process for This here, Dr. *Slare* some years since received a hint from Dr. *Christian Connerding*, *Archiater* to the Duke of *Zell*. And not hearing of any one, amongst many that have try'd, besides these Three, to have succeeded in the making of it, he hath imparted the following Account.

Take good firm *Chalk*, ignite it in a *Crucible*, and then powder it. Put into a pint or half a pint of strong *Spirit of Nitre*, *Cochleatim*, as much hereof, as will serve well to satiate it, *i. e.* till it becomes sweetish, and makes no *Effervescence* upon the injection of the *Chalk*. Then dilute this Liquor with fair Water, filtre it through a Paper, and so evaporate it in a large Glass, or glazed Vessel, or good *Hassian Crucible* to a dry *Salt*. The preparation whereof may be perform'd in four hours: whereas I have seen a Pocess, that would take as many Weeks to follow it.

The main business lies in the good *Enchiresis*; about which these several Directions must be carefully observ'd.

First you must prepare a Vessel of Clay, somewhat like a shallow *Coffee-Dish*, of three, four, or five inches in Diametre, and an inch in depth, very well baked and neal'd. Then place it under a Muffle, after the manner of a Refining Furnace, in the place where the Cuppels usually stand: and so make it red hot. Then put the prepared *Salt* into it, by little and little, not above ℥j ss. or ℥ij at a time. Keep the fire to that degree, which will suffice to make the *Salt* boil in the Dish, so as to spread it self every way, and creep up the sides of it. Before the *Salt*, last put in, be consumed, be sure always to be ready, to make a new addition, otherwise your labour so far is lost, and you must begin again.

When

When five or six Drachms are fum'd away, take the Dish nimbly out of the fire, so soon as the *Salt* last put in is dry. If you have wrought well, what remains in the Dish will be yellowish in some parts, and every yellow part will shine. Secure this Matter from the Air by fitting and cementing a Glass to it: otherwise it will loose its property in one Week.

As to the Cause of this strange *Phænomenon*, Dr. *Slare* continues to this effect. I shall in short offer my Thoughts, and refer them to your Judgment. Two Questions may arise: What it is in this Mixture that yields the light? and, How it doth it? As to the first, I take it to be the pure fiery part of the *Spirit of Nitre* embraced by the *Chalk*. For that the rest is weak and phlegmatick; as appears, if it be distill'd. Also, that about the end of the Operation, a black Fume begins to rise and fly away. That if by continuing the Dish too long in the fire, you drive all the Nitrous parts away, the *Chalk* which stays behind will not be luminous. Or if the Matter duly prepar'd, be exposed to the Air, and thereby prey'd upon, the same effect will follow.

As to the Second, I suppose, That it shines not by Imbibition of Light, but by Impression from it, from whence proceeds a motion therein productive of Light. Which we may the rather be induced to believe, In that if it be put into an Iron Cover, and then an Iron Box, and a good heat given to it, it will shine so vigorously as to seem to kindle the Air about it. That two Men by following their blow close, will make a Bar of Iron glow, or shine in the dark. And although the Impulse of Light may seem small; yet upon Bodies nearly related to it, as This seems to be, it appears to be great. As in those odd effects it sometimes hath upon Infants unus'd to it; and People that have sore Eyes; or have been newly Couch'd; as it happen'd to Dr. *Castle* sometime since, who by making bold with his Eyes too early, (*i.e.* by a too frequent admission of light to them,) after that Operation, did thereupon suffer such extreme pains, and mischief in his Eyes, that he now dispairs of ever seeing more.

Mr. *Haac* (*a*) saith he, hath frequently repeated the following Experiment upon this *Phosphorus*. If it be exposed to the Morning Light a little before Sun rising, it

(*a*) Author of the *Experiment upon the Loadstone*, Part 3.

presents a bright Rosy hugh. As the Sun approaches the *Meridian*, it advances to a higher and more firey Complexion, like that of a red hot Iron. A little after Sun-set, declines to a pale wan colour, like *Chalk*, or rather *Mother of Pearl.*

Expos'd, saith he, to the light of a Candle, or flaming Fagot, it receives a pale Luminous colour, as from the Sun towards setting. But being expos'd for a considerable time to the most clear Moonshine that I have seen in *London*, I could not perceive it to become Luminous in the least.

It hath been kept, saith he, in the *Vacuum* of my Great and Noble Patron, the Honourable Mr. *Boyle* called *Vacuum Boyleanum*, and by his Highness Prince *Rupert* and Himself observ'd, for above four or five months, without any diminution of its shining property.

He adds, That he hath lately found a way to affix this Shining Matter to Glass, whereby some not unpleasing Experiments may be made. Thus far Dr. *Slare.*

As to his Ingenious Conjectures of the Subject and Cause of Light in this *Phosphorus*: because he hath desired my Opinion, I shall therefore subjoyn it in a few lines.

As to the first, What it is which gives the Light: It seems hard to say, Whether it be the *Cretaceous Salt*, the *Nitrous Salt*, or some *Igneous Particles* incorporated with them in the Operation? It is plain, That one way or other, they do all concur to produce it.

As to the Question, How these *Particles* give light? It should first be stated, What Light is; Whether it be a Body? Which, though much disputed, yet in strict speaking, is an absurd Question; all one, as to ask, Whether a Quality, be a Body? But the meaning of the Question is, or ought to be, Whether there be any Body in Nature, which is the peculiar subject of Light, or metonymically may be called Light? Or whether more Bodies than one, may successively be the immediate subject thereof? If so, Whether it be any other Adjunct besides Motion? If only Motion, Whether as there is one peculiar Motion, at least for a Musical sound, so another for Light? And in regard there are some Experiments which seem to favour each of these Questions: such an Answer should be given as will cor-

correspond with all those experiments; and will be too long to suit with this Catalogue.

I shall here only say, I am inclined to believe, That, in this Case, all the three Bodies above mention'd serve together to compose an Apt Recipient of that which is the true Luminous Body. That, as in the mixture of *Sulphur* and *Water*, sulphurious *Salts*, of affinity with both, are used as a medium: so here, the Cretaceous Parts serve to fix the Nitrous; and the Nitrous, to fix the Igneous; being of a middle nature and readily incorporated with them both. And being in this union exposed to the Sun Beams, or other Light, the Igneous parts serve, for some time, to retain a certain portion of such as are Luminous, or to give, as I may say, a degree of Fixation to These also: and that therefore this Mixture is kindled or made to shine, by puting it into the Light, as a stick is made to burn, by puting it into the fire.

Of shining Flesh, see a Relation of some Remarkable Circumstances, made by Dr. *J. Beal*, and published in the *Phil. Transf.* (*a*) (*a*) N. 125.

Of Instruments relating to Natural Philosophy.

AN AIRE-PUMP; or an Engine to exhaust the Air out of any Vessel fitly applied. Contrived and described (*b*) by the Honourable *Rob. Boyle* Esq; Who hath also made therewith, and published in several Tracts, a great variety of accurate and instructive Experiments. (*b*) Experiments *Physico-Mechanick* of the Spring of the Air.

A Great CONDENSING ENGINE of Brass; contrived to ram and crowd a great quantity of Air into a little room. Whereto is also fitted an Iron Gun or Barrel.

A Little CONDENSING ENGINE of Glass, with a Brass-Neck, Rammer and Valve fitted to it.

A WEATHER CLOCK. Begun by Sir *Chr. Wren*, (*c*) now President of the *Royal Society*. To which other Motions have since been added, by Mr. *Robert Hook* Professor of *Geometry* in *Gresham-Colledge*. Who purposes to publish a Description hereof. I shall therefore only take notice, (*c*) See Hist. of the *Royal Society*, p. 312.

notice, That it hath ſix or ſeven Motions; which he ſuppoſeth to be here advantagiouſly made altogether. Firſt a *Pendulum* Clock, which goes with ½ of a 100 *lib.* weight, and moves the greateſt part of the work. With this, a *Barometre*, a *Thermometre*; a *Rain-Meaſure*, ſuch an one as is next deſcrib'd; a *Weather-Cock*, to which ſubſerves a piece of Wheel-Work analogous to a way *Wiſer*; and a *Hygroſcope*. Each of which have their *Regeſter*, and the *Weather-Cock* hath *Two*; one for the *Points*, the other for the *Strength* of the Wind. All working upon a Paper falling off of a *Rowler* which the *Clock* alſo turns.

An Inſtrument for MEASURING the quantity of RAINS that fall in any ſpace of time, on any piece of Ground, as ſuppoſe upon one Acre in one year. Contrived by Sir *Chriſtopher Wren*. In order to the *Theory* of Vapours, Rivers, Seas, &c. A triangular Tin-Veſſel hanging in a Frame, as a Bell, with one Angle lowermoſt. From whence one ſide riſes up perpendicular, the other ſloaped; whereby the water, as it fills, ſpreads only on one ſide from the centre, till at length it fills and empties it ſelf. Which being done, a leaden poiſe, on the other ſide, immediately pulls it back to fill again.

The Model of an Iron Inſtrument to fetch Earth, or other Bodies, from the bottom of the Sea; made with ſeveral *Valves* and *Springs* to open and ſhut it for that purpoſe. Contriv'd by Mr. *Hook*.

A LAMP-FURNACE. By the ſame Perſon. Towards the bottom is a partition with a hole in the middle; below which, ſtands a Veſſel of Oil with a Wick, and a Cork to float it, ſo as to ſtand within the ſaid hole. Over this is placed a *Pan*, *viz.* with the bottom about two inches diſtant from the partition. Within which, is fine Sand. Deſign'd for the hatching of Eggs, in order to obſerve the Proceſs of Generation. As alſo for digeſting of Liquors.

A pair of Semicylindrick LAMPS. Contrived, deſcrib'd, (*a*) and delineated (*b*) by the ſame Perſon. Deſign'd, for the poyſing the Liquor which is to feed the Flame, ſo as to keep the ſurface thereof always at the ſame height, till it be all conſum'd. And thereby not only to ſecure, that it never deſert the Flame, and ſo to ſave Attendance: but

(*a*) *See his* Lampus, p. 14.
(*b*) Ibid. Tab. 3. Fig. 4.

but alſo to keep the Flame of equal ſtrength, for all ſuch purpoſes as require it.

The MODEL of an EYE. In which the Humours are repreſented by Glaſſes of an anſwerable Figure.

A BURNING-GLASS, about half a foot in Diametre.

A HOLLOW BURNING-GLASS. That is to ſay, two thin concave Glaſſes ſet together, and ſo to be fill'd up with water when it is us'd. About the ſame bigneſs as the former: but burneth not altogether ſo ſtrongly. Contrived and given by Dr. *John Wilkins* late Biſhop of *Cheſter*.

A Large MICROSCOPE, with three Glaſſes, and ſeveral Screws to fit it for all manner of poſitions. It magnifies the *Area* of the Object to above a hundred times the extent thereof to the bare Eye.

A Leſſer MICROSCOPE, ſomewhat more managable than the former.

The advantage of one with more Glaſſes, is that it takes in a bigger Object, or a greater part of it. Of one with a ſingle Glaſs, that it ſhews the Object clearer. So that to have a diſtinct repreſentation of it, 'tis convenient to make uſe of both. Of the latter kind, I have ſeen ſeveral made by Mr. *John Malling* in this City, not only with melted, but with Ground-Glaſſes ſo very ſmall, that one of theſe Ground-Glaſſes being weighed in the *Aſſay-Scales* in the *Tower*, was found not above the fourſcorth part of a Grain. The Diametre or Chord $\frac{1}{17}$th part of an inch. Another, ſo ſmall, that thoſe Scales were not nice enough to weigh it. The Chord hereof to that of the former, is as two to three. Theſe are the cleareſt and beſt that ever I ſaw.

An OTOCOUSTICK, or Inſtrument to help the hearing, made of *Ivory*. In ſhape like a *Funnel*, ſaving that the *Noſe* is bended for the more convenient application to the *Ear*, and reception of the ſound. Given likewiſe by Biſhop *Wilkins*.

Another of *Copper*, funnel'd at one end, as the former, and alſo belly'd in the middle.

A Third of *Tin*, of a *Conick* Figure, and with a *Cochlea* within it. The beſt of all the three, is the firſt.

A Pair of HYDROSTATICK Scales. Uſed, amongſt other purpoſes, to examine the ſpecifick Gravity of Bodies.

A Box of ANATOMICK Instruments; *ſc. Saws*, Steel and Ivory *Knives*, *Chizels*, a *Forceps*, a *Leaver*, a *Tenter*, a *Sirynge*, *Pipes*, *Probes*, and *Needles*.

SECT. II.

Of Things relating to the MATHEMATICKS; and ſome MECHANICKS.

TO *Aſtronomy*. A REFLECTING TELESCOPE. Contrived by Mr. *Iſaac Newton*, Profeſſor of the *Mathematicks* at *Cambridge*. Whereby not only the cumber and charge of other *Teleſcopes* is avoided; one of theſe leſs than a foot long, magnifying as much as another of ſix feet: but the Object likewiſe, both by a more regular Refraction, and a leſs expence of Rays, is much more clearly repreſented.

It conſiſts of a *Tube* open towards the Object, and cloſe at the other end. Where is placed a *Metalline Concave*, inſtead of an *Object-Glaſs*. Near the other end, a flat *Speculum*, alſo of *Metal*; placed obliquely towards a ſmall *Eye-Glaſs*; *ſc.* upon that point of the *Tubes Axis*, on which the perpendicular falls from the ſaid *Eye-Glaſs*. So that the Rays coming from the Object, firſt fall upon the *Concave*; are thence reflected to the flat *Speculum*, thence to the *Eye-Glaſs*, and through that deliver'd to the Obſervers Eye. The Authors Deſcription hereof at large; together with a Diſcourſe of the Materials which are or may be thought fitteſt for the *Speculums*; a *Table* of Apertures and Charges for ſeveral lengths; As alſo Mr. *Hugen's de Zulichem's* Remarques on the ſame; ſee in the *Phil. Tranſactions*. (*a*)

(*a*) Num. 81, 82.

Arithmetick. An Inſtrument for working Queſtions by Multiplying and Dividing. Contriv'd by Mr. *Hook*. Who purpoſes to give the Deſcription hereof himſelf.

Geography. A WAY-WISER. Given by Biſhop *Wilkins*. 'Tis very manageable. It hath five *Indexes* pointing to ſo many different Meaſures, *ſc.* Perches, Furlongs, Miles, Tens of Miles, and Hundreds of Miles; and turn'd about with as many Wheels. Made to Work in a *Coach*, thus; In the

the middle of the *Axletree* is cut a little Box to receive the *Wiser*: from whence the *Axeltree* is made hollow to the end. In this hollow lies a *Rod*, loose from the *Axletree*, and fasten'd at one end to the *Nave* of the *Wheel*, and so turns round with it. And with a *Worm* it hath at the other end, at the same time, it turns the *Perch Wheel* of the *Wiser*, and that all the rest. Yet by this measure, 1 yard will sometimes be lost in a 100 yards.

Architecture. A Model of a *Geometrick* FLAT FLOOR. Given by the forementioned Person. Contrived and delineated (*a*) by Dr. *J. Wallis* Professor of *Geometry* at *Oxford*. Who was pleas'd to give me the following Account, as an Abstract of that he hath formerly published hereof. (*a*)

(*a*) *See his Book* De Motu, Cap. 6. Prop. 10. Fig. 243.

I did first, saith the Doctor, Contrive and Delineate It in the Year, 1644. at *Queens-Colledge* in *Cambridge*. When afterwards I was made Professor of *Geometry* at *Oxford*, about the Year, 1650. I caused it to be framed of small pieces of *Wood*, representing so many pieces of *Timber*; prepar'd by Mr. *Rainsford* a *Joyner* in *Oxford*, and put together by my self.

This I shewed soon after to divers in *Oxford*, and particularly to Dr. *Wilkins*, then *Warden* of *Wadham-Colledge* in *Oxford*. Who was so well pleased with it, that he caused another to be made for himself, according to that Pattern. Which he kept by him for many years, and afterwards presented to the *Royal Society*.

After the King's *Restauration*, I caus'd another to be made; and, in the Year, 1660. presented it to his Majesty; who was well pleas'd with it, and caused it to be reposited in his Closet.

On the Model first mention'd, I Read two Publique *Lectures* at *Oxford*, on the *Vespers* of the *Publique Act*: the one, in the Year, 1652. as to the Construction of it; the other, in the Year, 1653. as to the computation of what weight every Joynt of it sustains; whereby it might be the better judged how far it may be safely practised. The greatest weight charged on any one Joynt, doth not amount to Ten-times the weight of one Beam: And the greatest weight bor'n by any one Beam; not to seventeen times its own weight: and even this, not laid all on the same part, but distributed to several parts of it. The sum of these two *Lectures*, is to be seen in the Sixth Chapter of my Book *de Motu*.

A Third *Lecture*, much to the same purpose, I read, *May*, 1699. in the same place, before the present Grand Duke of *Tuscany*, who honoured the University with a Visit, and me with his Presence at that *Lecture*. After which, he was pleased very particularly to consider both the Delineation and Model, and declared himself very well pleased with it,

The contrivance is obvious to the Eye. The outsides represent the Walls of the Building on which this Flat Floor or Roof is to be laid. The Beams next adjoyning to the sides, have one end lodged on those Walls; the other end sustained by another Beam, lying cross; both ends of which, are in like manner sustained by other cross Beams; and those again by others; till they reach the other Walls. So that no one of them can fall, unless the Walls fail, or the Beams break: all mutually sustaining each other without any Pillar or Prop to support them, besides the outer Walls.

The Models I caused to be made, and that of the *Royal Society* in imitation thereof, are in Breadth, about four times as much as the Length of the longest Beam. But may be continu'd, at pleasure, to farther breadth, as shall be thought fit. With this Caution: That the farther the Work is continu'd, the greater Weight will be charged on every Joynt; especially near the middle. And though in this Model, no one Beam is charged with so much as seventeen times its own weight: yet if the Work be continu'd to a greater breadth, the proportional Weight will be thereby increased. And therefore must be limited, according to the strength of Timber, able to bear more or fewer times its own weight.

I do not know, that yet it hath been reduced to practise, in more than four Pieces, in this Form. Such is one of the Floors in the *Tower* of the Publique Schools at *Oxford*: the Breadth whereof, to the Length of the Beams, is as three to two. But may doubtless be continu'd much further: especially in such a Roof or Floor, as is not to bear much more than its own weight.

Thus, for instance, a *Bowling-Green* of near an Acre of Ground, may be cover'd with a Frame of long slender pieces,

pieces, without any other Prop than on the ſides, for *Vines*, or other like *Plants* to run upon, ſo as to ſhade the whole.

Note here, That whereas the ends of the ſeveral pieces are to lie upon thoſe that croſs them, about the middle thereof; it will be neceſſary at every Joynt to abate both pieces half way, or near it; that one may be thus let into the other, and the whole reduced to a Flat. But whether ſuch piece, ſo abated doth end even with that on which it lies, or doth lie over ſomewhat beyond it; is indifferent. And though That may ſeem more elegant; This, perhaps, may be fitter for uſe.

Each piece, I ſay, muſt be ſo abated half way, or near it. For, whereas thoſe Beams, eſpecially if of a conſiderable length, will, with the weight, bow a little; if this abatement be ſomewhat leſs than half way, (whereby without ſuch bowing, the whole would ſomewhat riſe in the middle) it will by ſuch bowing be reduced to a Flat.

Note alſo, That a Frame thus contriv'd, needs neither *Nail* nor *Pin*; the ſeveral pieces faſtening, as well as ſupporting one another. Yet, if it be to bear a great weight more than its own; it will be convenient to faſten each Joynt with *Pins*; and, if need be, to ſtrengthen it with *Iron-Plates*, or line it with other pieces of *Timber*, to be faſten'd with *Iron-Bolts*; to make amends for what is weaken'd by the abatements at the *Joynts*: which will make the whole Frame exceeding ſtrong.

A Model of a Double Winding STAIR-CASE. The Foot of one is oppoſite to that of the other; whereby both make a parallel aſcent, and within the ſame *Cylinder*. The *Newel* or *Column* in the *Centre*, is hollow, and built with long *Apertures*, to convey Light, from *Candles* placed at the bottom, and on the ſides of the *Newel*, into both the *Caſes*.

Another, of a ſingle one, with a ſolid *Column* or *Newel*.

Navigation. A Model of the *Hull* of a DOUBLE-BOTTOM'D SHIP. Contrived by Sir *William Pettey*.

It hath two *Heads*, two *Ruders*, two *Keels*, two *Holds*, and a Vacancy between them.

From *Stem* to *Stern*, four feet and ſeven inches long. The *Deck*, about four Feet. From the foremoſt *Rib* to

the *Rudder*, three Feet and ſeven Inches. The *Keel* three Feet and about five Inches.

The Beam or breadth of the Ship, ſixteen inches, or with reſpect to the *Keel*, as two to five.

The height of the *Round-Houſe*, or the *Room* in the place of it, three inches and ½. Of the Great *Cabin*, three inches. Of the *Fore-Caſtle*, as much. The depth of the *Waſt* an inch and ½. Of the *Holds*, ſix inches and ½. Each of them four inches broad. The Vacancy between them, eight inches over. Their inner ſides not belly'd, but plain, and perpendicular.

Theſe are the principal Meaſures; which I thought fit to ſet down. The great Advantages of this Form, with reſpect either to the Speed, the Courſe, the Safety of the Ship, or otherwiſe, I leave to the Authors own excellent Hand, from whom is expected a particular Account hereof.

An INSTRUMENT, contrived by Sir *Chriſtopher Wren*, to demonſtrate, How far againſt the Wind a Ship may Sail. Shewing, that the Mechanical Power, to which Sailing (eſpecially againſt the Wind) is reducible, is a Wedge: And that a *Tranſient Force* upon an *Oblique Plane* will cauſe the motion of the *Plane*, againſt the firſt *Mover*.

A TERELLA, or an Orbicular *Loadſtone*, about four inches and ½ in Diametre, with the one half immerſed in the Centre of a *Plane* and *Horizontal Table*; ſo as to be like a *Globe* with the *Poles* in the *Horizon*. Together with 32 *Needles* upon the *Margin* of the *Table*. By which the different reſpect of the *Needle* to the ſeveral *Points* of the *Loadſtone*; the reduction of the *Filings* of *Steel* to *Helical Lines*, or near them, by the *Magnetick Effluvia*; and other particulars may be obſerv'd. Contriv'd by the ſame Perſon.

Two DIPPING-NEEDLES. Deſigned for the taking of *Longitudes*.

A CANOO. Given by Mr. *Hocknel*. A ſort of Boat ſo called, uſed in *Greenland*, and ſome other places. Figur'd almoſt like a *Weavers Shuttle*. The Wooden-Work is made up of five ſlender pieces, running by the length: one, which is round at the bottom or in the place of the *Keel*; and two flat ones in each ſide: Made ſteady with ſmall

ſmall bended pieces, ſet or pricked in croſs-ways, inſtead of *Ribs:* and ſo ty'd all together with *Fin-Whale-Bone.*

This Wooden-Work is cover'd all over, both below and above, with *Seal-Skins*, ſewed together with *Leathern-Thongs.* Saving, that towards the middle, is an Oval Hole, encompaſſed with a *Rim* about four inches high, big enough for a man to ſit down in.

In length, ſeventeen feet. From the Centre of the ſaid *Hole* or *Seat*, forward, Ten feet; from thence, backward, ſeven. In breadth at the *Seat*, a foot and ½. In depth, backward, ſeven inches and ½; forward, a foot; becauſe of the mans feet. And the Boat ſeems thereby to be carried forward with the more eaſe: as a Coach, in being hung higher behind. The whole Boat is anſwerable to a great Bladder, in which, though the Waves daſh and beat over it never ſo much, the man ſtill ſits ſafe.

He makes uſe but of one *Oare*, about nine feet long. Made of *Aſh*, and ſhaped ſomewhat anſwerable to a ſtrong *Bow.* In the middle, an inch and ½ thick, and an inch and ½ broad, by the *Horizontal* meaſure: towards both ends, about ¼ of an inch thick, and two inches and ½ broad, by the *Vertical.* At each end is faſten'd a *Padle*, here wanting. This *Oare* he holds in the middle, and Rowing with both ends alternately, makes it ſerve inſtead of two.

War. A GUN affixed to an Iron Triangle; the middle of the Gun, to one of the Angles; and the Breech, to the middle of the ſubtended ſide: and ſo to be faſten'd to a Floor or ſteady Frame, either at all the three Corners, or only at one of the hinder. Contriv'd by my *Lord Vicount Brouncher*, for the making of Experiments of the RECOYLING of *Guns.* Delineated in the Hiſtory of the *Royal Society.* (*a*) Together with the Experiments made herewith by his Lordſhip; firſt before the ſaid *Society*, and afterwards before the King: ſet down in a Table of five Columns. The Firſt ſhewing the Corner ſtoped from Recoyling; the Second, the different Charges of Powder; the Third, the Diſtances to which the Bullet was carry'd wide of the mark; the Fourth, the ſide on which it was carry'd; the Laſt, the diſtance of the Mark from the Muzzle of the *Gun.* As alſo, the Cauſes aſſigned by his Lordſhip, for the particulars moſt obſervable.

(*a*) Part 2. p. 233.

An

An ASSAYER to try the ſtrength of *Gun-powder*. Contriv'd by his Highneſs Prince *Rupert*. Compos'd of two flat, upright and parallel Stands of *Braſs*, about a foot and ½ high, with a ſhallow Indenture on both their inner edges. Upon the Baſe on which they ſtand, and between them, is placed a *Powder-Pan*. Over which, a *Slider*, with a thin *Plate-Spring*, which plays againſt the ſaid Teeth, and two Arms for the charging it with weight at pleaſure. The ſtronger the Powder is, it forceth the *Slider* to a greater height.

A WIND-GUN. Given by Dr. *Wilkins* late Biſhop of *Cheſter*. Compoſed of two Barrels, one within another. To which is fitted a Rod to charge it with Air. At the Breech, where the two Barrels are open one into the other, is placed a *Valve*, to admit the Air into the outer Barrel, as the Rod drives it, and to keep it there.

A Seven-SHOT GUN, or a *Gun* which carries Powder and Bullets, for ſeven Charges and Diſcharges to be made preſently one after another. Given by *Dudly Palmer* Eſq; Under the Breech of the Barrel, is one *Box* for the Powder. A little before the Lock, another for the Bullets. Behind the Cock, a *Charger:* which carries the Powder from the *Box* to a *Funnil* at the further end of the Lock; opens one *Valve* to let it into the Barrel, and the Priming-Pan; another, to let in the Bullet after it; raiſes the Cock; and lets down the Steel; all at one time.

An *Indian* Poyſon'd DAGGER. About ½ a yard long. The *Hilt* is a ſort of Wood, as firm as *Box*. Very curiouſly carved into a kind of *Antique Head*. The *Neck* by which it joyns to the *Blade*, plated with *Gold*, and embos'd with a Ring in the middle, in which is ſet ſome ſmall ſparks of *Gems*. The *Blade* about 14 inches long, and an inch broad about the middle; waved in the manner of ſome *Swords* hung up for *Signs*, and much expanded next the *Hilt*, the better to ſtay the Hand: where it is alſo curiouſly Damask'd with *Gold*. But every where elſe with white flouriſh'd Work of the colour of *Silver*. Saving both the Edges, which are left naked, and are very ſharp. But that which is moſt obſervable is the *Scabbard*, which is one entire piece of Wood (near the colour of the beſt *Walnut*) with a *Cavity* cut down to the bottom of it anſwerable to the *Blade*.

A

A TAMAHAUKE, or *Braſilian* Fighting-CLUB. Made of *Braſile*-Wood. About an Eln long. The Handle, above two inches and ½ broad; in the middle, two; and four at the other end. Hath two double or ſquare Edges ¼ of an inch thick. The broad end wrought on both ſides with two *Tables* or *Areas* of ſmall lines obliquely croſſed, and fill'd up with a chalky ſubſtance to make them appear. In the middle of which, ſeems to be a rude Repreſentation of ſome one of their *Idols*, whoſe help they expect.

A *Weſt-Indian* TARGET. Given by *H. Whiſtler* Eſq;

A *Weſt-Indian* BOW, ARROWS, and QUIVER. The *Bow* is made of *Aſh*. Near two yards long. In the middle, not an inch broad, but high-back'd and belly'd, *ſc.* above an inch, as our *Bows*. But betwixt the middle and the ends, of a different ſhape, *ſc.* above an inch and ½ broad, and not much above ½ an inch thick. The ſtring made of a ſort of *Catgut*; but conſiſting of three of them hard twiſted together, looks like thick *Packthread*.

Some of the *Arrows* are almoſt an Eln long. Made of a fine ſort of unjoynted and hollow *Cane*; about the thickneſs of one of our *Arrows*, and feather'd in the ſame manner. The *Notch* fortify'd with a *Swath* of *ſplit Quill*, made tite with a fine ſort of *Glew*. In the other end of the *Cane*, is faſten'd a brown Stick, about ſeven or eight inches long, and the *Cane* there kept firm from cracking, with a *Swath* and *Glew*, as the *Notch*. This Stick is uſually knoted, for greater ſtrength: and always Arm'd. One of them, with a curious Shark's Tooth near an inch long, and indented or ſerrated on both edges: a ſcurvy Weapon. The reſt with Bones, Stones, and pieces of Metal, uſually ſhaped not much unlike the ſaid Tooth.

The *Quiver* made of the Skin of the Beaſt, ſomewhat like the *Pig-Badger*. With a round piece of wood for a Bottom; and in the middle of the wood, an Iron Wreſt, to keep it from the ground.

A Pot of MACASSAR POYSON. Given by Sir *Phil. Vernatti*. With this the people of the *Iſland* commonly poyſon their Arrows. They have of ſeveral ſorts; the moſt dangerous ſaid (*a*) to be made of the juyce of certain Trees in *Borneo*. But in This are plainly to be ſeen the Legs and

(*a*) Tavern. Ind. Trav. l. 3. c. 19.

and other Parts of ſome *Species* of *Cantharides*; which ſeem to be mixed with a kind of *Corroſive Salt*.

Three *Cane*-pieces ½ a foot long, fill'd with the ſame Poyſon.

A *Siam* DRUM. Given by Mr. *John Short*. The Body of it, as it were a great thick Neck'd *Earthen-Jug*, fourteen inches long; the Belly nine over, the Neck four; and with the Bottom out. In the place whereof is ſpread a thin *Parchment*, made of a *Fiſhes-Skin*, beſet all over with ſmall round knots in ſtrait and parallel Rows. Stretched out tite with numerous little *Braces* made of *Split-Cane*, all ſpread over the Belly of the *Jug*, and very curiouſly platted together at both their ends. The Neck of the *Jug* flouriſh'd round about with a Mould. Both this and the Belly cover'd with a black *Varniſh*; and the Neck alſo with *Red*, *Green*, and *Gilt*.

SECT. III.

Chiefly of MECHANICKS. Relating to

TRade. An *Arabian* BALSAME-BOTTLE. Given by *Thomas Henſhaw* Eſq; 'Tis two feet high, and near an Eln in compaſs. Shaped like a *Long-Neck* uſed in a *Reverberating Furnace*. Examining it well, I find it made neither of *Glaſs*, *Earth*, *Wood*, or any Vegetable Body; but only of *Leather* and *Parchments*. The inmoſt *Parchment*, as thick as that us'd by *Scriveners*. Next to which, is another, as thick as the beſt *Cordovan-Leather*; but as ſturdy as *Whale-Bone*. Next to This, another like the Inmoſt. Over all, is very titely and curiouſly ſew'd a Cover of tan'd *Leather*. The top of the Neck hath a *Ring* or *Collar*, made only with raming in a kind of *Gummy Earth* very hard between the middle and the utmoſt Skin. The Stople made of *Fir-wood*. So much of the *Balſame* which ſticks to the ſides of the *Bottle*, is of an extraordinary fragrancy: and ſeems not inferior to that which ſome *Drugiſts* ſell under the Name of the *Balm of Gilead*.

ASSAY-SCALES, included in a Caſe with *Glaſs Panels*; to weigh with, out of the Air.

A *China* STATERA, in the form of a *Steel-Yard*. The *Chineſes* carry it about them, to weigh their *Gems*, and the like. The *Beam* or *Yard* is of Wood, round, ¼ of an inch over, and a foot in length. Upon it are Three *Rules* of Meaſure, made of fine *Silver-ſtudded Work*, as in *Watch-Caſes*. One of the Rules is divided into inches; and every inch into (25) equal parts. The other Two are alſo divided into equal parts; but not into inches. They all begin from the end of the *Beam*: whence, the Firſt is extended (8) inches; the Second, 6½; the Third, 8½. The firſt, is our *Europe*-Meaſure; the other two, I take to be the *China*-Meaſure, and that of ſome other Country trading with them.

At the other end of the *Yard* hangs a round *Scale*, marked with a ſquare Seal of *China*-Characters. At Three ſeveral Diſtances from this end, are faſten'd ſo many ſlender ſtrings. The Firſt Diſtance makes ⅛ths of an inch; the Second, is double to the Firſt, or an inch and ¼; the Third, two inches and ½.

When they weigh any thing, they hold up the *Yard* by ſome one of theſe three ſtrings, and ſo hang a ſealed weight (about an Ounce and ¾ *Troy-weight*) upon ſome point of the *Rule*, as the Thing requires. 'Tis kept in a *Caſe* fitted to it, almoſt like a *Dancing-Maſter's Kit*. There is one like to this in the *Muſæum Romanum*. (*a*)

(*a*) P. 34. Col. 2.

A Pair of WOODEN-BELLOWS. Contrived to ſave *Leather*. Given by Sir *Rob. Moray*. They may be compared to a *Box*; ſaving, that here the *Box* moves, and ſtrikes not within, but over the Lid: and both of a ſquare Figure. The length of the *Box* from end to end, within, two feet. The breadth, at the *Breech*, a foot and ¼; the depth, about a foot. The breadth of the Noſe-end, ſeven inches and ½. The *Breech-Board* is bended, ſo as to make part of a *Zone*, anſwering to the Lid (which moves upon an Iron *Centre* or *Axis*) as the *Radius*.

The Lid hath a *Margin* placed inward on both ſides and both ends. From the inner edge, to edge, longways, nineteen inches; in breadth, at the *Breech*, ten inches; at the Noſe-end, four. The Noſe, of Iron, like that of an ordinary pair of *Bellows*. The *Valve*, of Wood.

On the middle of the ſaid *Margin*, are two Springs on each

ſide the Lid, and one at each end. Between the two Springs on the ſides, and at the four Corners, a kind of half Staple like a *Bench-Hook*. Within or under which are placed ſquares of Wood, andby the ſaid Springs, kept cloſe to the ſides of the *Box*, (to keep in the Air) as it plays over the Lid.

A ROUPY of *Silver*. Given by *G. Ent* Eſq;.

A HALF-ROUPY of *Silver*. By the ſame Hand. Theſe and divers other like *Coins* are currant all over the Dominions of the *Great Mogul*. I place them here, as not relating to *Antiquity*, but of preſent known uſe.

Several ſorts of *Indian* MONEY, called WAMPAMPEAGE. 'Tis made of a ſort of Shell, formed into ſmall *Cylinders*, about a ½ of an inch long, and $\frac{1}{7}^{th}$ over, or ſomewhat more or leſs: and ſo being bored, as *Beads*, and put upon *Strings*, paſs among the *Indians*, in their uſual Commerſe, as *Silver* and *Gold* amongſt us. But being looſe, is not ſo currant.

The meaneſt is in SINGLE STRINGS. Of which, here is both the White and Black. By meaſure, the former goes at Five ſhillings the Fathome; the latter, at Ten. By Number, the former at Six a penny; the latter, at Three.

The next in value is that which is Woven together into BRACELETS about ½ of a yard long; Black and White, in Stripes, and ſix pieces in a Row; the *Warp* conſiſting of *Leathern Thongs*, the *Woofe* of *Thread*. Theſe *Bracelets* the *Zanksquaes* or *Gentlewomen* commonly wear twice or thrice about their *Wriſts*.

The beſt, is woven into GIRDLES. Of This here are two ſorts. One about a yard long; with fourteen pieces in a Row, woven, for the moſt part, into black and white Squares, continu'd obliquely from edge to edge. The other, not all-out ſo long, but with fifteen pieces in a Row. Woven into black *Rhombs* or *Diamond-Squares*, and *Croſſes* within them. The ſpaces between filled up with white. Theſe two laſt, are ſometimes worn as their richeſt Ornaments; but chiefly uſed in great Payments, eſteemed their Nobleſt Preſents, and laid up as their Treaſure.

A ſtring of *Virginian* MONEY. A Row of Teeth in ſhape like the fore-Teeth of a *Hare:* all woven together, at

at one end, with brown twisted *Thread*, into one Piece ¾ of a yard long.

Husbandry. The Frame of a SAFFRON KILN. Given by the Honourable *Charles Howard* Esq; Together with a Description hereof; and the way of Planting *Saffron*, and ordering it upon the *Kiln*. And by Me published in the *Phil. Transactions.* (*a*)

(*a*) Num. 138.

The *Spanish* SEMBRADORE. A *Machine* for Plowing, equal Sowing, and Harrowing all at once. Contriv'd by *Don Joseph Lucaleto* a *Spanish* Knight. Used and approv'd both in *Spain* and *Germany*. Given by *J. Evelyn* Esq; together with the Description extracted out of the Authors *Treatise* hereof, and published in the *Phil. Transactions.* (*b*)

(*b*) Num. 60.

A CIDER-PRESS. Described also by Mr. *Evelyn.* (*c*) Contriv'd by Mr. *Hook*. For better Dispatch, and thorow breaking of the *Apples*. Consisteth chiefly of four *Cylinders*. Those two, which are first to bruise them, more distant; the other, to press out the Juyce, as close as will well consist with their motion.

(*c*) Appendix *to* Pomona.

A BOX-HIVE. Given by Sir *Rob. Moray*. But contrived by Sir *Christopher Wren:* And the Description hereof first published (*d*) in the Year, 1652. Since then by Mr. *Moses Rusden*. Design'd to keep them warmer, and more safe; but especially, to prevent their Swarming, and the better to propagate them into Colonies.

(*d*) By Mr. Hartlib.

Housewifery and Houshold-stuff. CASSAVI-BREAD. Made of the Root of the *Hyjucca Mexicana*. They first pound it, and press out the Juyce; which is of a noxious (say some, of a deadly) quality: and the *Pulp* of the Root is reduced to a *Cake*. These *Cakes* they fry, or rather bake over a gentle fire, and so set them in the Sun to dry, for their *Bread*. The thicker *Cakes*, called *Cassavi*, and eaten by the poorer sort. The thiner, called *Sciam Sciam*, by the *Rich.* (*e*) In *Hier. Benzoni*'s time, (*f*) all the Ships that were bound from *Spain* to *Mexico*; when they returned, were Victualled with *Cassavi-Bread*. That is, instead of *Bisco't*.

(*e*) Aldin. De script. Hort. Famef. *Out of* Monerdes *and* Oviedus.

A HAMMOCK. Like a Great Net, with several small *Tassels* on the sides, and two huge ones at the ends. Between which, 'tis fifteen feet long. The *Weft*, seven feet;

(*f*) Histor. Americ. l. 4. c. 28.

and about as broad. It consisteth of twisted *Thread*, as thick as small *Packthred*; made of the *Barque* of the *Coco-Tree*, and of the *Rind* of the *Nut*. Not Netted; nor Woven with *Warp* and *Woofe*; but after the manner of *Bobbin-Work*. At both ends, the *Weft* gather'd up into several small Ropes, and those at last into greater: by which it is commonly fasten'd to two Trees some yards above ground. Thus fitted, the people in some parts of the *Indies*, lie down in them, and so sleep secure from *Serpents* and wild *Beasts*.

A Pattern of the STUFF made by the *Planters* in *New-England:* the *Yarn* whereof they Dey of a kind of *Philea-mot*, with a Decoction of the *Barque* of the *Butter-Nut-Tree* (described in the Second Part) without *Alum*, *Copperas*, or any thing else to *strike* the Colour.

A sort of LEATHER, as thin as that of a *Kid*. Of which it is affirm'd, That it will keep out water better than the best *Neats Leather*. And I have been told, That it hath been us'd in the *French*-Camps, spread upon the ground, for Beding. It seems to be made, by being throughly soaked in a mixture of *Oil* and *Bees-Wax*.

A CUP Turn'd out of *Sassafras* Wood.

A Little BOX Turn'd out of a *Nutshell*.

A JAPAN Wooden CUP: cover'd with a *Red Varnish* within, and with yellowish *Flowers* without, upon a Black Ground.

An INDIAN-PAIL. Made of the *Barque* of *Birch-Tree*. Square at the bottom, and thence rising up into a *Conick* Form. So ingeniously contriv'd, that the Sides and Bottom are all made out of one single piece of *Barque*.

An INDIAN DISH or *Potager*. Made also of the *Barque* of a *Tree*, with the Sides and Rim sewed together after the manner of *Twiggen-Work*.

Another DISH, cut out of *Wood*, as *Hollow Ware* commonly is here in *England*.

A RUSH-BASKET. The *Rushes* are partly of their Native colour, and partly deyed with a redish and brown Tawny. Very prettily woven together by the *Indian* Women, in striped and indented Work. And also very oddly: for it seems to have a double *Woofe*, one on each side the *Warp*; the *Rushes* running on the out-side, one way; on the in-side the contrary.

A

A BASKET made of *Porcupine-Quills*. The Ground is a *Packthred-Caule*; not Netted, but Woven. Into which by the *Indian*-Women are wrought, by a kind of *Lap-Work*, the *Quills* of *Porcupines*, not ſplit, as the Perſon that ſent it affirms, but of the young ones entire: mixed White and Black in Even and indented Waves. Eſteemed by themſelves as one of their chiefeſt Curioſities.

ANOTHER, made of the ſame Materials; but with the *Quills* wrought in Triangular *Chequer-Work*.

An *Indian* COMB. A Stick, whereof ſomewhat more than one half is cut into three ſharp and round Teeth, four inches long. The other part left for the Handle, adorned with fine Straws laid along the ſides, and lap'd round about it, in ſeveral diſtinct Swaths.

Cloaths and *Ornaments*. An *Indian* PERUQUE. Made, not of *Hair*, but *Feathers*, *ſc.* black, grey, yellow, red and white: all cut at the tops to the length of about five inches. Saving the fore-Lock, which is made of ſmall ones an inch and ½ deep. Faſten'd to a courſe *Netted-Caule* of *Packthred*.

An *Indian* MANTLE; Alſo made of *Feathers*. Given by Dr. *G. Smith*. About an Eln ſquare. The *Feathers* all of a Brown or *Eagle*-colour, ſmall and wrought into a *Caule* of *Packthred*.

An *Indian* BRACELET for the *Wriſt*. Made of the Scarlet Feathers of the *Indian Sea-Curlew* (deſcribed in the Firſt Part) Clipt ſhort, and woven into a *Caul* of *Packthred* two inches broad. There are alſo ½ a dozen Tufts of blew Feathers in the middle, and two of Black at each end. Much like the uſual *Bumbaſt* of black Bits ſewed into *Ermine*, which our *Engliſh* Women are made to think very fine.

A Pair of *Iceland* GLOVES. Given by *Th. Henſhaw* Eſq; About ½ a yard long, and ½ broad at the Tops. Made of *Deer-Skin*; not tan'd, but only dry'd, with the Hair on; and lin'd with the ſame. The Tops faced with *Scarlet Serge*, Embroyder'd with *Flower-Work*, made of *Leaden-Wyre*, twiſted (as *Silver-Wyre* on *Silk*) upon brown *Hempen Thread*. I call it *Wyre*, not becauſe it is Drawn, which this Metal cannot be, but for that it is ſo ſmall. In the vacancies of

the

the Work, are set *Copper-Spangles* with knots of the same *Wyre*.

An *Indian* SCEPTRE. Made, as it seems, of a sort of *Cane*. A yard long; and as thick as a middle *walking-Cane*; without any Joynt, and perfectly round. Consisteth of hard and blackish *Cylinders*, mixed with a soft kecky Body; so as at the end cut *transversly*, it looks as a bundle of *Wires*. Gilt and varnished all over with *Flowers* in Green, Red and White; saving the two ends which are Black.

The FAN of an *Indian* King. Given by *H. Whistler* Esq; Made chiefly of the Feathers of *Peacocks* Tailes; composed into a round Form. Bound altogether with a circular Rim, above a foot over, consisting of the parts of certain *Plants* like *split Cane*. The middle strengthen'd and divided into squares with cross Bars, made of the same materials, and some of them dyed Red. The bottom of each Square over-laid with *Moscovy-Glass*. And in the middle of each, a knot of white *Feathers*, like the *Flower* of a *Jacynth*.

A plain *Indian* FAN, used by the meaner sort. Made of the small stringy parts of Roots, spread out in a round flat Form, and so bound together with a *Splinter-Hoop*, and strengthen'd with small *Bars* on both sides. The *Handle* painted with *Japan* Varnish, black, red, and yellow. When they use them, they sprinkle them with sweet Water, which perfumes the wafter Air.

An *Indian* PURSE or CASE for the *Pudenda* of a Man. 'Tis a foot long, and closed at the bottom. Made of small *Reeds* woven together after the manner of course *Linnen*.

An APRON for the *Pudenda* of a Woman. A ½ of a yard deep, and shaped like a Widows *Peak*. Hath two *transverse Labels*, with several small *Tassel'd Strings*, to tie it about her middle; and a great one hanging down before. Made of *Rushes*, and other *Plants*. The out-side of several colours, *&c.* white, yellow, red, tawny, and brown; as flexible as any *Thread*. Woven in several Squares, and ½ Squares in a most exact and geometrick Order. The in-side of smaller *Rushes*, all of one colour, and the Weaving uniform: as some *Silks* are plain on one side, and flowered on the other. A piece of Work, which an *European* could hardly imitate with all her Art.

A

A Pair of *Iceland* BOOTS. Given also by Mr. *Henshaw*. Made of dry'd *Deer-Skin*, as the *Gloves*. Somewhat above a foot long, and about a foot broad at the Tops. The small of the *Leg*, above ½ a foot. The *Foot*, but eleven inches. Lined with another sort of *Skin*, and that only dry'd. The *Knee* faced with course red *Cloath*; and the top of the *Foot* with *Lists* of the same; both Embroyder'd with twisted *Leaden-Wyre*, like that on the *Gloves*. On the end of the *Toe*, a *Button* made of a *Leathern Thong* knoted in a round form, and wrought over, not with twisted, but plain *Leaden-Wyre*. They are stitch'd together with *Cat-Gut*. How the people use them, I see not; for the very same Skin, which is thin, and with the Hair on, makes the *Sole*, as well as the *Top*, of the *Foot*, and the *Leg*.

A SNOW-SHOOE, used in *Greenland*, and some other places. Given by Mr. *Linger*. A yard and ½ long, and in the middle fifteen inches broad. Oval behind; the fore-end, sharp. The *Margin* is a piece of Wood of the breadth of a *Lath*, reduced to the Form above-said, and so made tite and steady with two cross *Bars*. To the sides round about, is stretched and fasten'd three pieces of woven Work, resembling *Net-Work*; made of small *Leathern Thongs*, in three parallel Orders, one directly, and two obliquely *transverse*. In the middle piece is a hole made, to affix It to the *Foot*.

Painting. A LANDSKIP, being the Prospect of a fair City, painted upon Stone.

A Natural *Landskip*, or Prospect of Ruinous Buildings in Stone. Humour'd with a *Tree painted* over it.

Another, with a Woman in a praying posture.

CATOPTRICK PAINT, on a Table or Board. Given by Bishop *Wilkins*. On one side, the *Paint* looks as if it were altogether rude and irregular, so as nothing can be made of it. But a *Metalline Cylinder* being placed perpendicular upon a certain Point of the Table; the *Rays* are in such sort incident thereon, and thence reflected to the Eye, as to represent a variety of curious Work: *&c.* a *Shepherd* playing on a *Pipe*; and his Wife dancing with a Child in her Arms, and a Basket on her Head.

On the other side, St. *George* and *Don Quicksot* both on Horse-back, and a *Wind-Mill* betwixt them. And *Don* having

having made his *Horſe* leap at the *Sail*, his *Horſe* hangs upon it, and himſelf is thrown to the ground. But a *Metalline Octogon*, placed as the *Cylinder*, ſhews St. *George* in good poſture upon *Don's* Horſe, killing the *Dragon*.

An Inſtrument to draw PERSPECTIVE with. Contriv'd by Sir *Chriſtopher Wren*.

An Optique BOX, uſed as a help in DRAWING.

A piece of SMALT-GLASS. Uſed by *Painters* for *Picture-Frames*, and other purpoſes. Given by Mr. *J. Linger*.

The Picture of a MUSK-DEER, in Colours, and after the Life. Taken in *Java major*, and ſent from thence by Sir *Philiberto Vernatti*.

The Picture of a BASILISK. Pretended by thoſe that ſhew it, to be a real *Animal* ſo call'd. But is an Artificial Thing, made chiefly of the Skin of the *Raja*, and the Legs of a *Dodo*, or ſome great *Fowl*. Given by *Ellis Criſp*, Eſq;.

The Picture of the *Plant* called *NINSIN*. The whole *Plant* is drawn after the *Life* on *Parchment*, in Colours. The *Root*, of a rediſh yellow; about five or ſix inches long, and near as thick as a *Skirret:* agreeing with the Deſcription hereof in the Second Part of this *Catalogue*. The *Stalk* as thick as a *Wheaten-ſtraw*, and a foot high. The *Leaves* ſomewhat like thoſe of the *Stock-Gilly-Flower*. The *Flowers* rediſh in the Bud, and white when open; three and three together, and compoſed of ſix round *Leaves*, like thoſe of the *Round-Flower'd Moly* figur'd in *Bauhinus*, but not ſo big.

The Draughts of ſeveral *Indian* PLANTS on a Table. In the firſt place, of

The CLOVE-TREE: Together with a Branch of the ſame after the *life:* The *Mother* or *Prolifick-Clove*, from which the *Plants* are propagated: And the Stone and Kernel of the ſame. Next of

The NUTMEG-TREE: Together with a Branch of the ſame after the *life:* The Fruit of the *Female-Nutmeg:* Of that called the *Thieving-Nutmeg*, becauſe it infects and ſpoils the good ones where it lies: The *Male*, with its Fruit, both long and ſhort: And the little Kind, wherewith the Natives dey their Teeth black. Next of

A PLANT which beareth a Fruit hanging with a long Stalk

Stalk upon the top of the Leafe; almoſt in the ſhape of a *Can*, with its Lid. If it be open'd, though the Weather never ſo hot, 'tis half full of Liquor. Then of

A SAGEWAR-TREE; whoſe *Flower* being cut, renders a Juyce like *Wine*, far above the *Coco-Tree*: With the Fruit both of the *Male* and *Female*. In the laſt place, of

The SAGOUS-TREE; which thoſe that inhabit the *Molucca* Iſlands, eat inſtead of Bread: With the Fruit, after the *life*.

Deſign. An Armed SOULDIER, in the poſture of fighting. Together with a *Landskip*, and the *Proſpect* of an *Army*. Given by Mr. *Will. Browneſt*; and all very curiouſly Drawn with his Pen.

Wrighting. A *Jewiſh* PHYLACTERY. This here is only a ſingle Scroll of *Parchment*, ¼ of an inch broad, and 15 inches long; with Four Sentences of the *Law*, (*viz. Exod.* 13. from 7. to 11. and *f.* 13. to 17. *Deut. 6. f.* 3. to 10. and 11. *f.* 13. to 19.) moſt curiouſly written upon it in *Hebrew*. *Serarius*, from the *Rabbies*, ſaith, That they were written ſeverally upon ſo many Scrolls. And that the *Jews* to this day, do wear them over their Foreheads in that manner. So that they are of ſeveral ſorts or modes, whereof this is one.

The original uſe of them, for *Memento's*: grounded on that Command, (*a*) *And thou ſhalt bind them for a ſign upon thine Hand, and they ſhall be as Frontlets between thine Eyes.* But afterwards, ſerved more for Oſtentation. And at laſt, for *Spells* or *Amulets*. (*b*) From whence alſo the uſe of *Charms* amongſt *Chriſtians* was firſt learn'd; and thoſe who gave them called *Phylacterij*. Prohibited by the Council in *Trullo*. (*c*)

(*a*) Deut. 6, 8. and in the other places above quoted.

(*b*) *Hierome*, quoted by Biſhop *Montague*.

(*c*) Can. 61.

An Example of the ARABICK Letter in one or two Variations upon *Parchment*.

An Example of the CHINA-Language, in a conſiderable Variety of CHARACTERS, upon two ſorts of *China* Papyr.

An Example of the MALABARINE Letters and Language. The Letters have ſome little reſemblance to thoſe of the *Coptick*. Written upon a ſingle Plate of the *Palmetto-Leaf*, an inch and ½ deep, and 10 inches long. It ſeems, from the Hole punched at the end of it, to have been

filed with a great many more, and so to have made a Book.

Another Variety of the ARABICK Letter, not properly *Written*, but *Impress'd* with a Style, or as it were Engraven, upon two double *Plates* of the *Palmetto-Leaf*.

Sculpture. A CARVED Shell of MOTHER of *Pearl*. On which *Andromeda* stands naked upon the Shore, having her Arms fasten'd to a Rock with two Chains. Near the Shore, a great *Sea-Fish* or *Monster* making towards her, and spouting out Water at *Perseus*. Who comes flying upon *Pegasus*, with his Shield, and his Sword advanced, to kill the *Monster*. Upon a *Promontory* between *Andromeda* and *Perseus* stands a *Cupid*, and among the Trees upon it another, signifying their Marriage afterwards. All done with extraordinary Art.

ANOTHER, with the same curious Work, but different Phancy. *Neptune* making towards the Shore, without his Mace, advances and spreads abroad his Arms, in Courtship towards *Diana*. Who stands on the Shore in her Mantle half naked, and holding forth her Hand in the posture of denial. Between them, two naked *Nymphs*, one giving aim to the other, shooting a Dart at *Neptune* to give him a further repulse. And a *Cupid* flying away over *Dianas* Head.

About 36 pieces of *Ivory*, with IMAGES CARVED upon Each. On some, of Men; on others of Women and Children; and on others, of Cattel. One of them, a *Crucifix*, with the Eleven Apostles. They seem to have belonged to a *Cabinet* or *Chest of Drawers*, and to make some story; but the rest being wanting, unintelligible.

One of them, is a curious piece of Work. On the top of a Rock, stands a Castle. At the foot, a *George* or *Chevaleer*, armed and mounted, and combating a *Dragon*; defending her self, and shewing her rage in a most lively posture. Behind the Horse stands one of her young Ones, expecting her Conquest. On the brow of the Rock, a Woman, or if you will the Lady, praying for her overthrow. Hereto may be refer'd,

A SEA-PIECE, consisting wholly of INLAY'D-WORK, of several Colours, in *Stone*. As also,

A FORREST, with a House at the end of it; and several Beasts

Beasts both wild and tame, as the *Lion*, *Unicorne*, *Boar*, *Camel*, *Stag*, and a *Dog* pursuing him: all Cut in PAPYR, in the compass of about three inches square.

Turn'd Work. A *Box* of CUPS, from *Norimberge:* being an Hundred of them one within another; the Boll of the utmost about two inches and ½ in Diametre. Given by *Dudley Palmer* Esq;. I take the Wood to be *Maple.*

A piece of TURN'D Work in *Ivory.* Given by *H. Oldenburge* Esq;. A solid Triangle, turn'd open on the four sides. With a *Flower* standing out on each side, and loose. In each *Flower*, a little Spike, also loose. But all the four *Flowers* by themselves, and so the Spikes, are united in the centre. On the Necks of the *Flowers* likewise hangs a Sphærical Triangle; and on each Neck, several small Rings. Preserved in a Round *Ivory Box.*

The HEAD of a Princes, in her HAIR, and with a CORONET; in an Oval of *Ivory.* That which is extraordinary, is, That it is not CARVED, but all TURNED Work. 'Tis kept in an Oval *Box*, wrought with Undulated Work of several Forms, all likewise Turn'd. The Art, I think, is now dead with the Author.

Molded-Work. Two HALF BODIES in Armor, betwixt four and five inches in length. Given also by Mr. *Dudley Palmer.* The phancy is this, That upon a rude molded Ground of *Rosin* and *Wax*, or some such substance, are laid, chiefly the parts of several *Plants* and *Insects*, by which the Figure is compleated. As the Forehead, (all the Face of one) with the Scales of the Belly-Piece, of the Broad Golden *Cantharis*; the Ball or White of the Eye, with *Gromwell-Seeds*; the Lids, with those of a sort of *Marigold*; the Nose, with that of *Carthamum*; the Beard with those of *Lettice.* Part of the Armor, of one, with the *Wing-Sheaths* of the Green Broad *Cantharis:* of the other, with the *Seeds* of *Cow-Parsnep:* and so for the rest. A couple like to These, are figur'd in *Olearius*'s *Musæum.*

Sir *Robert Moray*'s HEAD in WAX. Taken off of a *Plaster-Mold*, which was made upon it.

SECT. IV.

Of COYNS, and other Matters relating to Antiquity.

THE *Effigies* of JOHN HOWARD, the first Duke of *Norfolk*, in Colours Neald on *Glass*. From whom the Right Honourable the present Duke of *Norfolk* is the eighth, inclusive. Given by Mr. *S. Morgan*. He is represented kneeling in a *Chappel*, with his Dukes Cap by him, and Invested in his *Coat* of Armour, bearing four Coats, Quarterly: *sc.* of *Howard*, *Brotherton* (Son to King *Edward* the First) *Plantagenet* (Earl of *Warren* and *Surrey*) and *Fitz-Allan*. The first, is *Gules*, a Bend betwixt six *Crosslets* fitchy, Argent. The second, the *Arms* of *England*, with a *Label* of three Points Argent. The third *Checky Or* and *Azure*. The fourth, *Gules*, a *Lion Rampand Or*.

The PEDEGREE of the most Noble Family of the HOWARDS, from the first *Duke* above-said: Engraven on a *Copper-Plate*. Given by the same Hand.

A ROMAN URNE, of Glass, with a Handle. Given by Sir *Christopher Wren*. Above fifteen Hundred years old. Almost like a Bottle containing a Gallon and ½; but with a very short Neck, and wide Mouth, and of whiter metal. Encompassed girth-wise, with five parallel Circles. Found in *Spital-Fields*.

STONES, not long since found near the Foundation of *Charing-Cross* at a great depth. Given by Sir *Joseph Williamson*. They seem to be a sort of course *Marble*. Of a blackish colour, and figur'd into several plain sides; but irregular: from whence they may be argu'd to be very ancient.

A Piece of MOSAICK WORK, found deep under ground, in *Holbourn* near St. *Andrews* Church. Inlaid with black, red, and white Stones, in Squares and other Regular Figures.

A parcel of little square Stones, belonging to MOSAICK-Work, found in a Field near *Bath*, in the Year, 1664.

Several Examples of MORTARS of old Castles and *Roman* Buildings. Given by *John Aubrey* Esq; for comparing them with those now in use.

A ROMAN MONEY-POT. Given (with the *Coin* below mention'd) by the ſame Hand. Found in the Year, 1651. in *Week-Field*, in the Pariſh of *Hedington*, in *Wiltſhire*; half full of *Roman* Coin, *Silver* and *Copper*, of ſeveral Emperors near the time of *Conſtantine*. Of the colour of a *Crucible*, and faſhion'd almoſt like a *Pint Jug* without a Neck. Cloſed at the top, and having a Notch on one ſide, as in a *Chriſtmas-Box*. In the ſame place (where anciently was a *Roman Colony*) and at the ſame time, were dig'd up the Foundations of ſeveral Houſes for a Mile together.

Of COYNS.

MOſt of them being obſcure, leſt I ſhould miſtake, I preſently took the help of my Worthy Friend Mr. *Abraham Hill*, Fellow of the *Royal Society*, very well acquainted with This, as well as other parts, of Antiquities.

Silver.

Twenty SILVER DENARII; whereof Nineteen given by Sir *Paul Whichcote*. The

I, II, and III. *Conſular.*

IV. *Imp. Otho Cæſar Aug. Trib. Pot.*
Reverſe. *Securitas P. R.*

V. *Aulus Vitellius Imp. Germ.*
. . . . . *Auguſti.*

VI. *Cæſar Veſpaſian.*
. . . . . *Tr. Pot.*

VII. *Cæſar Aug. Pater Patriæ.*
Princ. Juvent. Cæſ.

VIII. *Imp. Cæſ. Domit. Germ. Pont. Max. Tr. P.*
Imp. iij. Coſ. xv. Cenſor. P. iij.

IX. *Imp. Cæſ. Trajan, Hadrian Aug.*
P. M. Tr. P. Coſ. iij. Felicit. P. R.

X. *Imp. Cæſar Trajan Hadrian. Aug.*
P. M. Tr. P. Coſ. iij.

XI. *Hadrianus Aug. Coſ. iij. P. P.*
Romulo Conditori.

XII. *M. Commodus Anton. Aug. Pius.*
Tr. P. viij. Coſ. iiij. P. F.

XII. *M. Commodus.*
. . . . . *Coſ. . . . : Exerc.*

XIV.

XIV. *Severus Aug. Parthic. Max.*
Reſtitutor Urbis.
XV. *Cæſ. Marc. Anton. Gordianus African. Aug.*
Princ. Juventutis.
XVI. *Maximus Cæſar German.*
Pietas Aug.
XVII. *Dom. Noſt. Julianus P.* (*i. e.* pius) *F.* (*i. e.* felix) *Aug.*
(*Julian* the Apoſtate.)
Votis x (*i. e.* Decennalibus) *multis x.*
XVIII. *D. N. Valentinianus P. F. Aug.*
Urbs Roma. *Lug. P. C.*
XIX. *R. N. Valens P. F. Aug.*
Reſtitutor Reip. P. Lug.
Theſe from Sir *Paul Whichcote.*
XX. *D. N. Valens P. F. Aug.*
Urbs Roma Tr. P. (Treviris Perc.)
Given by *Walter Chetwynd* Eſq;
XXI. *Henricus* IV.
Dominus Hiberniæ. Commonly call'd an *Iriſh Groat.*
XXII. *Carolus* V. . . . *L. M.*
. . . . *Indiarum Plus Ult.* In whoſe time the *Indiēs* were more fully diſcover'd. Theſe two given by *G. Ent* Eſq;

Copper.

I. *D. N. Conſtantius P. F. Aug.*
Fel. Temp. reparatio.
Two more of the ſame.
II. *D. N. Magnentius P. F. Aug.*
Felicitas Reipublicæ. Theſe from *J. Aubrey* Eſq.
III. *Conſtantinus P. F. Aug.*
Soli Invicto Comiti.
IV. *Conſtantinus Nob. Cæſ.*
Vot. x. Cæſarum noſtrorum. S. Tr. (*i. e.* Sign. Treviris.)
V. *Conſtantinus Aug.*
. . . *Tranquillitas Vot. xx.* The ſame again.
VI. *Conſtantinus Jun. Nob. C.*
Vot. x. noſtror. Cæſarum. Theſe found near *Cambridge.*
VII. *Antonius Pius Aug.* } Denarius.
Virtus Augg. (Auguſtorum) }
VIII. . . . . *Tit. Ael. Hadr. Antoninus Aug. Pius.*
Coſ. iij. S. C. (*i.e.* Senat. Conſ.) *Annona.*
IX. *D. N. Conſtantinus P. F. Aug.*
Fel. Temp. Reparatio.

X. *D. N. Magnentius.*
Felicitas. . . . . .

XI. *D. N. Magnentius.*
Salus DD. NN. Aug. & Cæſ. A. Ω.

XII. *D. N. Conſtantius.*
Salus DD. NN. Aug. & Cæſ. A. Ω. Of theſe two laſt together, here are 24, all with the ſame Revers, about ☧ the Initial Letters of XPIΣTOΣ.

XIII. *Conſtantius P. F. Aug.*
. . . . . *Exercitus.*

With Nine more obſcure. Theſe were taken out of the Pot above mention'd, found near *Hedington.*

XIV. . . . *Ptolomy.*
. . . . . .

XV. *Divus Aug. S. C.*
Conſenſu Sen. & Eq. Ord. PQR.

XVI. *Divus Auguſtus.*
Providentia S. C.

XVII. *M. Agrippa.* . . . *Coſ.*
. . . . . .

XVIII. *C. Cæſar Aug. German. P. M. Tr. Pot.*
Veſta. . . . . . The ſame again.

XIX. *Tib. Claud. Cæſ. Aug. P. M. Tr. P. Imp.*
Conſtantia Auguſti. The ſame again.

XX. *Tib. Claud. Cæſ. Aug. P. M. Tr. P. Imp.*
. . . . . *S. C.*

XXI. *Druſus Cæſ. Tiber. Aug. F. Divi Aug. N.*
Pontif. Tribun. Poteſt. iterum.

XXII. *Imp. Nero Cæſ. Aug. Pon. M. Tr. P.*
Roma. . . . *S. C.*

XXIII. *Nero Claudius Cæſ. Aug. Germ. P. M. Tr. R.*
Mac. Aug. S. S. (Macellum.)

XXIV. *Serg. Galba Imp. Cæſ. Aug.*
Adlocutio.

XXV. *A. Vitellius Imp. German.*
Fides Exercituum S. C.

XXVI. *A. Vitellius Germ. Aug. P. M. Tr. P.*
S. C. . . . .

XXVII. *Imp. Cæſ. Veſp. Aug. P. M. Tr. Coſ. viij.*
. . . . . *S. C.*

XXVIII. *Cæſar Veſp.* . . . .
. . . . *S. C.*

XXIX.

XXIX. *Imp. Cæſ. Domit. Aug. Germ. Coſ: xvj. Cenſ. Perp.*
Moneta Aug. The ſame again.

XXX. *Imp. Cæſ. Magnentius.*
Felicitas Reipublicæ. A Souldier holds in his right hand, a Victory; in his left, the Standard, on which is ☧ as on the XII.

XXXI. *D. N. Decentius.*
Salus DD. NN. Aug. & Cæſ.

XXXII. *D. N. Magnentius P. F. Aug.*
Salus DD. NN. Aug. & Cæſ.

XXXIII. *D. N. Decentius Cæſ.*
Salus DD. NN. Aug. & Cæſ.

XXXIV. *Urbs Roma.*

XXXV. *Conſtans.*
Fel. Temp. Reparatio.

XXXVI. . . . *Conſtantius.*
Fel. Temp. Reparatio. Of theſe two laſt together, here are 43, all with the ſame Reverſe.

XXXVII. *D. N. Magnentius P. F. Aug.*
Gloria Romanorum.

XXXVIII. . . . . *Philip.*
Miliarium Sæculum Coſ. iij. When *Rome* had been built a Thouſand years.

XXXIX. . . . *Aurelius Anton.*
. . . . . *S. C.*

XL. *D. N. Theodoſius P. F. Aug.*
Gloria Exercitus.

XLI. *D. N.* . . . .
Reparatio Reipub.

XLII. *Conſtans Pius Aug.*
Virtus Exercit.

XLIII. *D. N. Honorius.*
. . . . . .

XLIV. *Criſpus Nob. Cæſ.*
. . . . *Tranquillitas.*

XLV. *Gallienus Aug.*
. . . . . .

With about 72 more, which are obſcure.

Paper or Paſtboard-Money.

Lugdunum Batavorum.
Pugna pro Patria. 1574. When beſieged by the *Spaniards.*

Appendix.

Of ſome Particulars lately given by Dr. Chriſtopher Merret.

TO which I ſhall only premiſe a Note concerning the CLYSTER-BAG, deſcribed *p.* 239. of this *Catalogue*; but ſhould have been placed in the laſt Part. 'Twas given by Sir *Rob. Southwell*; of whom I lately learn, That the *Portugal Negros*, having rowled a lump of Clay into the ſhape mention'd *p.* 239. they cut the Branches of a certain Tree which yields an Oily *Gum*, and ſo turn the Clay round, as the *Gum* drops upon it, till it hath cover'd it all over like a thick Skin; which being dry'd in the Sun, will be almoſt as tough as *Leather*. Then picking out the Clay, it ſerves them for a *Bladder*. To which they tie the Shank of a *Hare* for a Pipe: and ſo filling it with Sea-water, as often as they feel themſelves much chafed with heat, put it up for a *Glyſter*. Theſe Bags they commonly hang by their ſides, to be always ready for their uſe.

The Particulars given by the Doctor are theſe that follow; with the Deſcriptions, in his own words.

SAGU. A *Gum*, ſo called. It comes from the Iſlands of *Malacca*. It drops from the Trees in ſmall roundiſh Grains, of the bigneſs of *Turnep-ſeed*, but whitiſh. Chewed, it taſteth ſomewhat clammy. Boil'd in water, exactly repreſents *Frog-Sperm*; and in conſiſtence, comes neareſt to *Gum Tragaganth*. 'Tis uſed in *Medicine* and *Diet*.

TERRA JAPONICA. Call'd alſo *Catechu*, *Categu*, and *Caſheu*. 'Tis a *Gummo-Reſina*. For moſt of it will diſſolve in Water; and ſome parts of it only in *Rect. Spirit of Wine*. Moſt of it contains a great deal of Earth; the reaſon of the Name. 'Tis cover'd with a rough brown Coat; within which it comes near the colour of *Aloe*; but darker, and

with brown earthy Particles intermix'd. The Taſt Aſtringent and very Dry. The Tincture of a bright Claret colour. An uſeful and effectual Medicine; and not ungrateful.

POCO SEMPIE. A Golden Moſs, conſiſting of moſt fine, ſoft and flexible Threads. Accounted a great Cordial. And ſaid wholly to diſſolve in the Mouth; and ſeem'd ſo to me, in barely chewing it: but the contrary upon Experiment, which was thus: I ty'd ſome of it in a Cloath, and chew'd it; keeping it in my mouth a whole Night: but in the Morning, I found no diminution, nor alteration. So that chewing only unfolds it, and then 'tis inſenſibly ſwallow'd with the Spittle.

RIZAGON. A Root brought from *Bengala*, of good uſe. Cut into flat pieces, of a whitiſh colour, bitteriſh and aromatick Taſt; and hath very large *Fibers*.

CAROLINA. A long red Root, ſo call'd, from the Place from whence it comes. It draws on Paper red Lines. Anſwers not expectation, as to deying.

SADORE, or Bitter Wood. It hath a browniſh Barque: the Wood yellowiſh, and exceeding bitter. If it be ſliced long ways, you will find very white *Fibers* running by the length.

(a) P. 2. p. 356. CAIUMANIS *Olearij.* (*a*) By the *Sea-men*, *Caiomanes.* By the *Portugeſe*, *Canella de Mato.* *An Canella Craſſiori Cortice.* (*b*) This Barque above ¼ of an inch thick. Diſtill'd, it affords a ſomewhat harſh and rough Liquor. But by Infuſion, makes an *Aromatick* and grateful ſyrup.

(b) Pinax, 409. b.

SALT of *Soap-Lees.* An *Exotick.* Found in ſome quantities on the ſides of the *Boylers.* I have yet made no trials of it.

TEUTENAGE. A ſort of *Speltar*, as many Experiments ſhew. Hereof *Parallellepipedon* Veſſels are made in *Japan*, wherein their *Thea* is brought over.

I have ſeveral other *Rarities*, which, when I ſee what is wanting in the *Societie's Muſæum*, I ſhall add to it.

Moſt of theſe Things were communicated by Mr. *Samuel Clark*, learned, judicious, experienced in all things Natural and Artificial which are brought to the King's *Warehouſe* in the Port of *London*, whereof he is *Surveyor.*

An

An Index of some Medicines.

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A List of those who have Contributed to this Musæum : *excepting some Names which are lost.*

His Highness Prince RUPERT, *Count Palatine* of the *Rhine.*

Thomas *Allen* M. D.
John *Aubrey* Esq;

WILLIAM L. Visc. *BROUNCKER.*
Hon. *ROBERT* *BOYLE*, Esq;.
Dr *Erasmus* *Bartholine.*
John *Bembde* Esq;.
Sign. *Paul* *Boccone.*
Monsr. *Olaus* *Borrichius.*
Joseph *Bowles* Merch.
Sir *Thomas* *Brown*
Edward *Brown.* M. D.

JONH late Lord B. *of* *CHESTER.*
EAST-INDIA *COMPANY.*
ROYAL AFRICAN *COMPANY.*
Walter *Charleton* M. D.
Walter *Chetwynd* Esq;.
Andrew *Clench* M. D.
Samuel *Colepress*, Esq;.
Thomas *Cox*, Esq;.
Edward *Cotton* M. D.
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Ellis *Crispe*, Esq;.
William *Crone* M. D.

John *Evelyn* Esq;.
George *Ent* Esq;.

Captain *Thomas* *Fissenden.*

Nehemjah *Grew* M. D.

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Thomas *Henshaw* Esq;.
Abraham *Hill* Esq;.
Mr. *Hocknel.*
Luke *Hodgson* M. D.
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Anthony *Horneck* B. D.
Sir *John* *Hoskins.*
John *Houghton Pharm. L.*

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Mr. *Langerman*
Mr. *Linger.*

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Sign. *Malpighi.*
Christopher *Merret* M. D.
Sir *Thomas* *Millington.*
Sir *Jonas* *Moore.*
Sir *Robert* *Moray.*
Mr. *S.* *Morgan.*

HENRY Duke of *NORFOLK.*
Walter *Needham* M. D.
Isaac *Newton* Math. Prof.

Henry *Oldenburge* Esq;.
Philip *Packer* Esq;.
Dudley *Palmer* Esq;.
Sir *William* *Petty.*
Robert *Plot* L L. D.
Walter *Pope* M. D.
Thomas *Povey* Esq;.

SETH Lord B. of *SALISBURY.*
Mr. *Scotto* Merch.
Mr. *John* *Short.*
Sir *Philip* *Skippon.*
Francis *Slare* M. D.
George *Smith* M. D.
Mr. *John* *Somner.*
Sir *Robert* *Southwell.*
Dr. *Swammerdam.*
Captain *Tayler.*
George *Trumbal* T. D.
Edward *Tyson* M. D.

(Parham.
WILLIAM late L. *WILLOUGHBY* of
Sir *Christopher* *Wren* P. R. S.
George *Wheeler* Esq;.
Daniel *Whistler*, M. D.
Henry *Whistler* Esq;.
Sir *Joseph* *Williamson.*
Francis *Willughby* Esq;.
John *Winthrop* Esq;.
Robert *Witty* M. D.

THE

Comparative Anatomy

OF

Stomachs and Guts

Illustrated

BY SEVERAL

LECTURES

Read before the

ROYAL SOCIETY.

In the Year 1795.

By *Nehemiah Grew* M. D. Fellow of the Royal Society and of the College of Physicians.

LONDON:

Printed by W. Bowyer, for the Author. 1802.

THE

Comparative Anatomy

OF

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In the Year, 1676.

By *Nehemjah Grew* M. D. Fellow of the *Royal Society*, and of the *Colledge* of *Physitians*.

LONDON,

Printed by *W. Rawlins*, for the Author, 1681.

An Advertiſement to the Reader.

WHereas a Book Entitul'd, *Exercitatio Anatomico-Medica de Glandulis Inteſtinorum, earumq; Uſu & Affectibus. Cui ſubjungitur Anatome Ventriculi Gellinacei. Studio Joh. Conradi Peyeri Scafhuſa-Helvetij,* 1677. In which are found ſome of thoſe Obſervations contained in the following Lectures. It was therefore thought fit, here to take Notice, That the ſaid Book was not Publiſhed, till the Year after theſe Lectures were Read.

CHAP. I.

Of the Stomachs and Guts of Six Carnivorous Quadrupeds; ſc. The Weeſle, Fitchet, Polecat, Cat, Dog and Fox.

I Am not ignorant of what many Learned and Inquiſitive Men, both at home and abroad, eſpecially in this laſt *Century*, have performed in the Anatomy of Animals. After all whom, if it be demanded, what is left for me to do? I Anſwer in the words of *Seneca*, (a) *Multum adhuc reſtat operis, multúmq; reſtabit; nec ulli Nato, poſt mille Sæcula, præcludetur occaſio, aliquid adhuc adjiciendi.* (a) Epiſt. 64.

I ſhall omit moſt of what is already noted by *Anatomiſts*; and princially ſpeak of thoſe things, which have hitherto been unobſerv'd.

A Weeſle.

The *Gulet* of a *Weeſle* (which from the Ears to the ſetting on of the Tail was 10 inches) about five inches long, ¼ in Diametre, equally wide, and thin. Enters the Stomach at the left End.

The *Stomach* about three inches long; proportionably, more than a *Dogs*. An inch in Diametre at the upper Orifice; at the nether, ¾; having a *flexure* towards its Conjunction with the Guts: ſhaped like to the body of a pair of *Bag-Pipes*. Thin, and plain, or without Folds. Which ſeems to be the property of the Stomachs of moſt Rapacious *Quadrupeds*.

The Guts *thin*, and plain, or with little ſtore of *Glands*, eſpecially of ſuch as in moſt *Carnivorous* Animals are conſpicuous. About a yard in length, and ½ an inch in Diametre; without any conſiderable contraction, difference of Size, Texture or Subſtance from the *Stomach* to the *Anus*. No *Colon*. No *Cæcum*. So that it ſeems to be all but *One ſingle Gut*. Contrary to what is ſeen in any other *Quadruped*, I have opened.

At the *Anus*, a Couple of *Bags* grow to the Gut; one

on each ſide. Each of them, fill'd, about the bigneſs of a large *Garden-Peas:* containing a yellow, and thickiſh Liquor, extraordinary *fœtid*, and having the peculiar ſcent of the Animal in the moſt intenſe degree. Over the *Bags* or *Bladders*, is ſpread the *Sphincter-Muſcle*; which compreſſing *Them* and the *Anus* both together, forceth them to a contemporary evacution.

I have not yet diſſected the *Civet-Cat*, but ſuppoſe, that theſe Bags are analogous to thoſe that contain the *Civet* in that Animal.

Theſe Bags, ſo far as I have obſerv'd, are proper to all *Carnivorous Quadrupeds*, and thoſe only: as will further appear by the following Examples.

A Fitchet.

A FITCHET, being of kin to the *Weeſle*; hath alſo a *Stomach* and *Guts* much alike.

The *Guts* about a yard and two inches. At moſt, but two. The firſt, about two feet and ½ long; and $\frac{1}{12}$ths of an inch over, where wideſt. Hath five or ſix Necks or Contractions. And a little before moſt of them, ſtands a ſmall *Cluſter* of *Glands*, about as big as a *Silver Half-peny*. The ſecond, is about ¼ a quarter of a yard long, and ½ an inch over where wideſt. Very thin, plain, and without any *Glands* viſible to the bare Eye.

On each ſide the *Anus*, there is alſo a Bag of *fœtid* Liquor, with the ſtink of the Animal.

The *Guts* of theſe Two Animals, and I ſuppoſe likewiſe of the *Ferret*, are the moſt ſimple, and plain, of all I have obſerv'd in *Quadrupeds*.

A Pole-Cat.

The *Gulet* and *Stomach* of a POLE-CAT, are in ſhape like thoſe of a *Weeſle*. But the *Guts* are different.

They may be reckon'd, four. The firſt, about ¼ of a *yard* long; ⅛ an inch over; very thin, and plain.

The ſecond, ¼ of a yard in length; ⅛ of an inch over, and in ſome places more. This *Gut* is Glandulous and very thick, in compariſon with the other, from end to end. The

Glands

Glands extream ſmall, no bigger than little *Pins heads.* Yet every Gland hath its *Oriſice*, out of which a *Mucus* or *Pituita* may be viſibly ſqueez'd.

The Third, is ¼ a yard long; and about ¼ an inch over, as the firſt. About the middle hereof, is a *Cluſter* (of petite *Glands*) about two inches long, and ¼ of an inch broad. At the further end alſo, joyning to the fourth *Gut*, is another like *Cluſter*, but as broad again. Each Gland in both theſe *Cluſters*, is about the bigneſs of a *Muſtard-Seed.*

Each of theſe *Cluſters*, may be called a little *PANCREAS INTESTINALE.* Their difference is, That This hath not one common *Ductus.*

Of theſe *Cluſters*, it is obſervable, That both here, and in all the other Animals hereafter mention'd, they ſtand directly oppoſite to that ſide of the *Gut*, into which the Veſſels are inſerted.

The Fourth, or *Rectum*, is ſeparated from the former by a Contraction. Almoſt five inches long; and near the *Anus*, ¼ of an inch in Diametre. So that all the *Guts* together, are two yards, within ¼ a quarter.

This Animal hath neither *Colon*, nor *Cæcum.*

At the *Anus*, a pair of *Bladders* grow to the *Gut*, as in a *Weeſle*; containing alſo a Liquor with the peculiar *fœtor* of the Animal, moſt intenſe.

A Cat.

The *Gulet* of a well grown CAT, ¼ of an inch, where wideſt. The Texture two-fold. The *Muſcular Fibers* of the upper half next the Throat, plainly *Platted.* A ſort of Work, which will beſt be ſeen in the *Gulet* of a *Sheep.* Thoſe of the other half, rather *Annular*, though not exactly ſo.

The *Stomach* in ſhape like that of a *Dog*, and moſt other *Carnivorous Quadrupeds*; only ſomewhat ſhorter and rounder; being not above five inches long, yet 3¼ over.

But in the *Guts* divers Specialties are obſervable. Altogether, about two yards and ¼ long. With reſpect to their ſubſtance, but two in number: To their ſhape, the firſt may be ſubdivided into four.

This first may be called *Musculare:* being in proportion, thicker or more carneous than the *Guts* of any *Quadruped* I have open'd.

It hath about 28 or 30 *Contractions*; some an inch, others two or three inches distant one from another. I have not seen a quarter so many in any other Animal. It may be subdivided into four.

The First, *i.e.* from the *Stomach* to the place where the *Gut* is considerably amplify'd, about a ½ of a yard; and somewhat more than ½ of an inch, over.

The Second, *i.e.* to the place where more conspicuously contracted, about ½ a yard; and in its widest place, above ½ an inch, over.

The Third, *i.e.* to the next greater dilatation, a yard and $\frac{1}{10}$th; and $\frac{1}{10}$ths of an inch, over; near the same width with that of the first.

The Fourth, about ½ a yard and $\frac{1}{10}$th; and ½ inch, over. So that two slender, and two ample ones are reciprocally joyn'd.

This *Intest. Musculare*, is furnished with several *Clusters* of *Glands*, six or seven in number: each *Cluster* about ½ of an inch long; and the last above three inches. This especially, as in the *Pole-Cat*, may be called *PANCREAS INTESTINALE.*

The Next *Gut* (in the place of the *Rectum*) may be called *Membranaceum*, in distinction from the former; being far more perspicuous and thin. About ½ a yard long; and where widest, an inch and ½, over. So that its hollow is more than four times as great as of any part of the *Intest. Musculare*; and eight or ten times as great as of the small parts. And doth therefore contain far more than all that *Gut.*

To the undermost part of this *Gut*, about an inch and ½ before the *Anus*, is fasten'd the end of a slender *Muscle*; the other extremity, to one of the *Vertebræ* of the Loins.

This *Gut* is furnished with several large *Glands*, not standing in *Clusters*, but singly, as in a *Fox* or a *Dog* presently to be describ'd; but not so big.

The upper End of this *Gut* where it joyns to the *Muscular*, for the length of ½ of an inch, is partly Conick and partly Helick; being, as it were, the beginning of a *Cæcum.*

On

On each ſide the *Anus*, a Bag of *fœtid* Liquor, as in the former Animals.

To the *Guts* of a *Cat*, I ſuppoſe thoſe of a *Leopard*, *Tiger*, and *Lion*, may have ſome Analogy.

A Bitch.

The *Gulet* of a BITCH (from the top of her Head to the ſetting on of her Tail about ¾ of a yard) near an inch in Diametre. Somewhat thick, rediſh, and muſcular.

The *Stomach* ſhaped as a *Cats*, ſaving that it is a little longer. In length, nine inches; in breadth, ſix; in depth, as much. Somewhat *Muſcular*, as the *Gulet*. Not very viſibly Glandulous, except near the lower *Oriſice*. Where, for the ſpace of three or four inches, are a great number of ſmall Glands, yet fairly obſervable round about.

The *Guts* are Four. The Friſt, or *Craſſum*, two yards and ⅓, and near an inch over, where wideſt.

The Second, or *Tenue*, about a yard and ¼ long, and ſomewhat more than ½ an inch wide.

The Third, or *Cæcum*, where wideſt, near an inch; and about ⅓ a foot long; but winding with three flexures, three ſeveral ways. Not joyned to the *Tenue*, but the *Rectum*; and ſo poſtur'd, as to make an acute Angle not with the *Rectum*, but the *Tenue*; in other Animals. And the paſſage between This and the *Rectum* ſomewhat ſtraight.

The Fourth, or *Rectum*, half a yard; next the *Cæcum*, an inch over; near the *Anus* an inch and ¼. All the *Guts* together, near five yards.

This only, of the Animals yet mention'd, hath a *Cæcum*. Yet without a *Colon*.

The *Guts* of this Animal, as well as the *Gulet*, are all of them thick, rediſh, and Muſcular. The like, I ſuppoſe, are thoſe of all *Oſſivorous Quadrupeds*.

They are furniſhed with ſtore of *Glands*. In the *Cæcum*, at ſeveral diſtances from $\frac{1}{5}^{th}$ to $\frac{1}{7}^{ths}$ of an inch. Very conſpicuous to the naked Eye, even after they are blown up and dry'd. In the two foremoſt, they ſtand in *Cluſters*; and the Cluſters in all, about 20. Some of them round, as big as a *Silver Peny* or *Two-peny*; and ſome Oval, the compaſs of an *Almond*: and ſome, eſpecially towards the *Cæcum*, two

or

or three inches long, and ½ an inch broad. Every Gland, as big as a *Turnep-Seed*. The *Cæcum* beſprinkled with Flat Glands, the breadth of a *Marſhmallow-Seed* or little Spangle. And ſo the *Rectum*, eſpecially towards the *Anus*; but here big.

In the centre of theſe Flat Glands, the *Oriſice*, or if you will the *Anus* of every Gland is very conſpicuous: by which the Gland ſpeweth out a certain *Mucus* or *Pituita*; as by compreſſing the Gut may be eaſily ſeen.

So that although the Glands of the Stomach and Guts, eſpecially in Men and *Quadrupeds*, ſeem to lie behind, or under the inner Membrane: yet the Mouths of them all, do open into the Hollow of the Stomach and Guts. The *Pituita* which is always found very copious in both, not being half of it, the ſpittle, or bred of the *Aliment*, as is generally conceiv'd; but ſpewed out of theſe Glands.

At the *Anus*, are two Bags of ſtinking Liquor, as in the aforeſaid Animals.

A Fox.

The Gulet, Stomach and Guts of a FOX, (½ a year old, and ½ yard from Head to Tail) are much like to thoſe of a *Dog*. But with ſome differences. The Gulet, in proportion, ſomewhat larger. The Stomach deeper.

The firſt Gut, or the *Craſſum*, far ſhorter, not above ½ a foot. The ſecond, or the *Tenue*, ſomewhat wider. The *Cæcum*, much larger; near ½ of a foot long. It lies not ſtrait out, but is wound up almoſt ſpirally. Where it joyneth to the other Guts, ½ an inch over; at the other End, near an inch.

The Guts furniſhed with ſeveral Cluſters of Glands, as in a *Dog*, about 14 in number. That next the *Cæcum* four inches long, and above ½ an inch broad. Before every large Cluſter is a little Contraction in the Gut. In the *Cæcum* and *Rectum* much larger than in the *Bitch*.

I ſuppoſe it is proper to all other Oſſivorous Animals, for the *Rectum* to be furniſh'd with ſuch Glands.

Juſt upon the *Anus* lie two Bags of ſtinking Liquor, as in the Animals above-ſaid.

CHAP.

CHAP. II.

Of the Stomach and Guts of the Mole; *which ſeems to feed on Inſects. As alſo of the* Urchan, Squirel, *and* Rat; *which are chiefly Frugivorous.*

A Mole.

THe Gulet of a MOLE, is not faſten'd to the End of the Stomach, as in the foregoing Animals, but to the middle.

The Stomach ſhaped ſomewhat like that of a *Polecat*, and is as big; being three inches long, an inch and ¼ broad, and as deep: which in compariſon with the ſmall bulk of the Animal, is exceeding great: this Animal weighing not much above three Ounces; but an ordinary *Polecat* betwixt 20 and 30.

The Guts, a yard and ¼ long; longer than in the Carnivorous kind. About ¼ of an inch over every where. Near the *Anus* a little wider. So that they ſeem, ſo far, to be but two. Yet taking in their Texture, they may be three.

The *Texture* of the Firſt (about ¾ of a yard long) is plain and ſimple, to the Eye, as in other Guts. Of the Second, extreme Curious; the *Fibers* of the *Muſcular Membrane*, making *Undulations* or *Indentures*, continued for the length of ¼ of a yard, round about the Gut: very much reſembling the *Needle-work*, commonly called *Iriſh-ſtich.* But the *Graver*, though in other reſpects he hath done tolerably well, yet cometh ſhort of the elegancy of this Work.

Both theſe Guts are furniſh'd with five or ſix ſmall Cluſters of Glands; each Cluſter as big as a little Spangle.

The *Rectum*, of a plain Texture, as the Firſt. And without any conſpicuous Glands. Half a ¼ of a yard long, and where wideſt, ⅓ inch over.

Here are none of the Bags deſcribed in the *Weeſle, &c.* Nor any *Cæcum* nor *Colon.*

An

An Urchan.

The Gulet of an URCHAN enters the Stomach towards the middle, as in a *Mole*. Somewhat ſmall, not ¼ of an inch over.

The Stomach not ſo large as in the *Mole*, yet bigger than in Carnivorous Animals; as than that of a *Weeſle*, although the Body of an *Urchan* of the ſame age be no bigger, as is plain, when the Skins of both are taken off. 'Tis alſo of a rounder ſhape.

The Guts, for ſubſtance, ſeem to be but One. But from the difference of ſhape, may be accounted Four. The Firſt, or *Craſſum*, a yard and $\frac{1}{4}^{th}$ long; and near ½ an inch over, where wideſt. It hath ſeveral, about 12 obſervable Contractions; ſome of them an inch or two long, ſome more, and ſome leſs: which, as to their length, is peculiar to this Animal.

The Second, or *Gracile*, is about ¼ of a yard long; ¼ of an inch over, and of an equal ſize throughout.

The Third, or *Ampliſſimum*, $\frac{1}{4}^{th}$ of a yard long; and above ½ of an inch over, where wideſt.

The *Rectum*, about as long; and above ½ an inch over. So the length of all the Guts, is Two yards and an inch or two: much longer, than in the Carnivorous kind.

The Third and Laſt, are ſprinkled with an innumerable company of extream ſmall Glands, ſcarce diſcernible without a Glaſs; through which, they ſhew as big as little *Pins heads*.

This Animal hath none of thoſe Bags near the *Anus*, above deſcribed in the *Weeſle*, *&c.* Hath no *Cæcum*. No *Colon*.

A Squirell.

That I open'd, was a *Virginian*, ſmaller than the *European*. The Gulet enters the Stomach towards the middle, as in a *Mole* and *Urchan* very ſmall, like the top of an *Oaten-ſtraw*: ſo that the upper *Orifice* of the Stomach, hardly lets any thing, ſo much as wind, to paſs into it.

The Stomach two inches long; the left end, an inch over; the right, ½ an inch. The

The Guts may be reckon'd Four. The Firſt, which reacheth to the *Cæcum*, above ½ a yard long; and near ¼ of an inch over.

The *Cæcum* very large, near three inches long, and about ½ an inch over. Lies ſpirally wound up on it ſelf.

The Third, about three inches long, not above $\frac{1}{12}$th of an inch over.

The Laſt, about as long. Hath two Contractions and Dilatations; where wideſt, ¼ of an inch over. All the Guts together without the *Cæcum*, not ½ of a yard: the ſhorteſt of all yet deſcrib'd.

Here are none of thoſe Bags upon the *Anus*, above mention'd.

A Rat.

The Gulet of a RAT, is extream ſmall, like that of a *Squirel*; and inſerted into the Stomach in the ſame manner.

The Stomach, with reſpect to that of a *Mole*, very ſmall; *ſc.* three times leſs: although the Body of a *Rat*, is above twice as big as the Body of a *Mole*.

The ſubſtance hereof is alſo more plainly diſtinguiſh'd into two ſorts. One half, towards the left end, more pellucid, thin and membranous. The other half, *ſc.* from the Inſertion of the Gulet to the *Pylorus*, more opacous, thick and Muſcular.

The Guts may be accounted Five. The Firſt, or *Gracile*, ½ an Eln long, and ¼ of an inch over.

The Second, or *Amplum*, ½ a yard long, and $\frac{1}{16}$d of an inch over.

In theſe two together, are eleven or twelve Cluſters of Glands; every Cluſter about the breadth of a Spangle.

The Third, or *Cæcum*, contained by a Ligament in an Orbicular poſture round about the *Amplum*. Above ½ an inch over, and three inches long. So that take it breadth and length, and it is as big as the Stomach it ſelf.

The Fourth, I crave leave to call the *Abomaſideum*: for that it is in figure or ſtructure very like to that *Ventricle* in a *Sheep* or *Cow*, called the *Abomaſus*. About two inches long; and near its Conjunction with the *Cæcum*, $\frac{1}{12}$d of an inch over, narrowing all the way to the other end. That

which is curious herein, is, That 'tis furniſhed with a conſiderable number of oblique Plates, about 46; 23 or thereabout, on each ſide oppoſitely; exactly like to thoſe in the *Abomaſus* of a *Sheep*.

The Laſt, or *Stercoraceum*, is ſix inches long; ¾ of an inch over, where wideſt. And hath one or two Contractions, as in a *Squirel*.

The Gulet, Stomach and Guts of a MOUSE, are little different. Only the Glands of the Guts fewer; and the *Cæcum*, leſs.

On the contrary, in a SHREW-MOUSE, the *Cæcum* is rather greater, being $\frac{1}{4}$ of an inch over, and two inches long. Yet the Body of the Animal five or ſix times leſs than that of a *Rat*.

CHAP. III.

Of the Stomach and Guts of ſuch Animals as are both Frugivorous and Graminivorous; as the Rabbit, Horſe, *and* Pig.

A Rabbit.

THE Gulet of a RABBIT is inſerted into the middle of the Stomach, as in a *Rat*.

The Stomach ſhaped almoſt like a *Dogs*, but bigger, with reſpect to the Animal. Its inner Membrane is gather'd up into ſeveral little Plates, like thoſe in a Man. At the End next the *Pylorus*, much thicker, and more Glandulous, Nervous, and Muſcular than in any other part.

The Guts, without the *Cæcum*, are four yards long. In number, five. The Firſt, or *Jejunum*, about four feet long, and ½ an inch over.

The Second, or *Ileum*, as long; and above ½ an inch over. Whereas in ſome, as the *Polecat*, *Dog*, *Urchan*, the Second Gut is ſmaller than the Firſt.

The *Jejunum* is beſprinkled with a great number of very ſmall Glands: which when the Guts are blown up and dry, look like a multitude of little Specks. Whence the Gut is more opacous than the *Ileum*.

Beſides

Beſides theſe ſmaller Glands, the *Jejunum* and *Ileum* together, are furniſhed with four or five Cluſters, about as broad as a *Two-penys*; and every Gland as big as *Wallflower-Seeds.*

Where the *Ileum* enters the *Colon*, it hath a very thick white and Glandulous Body, or *Pancreas Inteſtinale*: and the mouth of each Gland very apparent.

The *Cæcum*, of a prodigious ſize; above ½ a yard long, and and an inch and ½ over where wideſt.

At the End of the *Cæcum* hangs a certain Label, alſo continuouſly hollow with the *Cæcum*, and may be accounted part of it. Betwixt three and four inches long; and at the upper end, ¼ of an inch over; in ſhape like a Man's Finger. Lined quite through with a thick Glandulous Body, like that in the end of the *Ileum.*

All the reſt of the *Cæcum* very thin, and tranſparent: ſo as being blown up, it looks like thoſe Skins of *Iceing-Glaſs*, formerly us'd for Tranſparent *Flower-Works.*

This Gut ſeemeth at firſt, to have many *Valvulæ Conniventes.* But by being blown up, is fairly repreſented one ſingle *Valve* or *Plate*, ſtretched out perpendicularly from the circuit of the Gut, and moſt curiouſly winding, in a ſpiral Line, from one End to the other.

This Gut runs into the *Colon*, which is above a foot long, where wideſt or next the *Cæcum*, an inch over; at the other end ½ an inch. It hath a double *Vinculum*, one on each ſide; by which 'tis gather'd up into a great number of little Cells, contiguous one to another throughout.

In opening this Animal, being juſt dead, the *Periſtaltick* motion of the Guts, was very apparent, eſpecially in this Gut. By means whereof, the ſeveral Cells aforeſaid, were made reciprocally to move in and out; ſo as while one moved and was convex inward, another next adjacent, moved and was convex outward; and ſo on by a kind of undulation, for ſeveral inches together.

This Gut is very thick and Glandulous all over, the Glands ſtanding every where cloſe and contiguous: ſo that the inſide of the Gut, looks like the *Seal-Fiſhes* Skin. The Glands are not flat, as in the Guts above deſcrib'd, but ſtanding up round and high, like an infinite number of *Papillæ*: the Mouths of each viſibly open; from whence a *Mucus* may eaſily be expreſs'd.

So that all Inteſtinal Glands are either Flat, or Spherical; both with a Mouth in the centre. Anſwering to a *Button-Mould*; the Flat Gland, to a flat Mould; and the Sphærical Gland to the like Mould. The former may be called *Rotulares:* the latter *Papillares.*

The Laſt Gut is about four feet long; as wide as the *Ileum*, and near the *Anus* wider by ¼ of an inch.

This Animal hath none of thoſe Bags obſerved at the *Anus* of the Carnivorous kind.

A Horſe.

The Gulet of a HORSE, is large, thick, red, and very Muſcular. The properties of the Gulet in all Voraceous *Quadrupeds.* Inſerted into the Stomach, not at one End, but the middle, as in a *Rabbit.*

The Stomach ſingle. Not much above a foot long, about ¾ of a yard deep, and ſeven inches over. Which in reſpect to the Animal, and eſpecially to his Guts, is exceeding ſmall, I had not time to obſerve the inſide, but probably, 'tis gather'd up into Plates or Folds as That of a *Rabbit.*

The Guts are ſix. The Firſt, or ſmall Gut, about 28 yards. Near the Stomach, two inches over; towards the other end, two inches and ¼. Which though it be wider by far, than the ſame Gut in any other *Quadruped* that I have open'd: yet in reſpect to the Amplitude of the other Guts in this Animal, it may properly be called the *Small Gut.* It hath ſix or eight Contractions or ſhort narrow Necks; and amongſt them, a long one, about a foot before its entrance into the *Cæcum.*

It hath very few, and but ſmall Cluſters of thoſe larger Glands, obſervable in the fore-mention'd Animals. But of a ſmaller kind, the inner Coat is every where full as it can hold, each Gland not ſo big as a *Cheeſe-Mite.*

The Second, or *Cæcum*, is ſquare; having not two, but four Ligaments which contain it in that figure. By means whereof the ſides are alſo gather'd into many Cells, ſmall and great, as the *Colon* it ſelf in this and other Animals.

The Bulk is vaſt: Near the Cone, or cloſe end, about three inches over. But at the Baſe, or where it joyns to the

Colon,

Colon, a ½ of a yard over. And in length, a full yard. So that it is more than twice as big as the Stomach.

The Learned Dr. *Gliſſon*, in ſpeaking of the Stomachs of *Quadrupeds*, ſaith, That a *Rabbit* and a *Horſe* have a double *Cæcum*. His words are theſe; *In Equis, Cuniculis, & Porcellis Indicis, Cæcum duplex deprehenditur*. But herein he is miſtaken. As to a *Rabbit*, the contrary hath been ſeen in the Guts preſented entire before this Honourable Preſence. And who ever will take the pains to examine all the Guts of a *Horſe*, will find, That neither hath he, any more than One *Cæcum*, which I have above deſcrib'd.

The Third Gut, is the *Colon*. The unuſual ſhape, and prodigious Amplitude whereof, might give occaſion to the Doctor to miſtake it for another *Cæcum*. So that although a *Horſe* hath but one ſingle *Cæcum*; yet may he not improperly be ſaid to have a Treble *Colon*; *ſc.* Two Ample ones, next the *Cæcum*; and a ſmaller one next the *Rectum*. Unleſs any pleaſe rather to call the two Great ones, the two *BELLIES* of one and the ſame *Colon*.

The Firſt *Belly* next the *Cæcum*, is no leſs where wideſt, than ½ of a yard over; and in length, above a yard and ½.

The Second Belly, next the *Rectum*, as wide as the former; and above a yard long. So that each of theſe Bellies are bigger than the *Cæcum*. That next the *Cæcum* half as big again: And about four times as big as the Stomach.

Theſe two Bellies are joyn'd together by a *Neck*, about four inches over, and ½ of a yard long. Gather'd likewiſe into Cells, as all the other parts of the *Colon*. But with four Ligaments, as the *Cæcum*. By which alſo they lie ſquare. And upon a paſſing view, might be another occaſion of the forementioned miſtake. So that if any one ſhall call either of theſe *Bellies*, a *Cæcum*; then a *Horſe* will not have two only, but three *Cæcums*. But theſe *Bellies* have neither of them, the defining property of a *Cæcum*; which is, To be pervious at one end only.

The ſmall *Colon*, or the ſmaller part of it, runs betwixt the Second Belly and the *Rectum*: likewiſe full of Cells, contain'd together by two oppoſite Ligaments as in other Animals. 'Tis about three inches over; and ſix yards long.

The *Rectum*, very thick and Muſcular, as in moſt other large

large *Quadrupeds*; about three inches and ½ over, and not above ¼ a yard long. The length of all the Guts (without the *Cæcum*) is about 37 yards. So that the Guts of a Horſe, although they come much ſhort of thoſe of the Animals next mention'd: yet in wideneſs, much exceed them: So as to contain about ten times more than his Stomach.

A Pig.

That which I procur'd was but 16 days old. The Gulet was torn off; ſo that I could only obſerve the Inſertion of it, which is about the middle of the Stomach, as in a Horſe. But that of a *Hog*, I have often ſeen, and it is very thick, muſcular and red.

The Stomach, was five inches long, and three over. Shaped ſomewhat oddly; in a manner with a double *Ventricle*. The one, and the principal, may be called *Venter magnus*, ſhaped like that of Carnivorous *Quadrupeds*. Very thick and Muſcular; eſpecially in the Neck and at the *Pylorus*.

Againſt the *Pylorus* ſtands a round Caruncle, as big as a ſmall *Filbert Kernel*, like a ſtopple to the *Pylorus*. A part I think peculiar to this Animal.

This *Ventricle* within, hath ſeveral Folds, about ¼th of an inch broad, and as deep; and wind to and and fro, as in a *Rabbit* or a Man. Scituate only about the right End or half of the Belly: the other End being, though alſo Muſcular, yet very plain.

At the left End of this greater *Ventricle*, another far leſs, yet diſtinct one, is appendent. Much after the ſame manner as the *Reticulum* in a *Sheep* is to the *Panch*. Or as the *Inteſtinum Cæcum* to the other Guts: for which reaſon it may be called *Cæcus Ventriculus*. Separated from the greater by a Muſcular Ligament, like a half *Valve*. Where it joyns to it, an inch and ½ over, and thence extended two inches in length; ending in a twiſted or hooked *Cone*. Not ſo Muſcular, as the greater *Venter*, but thin and Membranous. The inner ſurface alſo plain, or without Folds. Yet is it Glandulous, as the other: but the *Mucus* the Glands yield ſomewhat thiner.

The Guts of this *Pig* (ſo young) were near fourteen yards

yards in length. Which is more than doubled, perhaps trebled in a well grown *Hog*. They may be reckon'd six or seven. The First, hath several Flexures, next the Stomach, within the length of a ¼ of a yard, and may be called *Serpentinum.*

The Second, about five yards and ½ long, and ½ an inch or $\frac{5}{8}$ths over. In this (no more than in the first) are scarce any conspicuous Glands; so that it may be called, *Perspicuum.*

The Third, of the length of the Second; and somewhat less in Diametre. The Vessels of This, are more numerous than of the former. And 'tis furnish'd with several large Clusters of Glands, about nine or ten: some of them an inch and ½, two or three inches long; and ¼, or ½ an inch over. And may be call'd *Minus Glandosum.*

The Fourth, is a yard and ½ long; where widest, as the Third; but the greatest part of it not above $\frac{3}{8}$ths of an inch. This Gut, instead of Clusters, is Lined with a Glandulous Lace, extended from one end to the other. At the beginning ¼ of an inch broad; at the end next the *Cæcum*, ¼ of an inch. Spread or extended (as was first observed of the Glandulous Clusters) upon that side of the Gut, as is directly opposite to the Insertions of the Vessels. The other part of the Circuit of the Gut, is very thin and perspicuous. This Gut may be called *Magis Glandosum.*

The extremity of this Gut, doth not only joyn to the *Colon*, but is inserted into it, and therein *protuberant*: very like, in shape and bigness to the Nipple of a Womans Breast that gives suck: and is likewise punched in several places at the top and round about with the *Orifices* of so many several Glands.

The Fifth, or *Cæcum*, is four inches long, and an inch and ¼ over. Among all the *Quadrupeds* I have open'd, peculiar to This and the *Cæcum* of a *Horse* to have the same structure with the *Colon.*

The Sixth, or *Colon*, is ½ of a yard long. Where it joyns to the *Cæcum* an inch over; from which place it tapers all along to the other end, where it is not above ½ an inch over. Gather'd up into several Cells from end to end, with two opposite Ligaments, as in a *Rabbit*. At the top of it, just under the abovesaid Nipple, is a large round Cluster of Glands with very fair *Orifices.*

Of

Of all the *Quadrupeds* I have open'd, peculiar to this Animal, a *Horſe*, and a *Coney* (perhaps alſo an *Aſs* and a *Hare*) to have a true *Colon:* if that of a Man be the ſtandard for the Definition of it.

The Laſt, or *Stercoraceum*, is alſo ¼ of a yard long. Scarce any where more than ½ an inch over; and towards the *Anus*, not ſo much. Whereas in moſt *Quadrupeds*, 'tis there wideſt.

Here are no Bags, as above deſcribed in the Carnivorous Animals.

CHAP. IV.

Of GRAMINIVOROUS QUADRUPEDS; a Sheep and a Calf.

A Sheep.

THE *Gulet* of a SHEEP (three years old, and weighing 120 pounds *Haverdupoiſe*) about an inch and ¼ over: which with reſpect to the *Panch* is but ſmall. Compoſed of ſeveral Organical Parts: which becauſe they are here, as well as in ſome other larger Animals, more conſpicuous, I ſhall ſomewhat more particularly deſcribe them.

They are all of them, by *Anatomiſts*, uſually, but improperly called *Coats:* for the inermoſt, are the chief Body of the *Gulet:* So that 'tis the ſame, as to call the Wood of a hollow Plant, one of its Coats. 'Tis therefore compoſed of Five Membranes; Three in the middle, lined with a Fourth, and faced with a Fifth.

The Utmoſt, and the Inmoſt, are both Cuticular. The Inmoſt, or *Glandulata*, exceeding white, and very friable: anſwerable to the outward Rind of the Root of a Plant.

The next to it, is the Nervous. Which here, and in ſome other Voraceous Animals, is ſo very thick, that it may more properly be called the *CORPUS NERVOSUM.* Compoſed of *Fibers*, partly running by the length of the *Gulet*, and in part *tranverſly* to the two Muſcular Membranes. Throughout

Throughout the length of it, run many ſmall Nerves, like the fineſt *Lawn-Thread.*

This *Corpus Nervoſum*, is, as I conceive the *TENDON* to the two next or Muſcular Membranes.

Theſe Two (they are at leaſt two) are truly Muſcular. *Stenon* hath obſerved them to be ſpirally continu'd: which of ſome of them is true, not of all. And Dr. *Willis* ſaith alſo truly, That they *Decuſſate*, the one winding from the right hand downwards, the other from the left. But, to proceed where theſe two accurate Perſons have left; of the admirable Texture of theſe two Muſcules, it is further obſervable, That of each parcel of *Fibers*, one half is ſo diſtributed, as thoſe *Fibers* which belong to the uppermoſt Muſcule on the right hand, are in their progreſs towards the left, caſt into that which lies underneath. And ſo on the contrary, thoſe which belong to the Upmoſt on the left hand, are caſt, into that which lies underneath on the right: both together making a perfect Plat, ſomewhat like to that in a *Riding-Whip*. The other half keeps always above, and is continu'd by a compounded line, partly *Spiral*, and partly *Elliptick*; eſpecially towards and at the bottom of the *Gula*.

The Stomachs or Venters in a *Sheep* are Four. The Firſt, or *Panch*, conſiſteth of as many Membranes as the *Gulet*. The Inmoſt and the next, *ſc.* the Nervous, are raiſed up, and made all over rough with a multitude of ſmall Nervous and pointed Knots, in ſome places ſmaller and round; in others larger and flat: all very like thoſe upon the Tongue.

In the *Panch* alſo are ſeveral *Gibboſities*, cauſed chiefly by the doublings and thickneſs of the Muſcular Membranes, in thoſe places. So that they are as it were the *Tendons* of the ſaid Membranes.

The Second *Venter*, is by the *Latins* called *Recticulum*. In which are the like Nervous Knots, as in the *Panch*, but ſmaller. And comprehended within ſeveral round Ridges or Plates compoſed together in the form of a *Net* or *Honey-Coome*.

The Third, is called the *Omaſus*: by *Butchers* the *Feck*. Of a wonderful ſtructure: being divided into above 40 Receptacles by ſo many Sepiments, great and ſmall:

ſome ¼, ⅓, or ½ of an inch, others an inch, or two inches broad. All cover'd with the like Knots, as the two former *Venters*; but extream ſmall.

The Fourth *Venter* is called *Abomaſus:* by *Butchers*, the *Read.* The only analogous one to that in a Man; the Membranes hereof being all alike. Saving, That the Plates (as here they are rather than Folds) are far deeper; and oppoſitely and regularly mett in an oblique poſture.

The *Guts* are Six or Eight. The length of all, near 32 yards. The Firſt, or *Serpentine*, from its Flexures, about ¼ a yard long, and ½ of an inch over.

The Second, or *Jejunum*, about 13 yards and ½, and as wide as the firſt.

The Third, or *Ileum*, 11 yards long; and an inch over.

The Fourth, or *Cæcum*, above a Foot in length; and where wideſt, two inches and ½.

The Fifth, is continu'd from the *Cæcum* without either Valve or Contraction intervening. Above a yard long; and an inch and ½ where narroweſt.

The Laſt, may by way of Eminence, be called the *Muſcular:* being as thick as the *Gulet* it ſelf. And This may be ſubdivided into Three. From the Fifth, it grows ſmall to the length of an Eln; where it is ½ an inch over. Of this width it continues two Elns more and ½. After it widens again, to the *Anus* or the length of another Eln and ½; where 'tis near an inch and ½ wide. In the *Jejunum*, the Veſſels are leſs numerous; in the *Ileum*, more; in the *Cæcum*, and the next, moſt; and in the Muſcular, leaſt.

The Glands, not ſo obſervable, as in thoſe of a *Calf*, which I ſhall next deſcribe.

A Calf.

The Number, Shape, and Texture of the *Gulet* and *Venters* of a CALF, are the ſame, as of a *Sheep.* The Guts much different. In length, about 20 yards. In a well grown *Ox*, at leaſt thrice as long. Asking a *Butcher*, at his *Slaughter-Houſe*, How long he thought they might be; he gueſſed 30 yards. But believing him miſtaken, I cauſed them to be meaſur'd, and found them full 60 yards, and four over, which may be allowed for their ſtretching, for that they were meaſur'd empty. They

They may be reckon'd ſeven or nine. The Firſt, the *Serpentinum*, as in a *Sheep*. In length ½ a yard, and ¼ of an inch wide.

The Second, or *Amplum* (being the wideſt of all the reſt but the *Cæcum*) is five yards and ½ long; and an inch and ½ broad. Theſe two are very thin, and have ſcarce any conſpicuous Glands.

The Third, or *Magis Glandoſum*, near ſeven yards long, and an inch wide. Furniſhed with a great many Cluſters of Glands, like thoſe in a *Pig*, about 50 of them; an inch ¼, or ½ long, and ſome longer.

The Fourth, or *Gracillimum*, about two yards long; and not above ¼ an inch over. Whereas in a *Sheep*, the *Guts* next the *Venters*, and that following, are near of one width. Somewhat thicker and more fleſhy than any of the former. Hath ſeveral Cluſters of large Glands; but nothing near ſo many, no not with reſpect to its length, as the precedent: and may therefore be alſo called *Minus Glandoſum*.

The Fifth, or *Maximè Glandoſum*, is a yard and ¼ long, and an inch wide. By far the moſt opacous, thick and ponderous of all the five. Lined throughout the length, with ſuch a Glandulous Lace, as in a *Pig*. This Lace is thicker than all the other Parts of the Gut together. At the beginning ¼ an inch, at the lower end an inch broad. The reſt of the Gut, over which this is not ſpread, is perſpicuous.

The Sixth, or *Cæcum*, near two feet long, and above two inches and ¼ over where wideſt; where narroweſt, an inch. Very thin, and without any conſiderable Glands.

The Laſt, or *Muſculare*, two yards and ½ long, and of the ſame Diametre in its ſeveral parts as in a *Sheep*; being wide at both ends, and ſlender in the middle: and may therefore, as that, be ſubdivided into three.

CHAP. V.

Of the Uſes of the Gulet and Stomachs of Quadrupeds.

And firſt of the Gulet.

IN ſpeaking hereof, I ſhall, as in the Anatomical Part, inſiſt chiefly on thoſe Particulars which have been omitted by others.

It may therefore firſt be noted of the bore of the *Gulet*, That it is not every where alike anſwerable to the Body or Stomach. As in a *Fox*, which both feeds on Bones, and ſwallows whole, or with little chewing; and next in a *Dog*, and other Oſſivorous *Quadrupeds*, 'tis very large; *ſc.* to prevent a contuſion therein. Next in a *Horſe*; which though he feeds on *Graſs*, yet ſwallows much at once, and ſo requires a more open paſſage. But in a *Sheep*, *Rabbit*, or *Ox*, which bite ſhort, and ſwallow leſs at once, 'tis ſmaller. But in a *Squirel*, ſtill leſſer, both becauſe he eats fine, and to keep him from diſgorging his meat upon his deſcending leaps. And ſo in *Rats* and *Mice*, which often run along Walls with their Heads downward.

The Thickneſs of the *Gulet* is alſo different. So in a *Weeſle* or *Pole-Cat*, which eat no Bones, more Membranous or Skiny. In *Dogs* more Muſcular, greater force being required to carry down Bones, than Fleſh. But in *Sheep*, *Hogs*, *Cows*, *Horſes* moſt of all; for three Reaſons: Firſt, For that *Graſs*, and eſpecially *Hay* is leſs ſlippery, and apt to clog by the way. Secondly, Becauſe they eat continually, and ſo the Gulet is in continual action, which it could not bear without pain, were it not made ſturdy for hard labour: in like manner, as are the Muſcules of the Chaps, and eſpecially the *Maſſeter*, in all the ſaid Animals. Thirdly, For that all they eat and drink (becauſe they hold their Heads down) muſt be made by a greater force to *aſcend* into their Stomachs. Whereas in Carnivorous Animals, and eſpecially a Man, it paſſeth by deſcent. And there are few, but may remember, how difficult it was, when they were Boys, to drink with their Heads down at a Spring. And although *Dogs* drink with their Heads down, yet they can only

only *Lap*, their Gulet not being Muſcular enough to *carry up* much at once.

The ſeveral Parts of the Gulet, have their diſtinct Uſes. The outer Membrane, is both a Fence, and a Swath to all the reſt; eſpecially to the Muſcular. For the Nervous underneath, being always capable of, and ſometimes ſubject to inordinate expanſions (as Dr. *Willis* doth well conjecture) it would Rack the Muſcular Membranes beyond their Tone, were they not bound up within this.

The two Muſculars, chiefly ſubſerve the ſeveral Motions of the Gulet. Amongſt which, Dr. *Willis* reckons Oſcitation or Yauning, and Expuition. Of the firſt, (*a*) his words are theſe; *In Oſcitatione, Oeſophagi ductum ampliari, & quaſi a vento quodam inflari & expandi ſentimus.* But who knows not, that the *Windpipe*, and not the *Gulet*, is the part concern'd in all kinds of Reſpiration, whereof *Oſcitation* is one. Of the latter, his words are theſe; (*b*) *Gulæ Tunica carnoſa, duplex quaſi Muſculus cenſeri debet; quorum alter, expuitionis opus perficit.* At that time forgeting, that no man ever ſpat any thing out of his Stomach; no more than he can be ſaid to vomit or eructate out of his Mouth. The Doctor is one, of whom I have learned much: and therefore I mention theſe Things, only becauſe they lie in my way: and that we may ſtill remember, *Nullius in Verba.*

(*a*) Pharmac. Ration. P. 1.

(*b*) Ibid.

The Actions of the *Gulet* are therefore principally theſe Three, *Deglutition*, *Vomition*, and *Eructation*. By one of the Muſcular Membranes, ſaith the forementioned Doctor, *ſc.* that which deſcends, *Deglutition* is performed; by the aſcendent, *Vomition*. His words (*c*) are theſe, *Cùm unius Fibrarum ordo deſcendens, Deglutitioni inſerviat; alter aſcendens, Vomitionis opus perficit.* But that he was herein miſtaken, I conceive, appears from the ſtructure of the ſaid Membranes, neither of which, is aſcendent or deſcendent, more than the other; and from the manner of their Contexture, as is above deſcrib'd. Beſides, if it were ſo, why ſhould there not be *Aſcendent* and *Deſcendent Fibers* or *Muſcules*, for the Natural, and the Inverted Motions alſo of the *Guts?*

(*c*) Ibid.

I conceive therefore, That *Deglutition* and *Vomition* are made by the Cooperation of both the ſaid Membranes: only in the former, the Motion goes from the Throat downward, in the latter, from the Stomach upward. And

ſo

ſo in *Eructation*, only with leſs force. For the performance of which Actions, Two Muſcules or Muſcular Membranes are yet requiſite; and thoſe platted and interchanged, as hath been deſcrib'd: That is, by a double Plat of the *Fibers* of both; whereby half the nether Membrane on the one ſide the *Gulet*, becomes half the upper Membrane on the other ſide: and ſo *vice verſa*, in ſpiral rounds throughout. To the end, That the *Gulet* being hereby contracted in one part, and dilated in the next, might at the ſame time, thruſt forward, and let paſs, any body therein contain'd: and that the ſaid *Contractions* and *Dilatations* might be more eaſily and regularly made, and by reciprocal *Undulations*, carry'd on from one end of the *Gulet* to the other. Theſe *Undulations*, in the *Gulet* of a *Horſe*, when he drinks, are very plainly ſeen.

And that this *Undulation* may be made with more ſpeed, it is obſervable, That the ſaid *Muſcular Fibers* are not continu'd by a cloſe, but very oblique or open ſpiral Line. Whereby, as the ſpiral Rounds or Circuits, ſo the *Undulations*, are the fewer; and conſequently, not ſlowly (as in the *Guts*) but much ſooner finiſhed.

Hence it is, That a *Cat* hath ſo difficult a ſwallow, the meat commonly ſeeming to ſtick in her Throat. Not from the ſmallneſs of her *Gulet*; but for that in the longer half of it, the *Muſcular Fibers* are continu'd in ſo cloſe a ſpiral Line, as rather to ſeem *Annular*. Whereby, the *Undulations* of the *Gulet* are more ſlowly and difficultly made. So that a more difficult ſwallow, being one thing neceſſary to make her not greedy, but patiently to watch for her Prey; Nature hath therefore contriv'd her *Gulet* for that purpoſe.

The Nervous Membrane, or (as in ſome *Graminivorous Animals* it may be call'd) *Corpus Nervoſum*, hath hitherto been thought to ſerve only for ſenſe. Dr. *Willis* Conjectures, That it is alſo the Inſtrument of ſome certain motions of expanſion in *Oſcitation* and *Preternatural Inflation*: which is all he ſaith.

But to Me, it ſeemeth, That it Cooperates with the Muſcular Membrane to all the Natural Motions of the *Gulet*, in *Deglutition*, *Vomition*, and *Eructation*. And, to ſpeak properly, That 'tis nothing elſe but a HOLLOW TEN-

TENDON; that is, the *Tendon* of the two Muſcular Membranes.

It may be Objected, That then it ſhould lie above, not under the Membranes. But in a *Gizard*, we find the *Tendon* ſpread within or underneath the Fleſhy part of the Muſcules, as well as above.

The truth of this will further appear, if we conſider the great Thickneſs of this Membrane, where the moſt forceable motions of the *Gulet* are required. For it would ſerve as well for ſenſation, if it were ten times as thin: the groſsneſs of the ſenſory, not being neceſſary to the exquiſiteneſs of the ſenſe; but of the mover, always to the ſtrength of the motion. And therefore, whereas the *Cuticular* or utmoſt Membrane is much of the ſame thickneſs in all Animals; the Nervous is much varied according to the thinneſs or thickneſs of the Muſcular: that is, where the Muſcule is thick, the *Tendon* is proportionable. The notice of which in *Oxen*, *&c.* ſheweth the ſame uſe hereof in a man.

The Inmoſt Skin or Lining of the *Gula*, is to be a protection to the Nervous, as the outer is to the *Muſcular*; that ſo nothing hard, ſalt, ſower, or any way acrimonious, may be injurious to it. To keep it the better within bounds, in all the motions of the *Gulet*. To be the Bed of the Glands. And one ſeat of Thirſt; which oftentimes lies no deeper than the Throat and upper part of the *Gulet:* and is cured by any thing which by moiſtening the Throat ſhall give vent to the *Mucus ſtagnant* therein.

CHAP. VI.

Of the Uſes of the Stomachs of Quadrupeds.

AND firſt, all *Carnivorous Quadrupeds* have the ſmalleſt *Ventricles*; fleſh going fartheſt. Thoſe that feed on Fruits and Roots have them of a middle ſize. Yet the *Mole*, becauſe It feeds unclean, hath a very great one. *Sheep* and *Oxen*, which feed on *Graſs*, have the greateſt. Yet the *Horſe* (and for the ſame reaſon the *Coney* and *Hare*) though

Grami-

Graminivorous, yet comparatively have but little ones. For that a *Horſe* is made for labour, and both This and the *Hare* for quick and continu'd motion: for which, the moſt eaſie Reſpiration, and ſo the freeſt motion of the *Diaphragme* is very requiſite; which yet could not be, ſhould the Stomach lie big and cumberſome upon it, as in *Sheep* and *Oxen* it doth. For which cauſe Nature hath here transfer'd the greater part of the *Alimental Lugage* into the *Cæcum*.

The Neck of the Stomach, near the Gut, is commonly reflected backward, ſo as to make an acute Angle with the Back of it. To the end, the extruſion of the prepared *Aliment* to the Gut, may be ſtinted. And that the thiner part, which will more eaſily wind about, may the better paſs away, and leave the reſt behind. Sometimes it hath three or four *Flexures*, as in *Sheep* and *Oxen*: for that the Gut being ſo ſmall with reſpect to the *Venter*, and with all ſo very thin; it would, by too ſudden or copious an irruption of the *Aliment*, be in danger of being burſt. And for the ſame reaſons, the Stomach of a *Pig*, ſo voraceous a Creature, is alſo furniſhed with a Stopple.

The diſtinct uſes of the Parts of the Stomach, are many of them the ſame as of the *Gulet*. I ſhall not therefore repeat, but proceed to thoſe particulars as remain to be explicated.

And firſt, 'tis plain, in thoſe thick Stomachs of an *Ox* or a *Sheep*, that the carneous Membranes are true *Muſcules*: which conducteth us more eaſily to believe that of a man alſo *Muſcular*. 'Tis certain, that the *Muſcules* of the *Abdomen* in ſome Animals, as in *Squirels*, are thiner than thoſe of a mans Stomach.

Now the Nervous and Muſcular Parts joyntly ſubſerve to all the motions of the Stomach, which I reckon five, *viz. Corrugation*, *Aſtriction*, *Undulation*, *Convulſion*, and *Voluntary Motion*.

Corrugation, is when there is a double motion of Contraction, beginning from both the *Orifices* of the Stomach, and ſo drawing it up into innumerable ſmall Wrinkles. For the better expreſſion of the *Mucus* out of the *Glands* of the inner Membrance. For a cloſer comprehenſion of the *Aliment*, and immiſſion of the ſaid *Mucus* or other fermenting Juyce, into it. And for the gradual expreſſion of the colliquated

quated parts thereof into the Gut. In this motion, the utmoſt *Muſcular Fibers* contract the Stomach in length; and the inermoſt, in breadth.

Aſtriction, is a Contraction only about the *Pylorus*; performed by the inermoſt *Fibers* alone. For the firmer Retention of the *Aliment*, and its orderly diſmiſſion into the Gut.

Undulation, is when the Contraction is made in ſeveral parts of the Stomach ſucceſſively, beginning at one *Orifice*, or End, and terminating at the oppoſite. Made alſo by the Inner *Fibers*; after the ſame manner, as the *Undulation* or *Periſtaltick Motion* of the *Guts*. The uſe of it, is either for *Excretion* or *Eructation*. If it begins from the *Gulet*, it ſerves, after the fineſt of the *Aliment* is diſcharg'd by *Corrugation*, for Excretion of the reſt. But if the *Undulation* be Inverted, or begins from the *Pylorus*, it produceth *Eructation*. Anſwering to the like Inverted Motion, which ſometimes happens in the *Guts*.

Convulſion, is a forcible and ſuddain Contraction of all the Orders of *Fibers*, outer, middle, and inmoſt. The uſe hereof with *Undulation*, is for *Vomition*. For firſt, there is only an Inverted *Undulation*, that is, I conceive, when there is only a *Naucea* or tendency to Vomit. Which *Undulation* alſo, carries part of the matter by degrees, to the upper mouth of the Stomach. And growing quicker and ſtronger, at laſt turns into a *Convulſion*; the Stomach being hereby contracted both in width and length, and the *Pylorus* forced up to the upper *Orifice* (as a *Barbars Puff* in powdering the *Hair*, or the *Bladder* in the Injection of a Clyſter) and ſo produceth actual *Vomition*.

The Voluntary Motion of the Stomach, is that only which accompanies *Rumination*. That it is truly voluntary, is clear, from the Command that Ruminating Animals have of that Action. For this purpoſe it is, that the *Muſcules* of their *Venters* are ſo thick and ſtrong; and have ſeveral *Duplicatures* as the Baſes of thoſe *Muſcules*, whereupon the ſtreſs of their motion lies. By means whereof, they are able with eaſe to rowl and tumble any part of the meat from one Cell of the ſame Venter to another, or from one Venter to another, or from thence into the *Gulet*, whenſoever they are minded to do it. So that the Ejection of the meat

in Rumination, is a *Voluntary Eructation.* Not at all laborious to them, because of the great strength of the Muscules of their Stomach and Gulet to command and govern the same.

By the Joynt assistance of the Glandulous and the Nervous Membranes, the business of *Chylification* seems to be perform'd. The *Mucous* Excrement of the Blood being supply'd by the former, as an Animal *Corrosive*, preparing; and the Excrement of the Nerves by the latter, as an Animal Ferment, perfecting the Work. And the *Cæcus Ventriculus* of a Hog, seems to be a *Repository* provided for such a mixed *Leven* or *Menstruum*: whereby he not only becomes more voraceous, having thence continual irritations to eat: but all he eats, is thereby likewise well digested.

The Folds of the Stomach, which in its *Corrugation* must needs be much deeper than when it is dilated, or of use, To divide the *Aliment* into several Portions, and thereby administer their Ferments not only to the Circumference, but intimate parts of the Mass to be fermented.

The pointed Knots, like little *Papillæ*, in the Stomachs of divers Ruminating Beasts, are also of great use, *viz.* For the Tasting of the Meat. Dr. *Willis* describing the Inner Membrane of the Stomach (not of a Beast, but expresly of a Man) speaketh thus; *Hæc Crusta Ventriculum* (Humanum puta) *intus obtegens, similis videtur Illi, quæ Linguam obtegit.* Wherein he was mistaken: this Inner Membrane being Glandulous; the Skin of the Tongue not so, but only Fibrous. But of divers Beasts which Ruminate, thus much is true, That in their Three first Venters, the Inner Membrane is Fibrous, and not Glandulous; the fourth only being Glandulous, as in a man. Of the Fibers of this Membrane and the Nervous, are composed those pointed Knots before described (*a*) both in substance and shape, altogether like to those upon the Tongue. Whence I doubt not, but that the said Three *Ventricles*, as they have a power of *Voluntary Motion*: so likewise, that they are the *Seat* of *Tast*, and as truly the *Organs* of that sense, as is the Tongue it self.

(*a*) Chap. 4.

Lastly, and consequently, the said Nervous Knots, are of use to Methodize the Work of *Rumination*, after this manner. The Animal having eaten enough for the *Panch*

well

well to govern; rowles and tumbles the meat to and fro therein: and at the same time, with the help of the said Nervous Knots of several degrees of fineness (as the *Goldsmith* hath his *Assayers* of several degrees of niceness) judges of the Courseness or Fineness, Crudeness, or Concoction of any part of it; and accordingly lets it rest, or removes it. So then the grossest of these *Assayers* standing about the *Gulet*, and so in the passage of the meat between the *Panch* and the *Reticulum*, being the proper judges of what is Course or Crude; if they find it so, then 'tis tumbled back to receive a further maturation in the *Panch*. If somewhat fine and Concocted, 'tis then permitted to pass on and rowl into the *Reticulum*. And the said *Assayers* or *Nervous Knobs* being here sharper and softer, than in the *Panch*; have still a more accurate Tast: and therefore what they yet find too course, the *Reticulum* forthwith throws it up into the Gulet and Mouth. From whence, being further refined, 'tis remanded to the *Reticulum*; and thence after a while, into the Third Stomach or the *Omasus*. And This again being a more nice *Assayer* than the *Reticulum*; if it feels the meat fine and soft enough, passeth it into the last Stomach or *Abomasus*. But if otherwise, throws it back into the *Reticulum*, and the *Reticulum* into the Gulet and Mouth to be labour'd once again, and so remanded.

CHAP. VII.

Of the Uses of the Guts of Quadrupeds.

I Shall here, as before, pass over such particulars as have been spoken of by others; and divers also which being observable in the Gulet and Stomachs, as well as here, have been already sufficiently explain'd.

And first the different Bore of the Guts is observable. So, for example, the Guts of a *Horse* are very wide. For that he both swalloweth, and dischargeth from his Stomach into his Guts, the meat more gross; which therefore requireth a more open passage, lest it should clog. As also, that it may move with greater speed towards the *Cæcum*,

(a) Chap. 6. here, (a) for the reaſon above-ſaid, deſign'd by Nature to be a ſecond Stomach. Whereas in an *Ox* or a *Sheep*, the meat having paſſed four ſucceſſive Concoctions, 'tis thence delivered to the Guts of a much finer ſubſtance; and ſo moveth ſafe enough throuh a much ſmaller Chanel; and faſt enough, there being much leſs work here left, for the *Cæcum* to perform.

The Contraction alſo of the Guts, or leſſening of the Bore by ſeveral Necks, is of good uſe. As for inſtance, in an *Urchan* or *Cat*; ſerving to ſtint the Tranſition of the meat, that it be not over quick, and dividing the Guts into ſo many little *Venters*, in which the meat reſtagnates for ſome time, in order to its reception of as many repeated Concoctions. Whereby alſo in theſe Animals the work of the *Cæcum*, and therefore the making of it, ſeems ſuperſeded.

Moreover, the rarious length of the Guts is obſervable, according to the cleanneſs, or more fewer nutritive parts of the Food; or its colliquability into *Chyle*. So in a *Weeſle* or *Squirel*, that feeds much on Eggs, and Nuts, and ſuch like fine and nutritive food, they are extream ſhort. And in all Groſs eaters, longer than in other *Quadrupeds*. And therefore one reaſon, why the Guts of a Sheep or *Ox* are ſlender, is, that they may be long. For were they ſhorter and wider, it would not be *tantamount*: For the food being *Graſs*, it is not ſufficient that they ſhould hold enough: but alſo neceſſary, that they give a longer voyage to a ſubſtance ſo jejune, for a thorow ſolution and exuction of all its nutritive parts. Beſides, that in a ſmaller Channel, the ſaid parts will all along lie nearer to the Lacteal Veins, and ſo more eaſily be expreſs'd into them.

The Membranes of the Guts, have a general analogy in all *Quadrupeds*, and divers of their Uſes have been well aſſign'd. I ſhall therefore only Note, That as the ſpiral *Fibers* contract or purſe up the Bore of the Gut; ſo thoſe that run by the length, draw it up ſhorter, and ſo dilate it. Whereby, as one part of the Gut may preſs the meat forward, or as it were diſgorge it, ſo another gape to receive it, at the ſame time. And in caſe one Gut ſhould by another, or by ſome Bowel, be oppreſs'd, being by the ſaid Contraction in length removed a little out of its place; the freedom of its motion, or any thing therein, will thereby be regain'd.

But

But in a *Mole*, the ſame *Fibers* which run by the length, being Indented, do alſo for a little way, each parcel obliquely run by the breadth of the Gut. Whereby they are able, without the help of ſpiral *Fibers*, to narrow or ſhorten the Gut of themſelves: and alſo to do both in the ſame place. For by the Relaxation of the *Fibers*, the ſides of every Indenture, muſt needs grow both wider and more diſtant, and the Gut wider and more extended, at the ſame time: and ſo *Vice verſa*. Probably with this deſign, That the Shells of *Inſects* may make a more ſafe tranſition, without raking againſt the tender ſides of the Guts.

The Glands of the Guts are likewiſe of great Uſe. The *Mucus* which they ſpew, ſerves to make the Guts ſlippery, that the meat may the more eaſily and ſafely glide along. As alſo for another Ferment ſuperinduc'd to that of the Stomach, and ſo a further colliquation of the meat. With reſpect to both which Uſes, the ſaid Glands, according to the Bore of the Guts, the hardneſs or ſoftneſs, courſeneſs or colliquability of the meat, are more or leſs numerous; as in the precedent Examples.

And that this *Mucus* may be duly ſupply'd, Nature ſtill allows *Blood-Veſſels* proportionable to the plenty of Glands. And hath taken care that the Veſſels enter not the Guts on the ſame ſide on which the Glands are ſeated, but the oppoſite: that having ſpace enough to branch themſelves into the ſmalleſt capillary Tubes, before they reach the Glands, there may be the leſs danger, that any ſincere Blood ſhould with the *Mucus* make an Inundation into them.

Through the ſame Glands, as ſo many little Springs, I conceive, That the Humours are either emunged, or precipitated, out of the Blood, in Purgation. For that one ſo ſmall a *Pipe*, as that of the *Pancreas* ſhould bring ſo great a quantity, is not at all probable. And the Glands being a viſible way, I know no reaſon, wherefore we ſhould have recourſe to any inviſible one.

Thus the ſame Glands are a great means to prevent *Feavers*, and other ill effects of *Cold* by a *Diarrhea*. For when by a ſuddain aſtriction of the Pores of the Skin, or otherwiſe, the uſual perſpiration is ſtop'd: the redundant matter in the Blood, is often ſafely diſcharged, by the Glands, into the Guts. But if the matter be very ſharp, or ruſheth upon

the

the Glands too ſuddainly; it ſometimes corrodes or breaks them, and ſo makes way for Blood alſo: as may be obſerv'd in the Guts of ſuch as die of a *Dyſentry*.

The Uſe of the *Cæcum* is manifold, but divers in divers Animals; according to the make of it, and the Relation it bears to the Stomachs and the Guts. And firſt, for the moſt part, it ſerves to give a ſecond Deliberate Concoction to the meat, that nothing nutritive in it may be loſt. For which purpoſe, it is always furniſh'd with Glands, as well as the other Guts. And, with reſpect to its width, is commonly but thin, or leſs muſcular, that ſo being leſs apt to conſtringe it ſelf, it may give a due time of ſtay to the meat deliver'd to it. For which end alſo it is placed out of the common Road of the Guts; that being thereby leſs receptive of their *Periſtaltick Motion*; it may lie the more ſtill. For the ſame intent the *Cæcum* in a *Sheep* hath ſeveral *Flexures* anſwerable to thoſe in the 4*th* Stomach or *Abomaſus*. And in a *Hog*, 'tis drawn up into Cells on both ſides, like the *Colon*, to make it ſo much the more retentive. In the *Coney*, the ſame is done ſtill more effectually, by the ſpiral Plate, or Connivent *Valve* winding from end to end. And in the *Horſe*, not by two only, but four Rows of Cells on the four ſides. In which two laſt Animals the ſaid Uſe is ſo eminent, that the *Cæcum*, conſidering its bigneſs withall, is the chief Stomach, and much ſuperior to the *Stomach* ſo call'd. And it is alſo obſervable, That the *Abomaſideus* in a *Rat*, hath the ſame relation to the *Cæcum*; as in a *Sheep*, the *Abomaſus* hath to the other Stomachs. Hence likewiſe it may be, that ſome Animals have little or no *Cæcum:* either becauſe the meat is ſo diſſoluble, as not to need a ſecond deliberate Concoction, as in a *Weeſle*; or for that Nature hath made ſomething elſe to ſerve without it; as thoſe ſeveral Contractions in the Guts of a *Cat*; and the *Valvulæ Conniventes* in the ſmall Guts of a Man. Where we may obſerve, That theſe *Valves* are not every where ſpiral, as is thought, but do alſo make ſome perfect and diſtinct Rings: whereby they are fitter to retard the motion of the meat in its deſcent.

Another Uſe may be, For a Retreat; Either to the meat, if it ſhould chance to ruſh too faſt into the Gut below it: Or to the Excrements, in caſe the Animal is diverted from a preſent ejection of them.

The

The last Use, I shall name, may be this, That in case the meat, or the Excrements in the lower Guts should be at any time so dry and hard, as too slowly, and not without much stress to the Guts, to descend; the *Cæcum* is as a *Clyster-Bag*, always ready with its liquid Content, to be in some part thereinto injected. For which purpose, it usually makes an acute angle with the upper Guts, and opens directly into those below it.

The Make of the Colon, with other Uses, also answers to the greater need of Retention. Either because of the upright posture, as in a Man; or frequent and speedy motions, as in a *Horse* or *Hare:* where, without the Cells of the *Colon*, to retain the Excrements from the *Rectum*, there would be a continual *Conatus egerendi*.

The *Rectum*, or rather *Stercoraceum* of a *Cat*, being peculiarly of so great a bulk; I will conclude with a Conjecture of one Use of it: and that is, To be as a *Counter-poise* to her Head: whereby, from what height soever she falls, she still lights upon her feet.

CHAP. VIII.

Of the Stomachs and Guts of BIRDS.

BEcause that many particulars will here occur, which are intelligible from the former Descriptions, and have already been explain'd; I shall therefore be the shorter. Of about Forty, which I have open'd, I shall describe these Thirteen that follow, *&c.* of a *Cassowary*, an *Owl*, a *Cuckow*, a *Dunghil-Cock*, a *Tame Pigeon*, a *Jackdaw*, a *Starling*, a *Yellow-hammer*, a *Bull-finch*, a *Wry-neck*, a *Bunting*, a *Reed-Sparrow*, and a *House-Swallow:* and figure them all, but those of a *Cuckow*. With Notes upon others, as I proceed.

Of a Cassowary.

The CASOWARY hath no Crop. But a wider Gulet, I suppose, as well as Guts, than in any other Bird. Far greater than those of an *Ostrich*; although the Body be much less. The Gulet, where widest, or near the Throat, about five inches over;

over; next the Stomach, two. Sprinkled with many ſmall Glands, as it is, more or leſs, in all Birds.

At the bottom of it, the *Echinus*; common to all Birds that I have open'd. But here leſs conſpicuous. The Figure hath not expreſs'd it. It hath always a Lining of much larger Glands than thoſe in the *Gulet* or *Crop*; commonly of an Oval Figure, and each of them with an open mouth ſpewing out a *Mucus*.

He hath no Gizard (as hath the *Oſtrich*); yet a thick Muſcular Stomach, as in other Carnivorous Birds. Almoſt of an Oval ſhape; and ſmall with reſpect to the Guts: expreſſed ſomewhat too big for the Scale, (as alſo the *Gulet* and *Guts*) in the Figure. The *Pylorus* guarded with a kind of *Valve*.

The *Guts* not two yards and half long. Beſide the two *Cæca*, are three. The larger, next the Stomach: as it is, in almoſt all other Birds. About three inches and ½ over, where wideſt. The ſmaller, ſomewhat above two. The *Rectum*, the largeſt, *ſc.* about four. Much wider than even thoſe of a *Horſe*, excepting only his *Cæcum* and his *Colon*.

He hath two *Cæca*; as have almoſt all Birds. Yet here very ſmall, about ½ a foot long, but no thicker than a Womans little Finger. Here, as in all other Birds, making obtuſe Angles with the *Rectum*. So that what is ſaid of them in Mr. *Willughby's Ornithologia*, ----*Cum Inteſtino Recto angulos acutos faciunt*: was only a ſlip of that moſt accurate Pen.

The *Rectum* is ſeparated from the next above, by a Connivent *Valve*.

Of an Owle.

The *Gulet* of a young Grey-OWLE, is of an indifferent ſize. At the bottom of it, the *Echinus*. And ſomewhat more apparent, than in the *Caſowary*, but leſs than in moſt frugivorous Birds.

The Stomach, a middle Thing betwixt that of other Carnivorous Birds, and a *Gizard*, *ſc.* a plain Bag, yet in the middle ſomewhat Tendinous.

The *Guts* in length two feet and ½. Three, beſides the

Cæca.

Cæca. The first or *Amplum*, a foot long; and above ¼ of an inch broad. The *Gracile*, which reacheth to the *Cæca*, a foot and three inches; and above ¼ of an inch where narrowest. In this Gut, are 15 or 16 Contractions, like those in a *Cat*'s, but made longer.

The *Cæca*, four inches and ½ long. As the *Gizard* of a middle Nature, so these of a middle size, betwixt those of some Carnivorous, and some *Frugivorous Birds*. At their close or further ends, ¼ an inch over. But where they enter the *Rectum*, no thicker than the bigest string of a *Trebel Vial*.

The *Rectum*, three inches long; towards the *Anus*, near an inch wide; almost in the Figure of a little *Pear*. As it is also in most *Wild-Fowl*.

Of a young Cuckow.

Neither hath this Bird any Crop, nor a Gizard. But to the Gulet it is peculiar, That it hath Ten or Twelve Rows of more conspicuous Glands, which run along from the Throat to the *Echinus*.

The *Echinus*, of a ratable bigness, and more distinct from the Stomach, than in the *Owle*; being divided from it by a *Muscular Neck*. As it is also in most other Birds.

The Stomach, a plain Bag, much like to that of an *Owle*; yet somewhat thicker, and more Tendinous.

The Guts about a foot and ½ long. Three besides the *Cæca*. The first, an inch and ½ long; and near ¼ of an inch wide. The second, above a foot, and ¼th wide. The *Cæca*, as wide in the middle, as the first; and above an inch long. The *Rectum*, two inches and ½.

The *Wild-Duck* and *Teal* also, and I suppose all of this kind, and most other Birds, are without a Crop.

Of a Dunghill-Cock.

A DUNGHILL-COCK, hath one Stomach or Ventricle more than the former Birds, *&c.* a Crop: all over besprinkled with small Glands, somewhat more visible than in the Gulet.

The upper part of the *Gulet*, leading to the *Crop*, ¼ of an

inch over. But the lower part, leading from it towards the *Echinus*, very ſlender, not above ¼ wide.

The *Echinus* almoſt an Oval ſhape, being divided from the Gizard by a pretty long and ſlender Neck. And may therefore be properly call'd the *Second* or *Oval Ventricle*.

The Third, is the *Gizard*, in the place of the plain Bag or Stomach in the former Birds. 'Tis made of Six *Muſcules* and a *Cartilaginous Lining* in the greater Concave; which may be called the *Laboratory*. Thoſe four, which make the greateſt part of the *Gizard*, may be called the *Grinders*. Of extraordinary thickneſs; whereby the length of the Convex, is croſs to the length of the Concave of the *Gizard*. Yet thinner towards the Edges, ſo as to make a kind of double *Hyperbola*. In the Centre hereof on both ſides meet the *Tendons* of the ſaid *Muſcules*, continued or expanded for about ½ an inch in breadth, without any Carneous or Red *Fibers* mixed with them. From whence, they are divided, the one, which is the ſtronger, ſpread over, the other, under the *Muſcules*; into which they are alſo branched all the way, ſo as meeting in the body of the *Muſcule* they make a ſort of fine Cancellated Work, as may be ſeen better in the *Gizard* of a *Gooſe*; eſpecially in a thin ſlice hereof parboyl'd, and held up againſt a *Candle*. And in all *Gizards*, ſo as to be ſeen to run croſs, as in that of a *Pullet* in *Tab.* 29.

The Fifth *Muſcule* is that which ſtandeth between the *Echinus* and the four *Muſcules* now deſcrib'd, and may be called the *Deductor*, from the uſe hereafter mention'd. Very thin with reſpect to the former; placed at the upper end of the left edge of the *Gizard*, and ſpread a little on the ſide, but not ſo much as in the Figure. Better repreſented, *Tab.* 29.

The Sixth, is ſuch another *Muſcule*, ſtanding oppoſite to the former, *ſc.* on the right edge of the *Gizard*, and may be called the *Reductor*, as ſhall be ſhew'd why.

The four *Grinders* are ſtrengthened within, not only with a *Tendon*, but a Griſtly Lining, thicker than the outer *Tendon*, with a rough ſurface, and wrinkled into ſeveral *Tranſverſe Furrows*, from one end to the other.

The *Guts* are about a yard and ½ long. Three beſides the *Cæca*. The firſt, the ſmaller; contrary to what it is in moſt Birds. Not much above ¼ of an inch, where wideſt.

About

About two feet and ½ long. Where it joyns with the Greater, ſtands the end of the *Ductus Inteſtinalis*, accurately deſcribed (*a*) by Dr. *Walter Needham*.

(*a*) Lib. de Fœtu Formato.

The Greater, where wideſt ½ an inch. The *Rectum*, ſomewhat more. The *Cæca* near eight inches long: at the further end, above ¼ of an inch over; but where they open into the *Rectum*, no thicker than the great ſtring of a *Baſe-Viol*.

'Tis proper to the *Gallinaceous kind*, to have a great *Gizard*. That of a good big *Turkey*, near eight Ounces *Troy*. Whereas that of a *Japan Peacock* is not above two: yet the Body about half as big as that of the *Turkey*.

Not only all the *Gallinaceous kind*; but the *Duck*, and, I ſuppoſe, all of that kind, have two very long *Cæca*.

Of a Tame Pigeon.

The *Gulet* of a Tame PIGEON, near the Throat, very wide; almoſt an inch and ½ over.

The *Crop* is above three inches broad; above two, long; and an inch and ¼ deep. Not ſo diſtinct from the *Gulet*, as in the *Gallinaceous kind*; this and the *Gulet* running one into another in a direct Line. In the Belly of it, are few viſible Glands: but the Neck thence down to the *Echinus*, is curiouſly Lined with ſix or ſeven Glandulous Laces.

The *Crop* of a *Carrier-Pigeon*, is curiouſly ſhap'd; as it were Treble-Belly'd: the two outmoſt or ſide-Bellies, opening into that in the middle. The bottom and Neck whereof, are lined with ſeveral Glandulous Laces, as that of the *Tame Pigeon*.

The *Crop* of the *Cropper-Dove*, is almoſt of the ſame Figure. But the *Gulet* of a wonderful extent; when blown up lightly, above nine inches in the girth.

The *Echinus* large, and ſo the Glands therein; for the ſight of which, I have repreſented it inſide outward. Divided, as uſually, from the *Gizard* by a *Muſcular Neck*.

The *Gizard* rounder than of moſt other Birds. The *Muſcules* very thick and high in the middle, and flater at the edges. The *Deductor* ſtands at the top of it, and the *Reductor* at the bottom.

The Greater Gut a foot long, and near $\frac{1}{8}$ths of an inch where wideſt. The ſlender Gut above $\frac{1}{4}$ a yard long, and not much above $\frac{1}{16}$th of an inch over where ſmalleſt. The *Cæca* not more than $\frac{1}{4}$ of an inch long, nor thicker than a *Kniting-Pin.* Placed about an inch above the *Rectum.* The *Rectum* near $\frac{1}{4}$ of an inch wide, and an inch and $\frac{1}{4}$ long.

Of a Jackdaw.

The Gulet above $\frac{1}{4}$ an inch over at the top; $\frac{1}{8}$ at the bottom; being *Conick* all the way, as in moſt Birds.

The Gizard, above $\frac{1}{4}$ of an inch over, an inch and $\frac{1}{4}$ long, and very Tendinous. The Guts a foot and $\frac{1}{4}$ long. The firſt or Greater, $\frac{1}{4}$ of a foot; and $\frac{1}{8}$ of an inch wide. The ſmaller, Ten inches long, and ſomewhat more than $\frac{1}{16}$ of an inch over. The *Rectum,* two inches long, and above $\frac{1}{4}$ an inch over; ſhaped like the end of a *Plummers ſodering Iron.* The *Cæca,* not much above $\frac{1}{4}$ of an inch long, and very ſmall.

All along the ſlender Gut, and in part of the *Rectum,* the chief *Muſcular Fibers* are moſt curiouſly *Indented,* as in the *Mole*; eſpecialy near the *Cæca.* Not ill reſembling the Needle-Work called *Iriſh-Stitch.*

Tranſverſe to theſe *Fibers* which make the Indentures, and which are continu'd by the length of the Gut, run others of the ſame colour, round about it; one of them to every Indenture, which it divides into two equal parts.

The ſame *Indented-Work* is ſeen in moſt other ſmaller Birds, as well as here, but not every where after the ſame manner, nor in the ſame place. In the *Twite* or *Avicula Anadavadenſis,* it continues alſo very far, *ſc.* four inches above the *Cæca.* In the *Redſtart,* above three. And in the *Titlark,* as far. In the *Water-Wagtaile,* not above two and $\frac{1}{8}$; and an inch below them. In the *Solitary-Sparrow,* they are alſo very pretty below the *Cæca.* In the *Houſe-Sparrow,* they are viſible only in the ſmall Gut an inch and $\frac{1}{4}$ above the *Cæca.* In the *Chaffinch,* only in the *Rectum.*

The Gulet of a *Jay,* being contracted in the middle, is divided into two ſlender *Venters,* as the Guts of ſome Animals. So alſo is that of a *Japan Peacock.*

The *Rectum* of a *Jay,* hath ſeveral *Muſcular Plates,* or

Valvulæ

Valvulæ Conniventss placed at the distance of ½ or ⅓ of an inch.

Of a Starling.

The Gulet exceedeth not ½ an inch in width. The *Echinus* small, with respect to the other parts. The Gizard, mean; near an oval shape: the *Reductor* conspicuous. Next to the Gizard stands the slender Gut, and the Greater follows; as in the *Dunghill-Cock:* contrary to the order kept in most other Birds. Where they meet,there is a remarquable Contraction. The Indentures run along the lower half of the Ample Gut; with some *Undulations* over-against the *Cæca.*

Of a Yellowhammer.

The *Gulet*, at top is dilated into a *Crop* an inch and ½ long, and above ½ an inch over. The *Axis* whereof, as in a *Pigeon*, is the same with that of the lower part of the *Gulet*, and not *transverse*, as in the *Gallinaceous kind*. Curiously Laced with 16 or 18 Rows of Glands, about half an inch long. The *Green-Finch* hath a *Crop* of the same shape: but the Glands sprinkled all over it; very small,yet distinct.

The *Echinus* very small; not above ½ of an inch long, and as broad.

The *Gizard* above ½ an inch long, almost ½ an inch broad; thin edg'd, but high in the middle; very strong and Tendinous. And it may here be observ'd, That although the *Gallinaceous kind* have a very large *Gizard:* yet in many other Birds, even of the smallest sort, the *Gizard*, with respect to its bulk, is altogether as strong: that is to say, the *Muscules*, with respect to their length and breadth, are as Thick, and their *Tendons* answerable; as not only in this Bird, but the *House-Sparrow*, *Linnet*, *Titlark*, and many more. And with respect to the Body, some small Birds have also a great *Gizard*, as a *Chaffinch*, which hath one four times as big as that of a *Linet.*

The *Guts* about eight inches long. The Greater, three; and above ½ over where widest. The smaller, about three and ½; and above ⅛th wide. The *Rectum* an inch and ½ long, shaped like a *Pear*; ⅛ths over in its widest place: very great. The *Cæca* stand ¼ of an inch, below its smaller end: not above ⅛th of an inch long. The

The Indentures continu'd about ¼ of an inch from the *Cæca* both upward and downward.

The Annular, or rather ſpiral *Fibers*, in the *Rectum* more apparent.

Of a Bull-Finch.

A very different Bird from all the *Finches*. For firſt he hath a Lateral *Crop*. 'Tis above ½ an inch broad, and about ½ long. The *Gulet*, between the *Crop* and the *Echinus*, near ⅛th over. The *Echinus* near ½ an inch long, and above ¼ broad: Thrice as big, as that of a *Martlets*, *Swallows*, or *Sparrows*. The *Gizard* near ½ an inch broad; broader than long.

The *Guts* no leſs than ½ a yard and an inch long: much beyond what they are in any of the *Finches*. The Greater, a foot and ½ an inch; and ⅛th wide. The ſmaller five inches and ½; and ⅛th in width. The *Cæca*, at the end of the *Rectum*, not above ⅛th of an inch long. The *Rectum*, near an inch: and where wideſt, almoſt ¼ an inch. Figur'd like a *Pear*, as in moſt other Birds.

The whole ſmaller *Gut*, and about five inches of the greater, very curiouſly Indented. And the Indentures deeper in the latter.

A Young Wryneck.

Hath no *Crop*, and but a ſmall *Gulet*; not much above ¼ of an inch, where broadeſt. The *Echinus* of a prodigious bigneſs; near an inch and ½ long, and ½ an inch over. Much bigger than in a *Jackdaw*, that is yet near ſix times as big as this Bird. I found it full of meat. The *Gizard* of a mean ſize; ½ an inch long, and ⅛ths broad. The *Guts* about eight inches. The greater, near two; and near ¼ wide. The next, four; and ſomewhat more than ⅛th broad. The *Rectum*, above two and ½; and ⅛ths, where wideſt. The ſpiral *Fibers* herein more viſible. He hath no *Cæca*. The Indentures not ſo regular, as in moſt Birds, and but few.

As this Bird hath no *Cæca*; ſo the *White-Throat*, hath no ſmall Gut.

Of

Of a Bunting.

Hath no *Crop.* The *Gulet* from end to end; above a ½ of an inch over where ſlendereſt. The *Echinus* ½ths long, and as broad. The Gizard large, about ½ of an inch ſquare. The Guts, ratably, extream, ſhort, not above nine inches long. The larger, four inches, and ½ wide. The next, as long; and ½th over. The *Rectum*, about an inch; and not very wide. The *Cæca* not above ½th. The Indentures continu'd from the *Cæca* upward, three inches, but leſs viſibly. Downward or towards the *Anus*, a ½ of an inch, very curious.

Of a Reed-Sparrow.

The *Gulet*, *Echinus*, *Gizard*, and *Guts* of this Bird, are all much like in ſhape to thoſe of a *Bunting*: and ratably, leſs.

Of a Houſe-Swallow.

The *Gulet* above ½ of an inch over next the Throat; next the *Echinus*, ½th. Laced with eight or nine Rows of Glands by the length, as in a *Pigeon*. He hath no *Crop*. The *Echinus*, above ½ of an inch long, and as wide. The *Gizard* near ½ an inch long; and ½ths broad. The Guts about five inches long. For the bigneſs, ſtrong and muſcular. The Indentures, for the length of an inch and ½, very fine; eſpecially, when the Guts are blown up. The *Cæca* ½th of an inch. Between the Indented Gut and the *Rectum*, a great Contraction: but is omitted in the Figure.

In a *Robin-Redbreaſt*; the Guts are more Muſcular, than in any ſmall Bird. The *Cæca*, faſten'd, not as uſually either on the Neck of the *Rectum*, or where that and the ſmaller Gut meet; but ½ an inch above the end of the ſmaller Gut. None of them have any viſible Indentures.

CHAP.

CHAP. IX.

Of the Uſes of theſe Parts.

THe *Gulets* of Birds, are bigger or leſs, according to the quantity they ſwallow. More or leſs Glandulous, according to the Solidity, or the Dryneſs of their Meat. And with reſpect to the ſame, the Figure thereof is more ſimple; or expanded into a *Crop*; by which it is retain'd a longer time, before it further deſcends. And according as leſs or more Time is requir'd, the *Crop* is made ſo, as either to have its *Axis*, the ſame with that of the *Gulet*; or elſe to ſtand Collateral, and ſo open *tranſverſly* into it.

After the Meat hath been ſufficiently macerated there, it deſcends into the *Echinus*, for a ſecond preparation. So much the more thorowly made here, becauſe by far greater Glands. And what was done before to all at once, is here in, to ſmaller parcels. This Part in ſome ſort anſwering to the *Crop*, as the *Reticulum*, in a *Sheep*, to the *Panch*. Withall it ſhould ſeem, That when the *Gizard* is either over loaded, or the Meat not enough prepar'd; 'tis thence returned back to this Part, (as the *Reticulum* alſo ſubſerves the *Omaſus*) till It and the *Gizard* are more ready, one for the other. For which end alſo the *Muſcular Neck* below the *Echinus*, ſerves as a Sphincter to purſe it up.

At length it deſcendeth into the Third *Ventricle*. Either Membranous, as in moſt *Carnivorous Birds*; where the Meat is concocted as in a Man. Or ſomewhat Tendinous, as in an *Owle*; as if it were made indifferently for Fleſh, or other Meat, as he could meet with either. Or moſt Thick and Tendinous, called *The Gizard*; wherein the Meat, as in a Mill, is ground to pieces, and thence preſſed by degrees into the Guts in the form of a *Pulp*. For which purpoſe, the *Deductor* ſerves to deliver the Meat from the *Echinus* to the *Laboratory*; as a *Hopper* to a *Mill*. The four Grinders or chief Operators, as the *Millſtones*: Partly, as they are extraordinary Thick, and made with double Tendons; whereby they are conſtring'd with the greater force. And partly, as their Tendons ſtand high in the centre, ſo as to be *arched*: for ſo, every time the Tendons are contracted, they muſt needs

needs make a ſhallower Arch, and ſo force the inſides of the Grinders cloſer together. And as the *Millſtones* are peck'd and cut with ſmall Gutters,leaſt their force ſhould be evaded: ſo the Griſtly Lining of the Gizard is all over rough, and gather'd into anſwerable Furrows. And becauſe the forceable motion of the Grinders, muſt needs work the Meat from under them: as therefore in ſome *Mills* there is one attends ſtill to turn the Griſt under the Stone; ſo the *Reductor* here, to deliver it back to the Grinders, and ſo over and over, till it be ſufficiently elaborated for the Guts.

And as the ſtrong and continual motion of all theſe *Muſcules*,is taught us from their ſtructure,ſo likewiſe from their red colour, which eſpecially in the Grinders is intenſe. Hence in a *Fiſh*, the *Muſcules* which move the *Fins* are uſually Red, although the reſt of the Fleſh is very white: And ſo the Leg of a *Domeſtick Fowl*. Whereas the Wings alſo of a *Wild Fowl*, are of the ſame colour. So likewiſe the Fleſh of a driven *Calf*, or of a *Hare*, though that of a *Coney* be white. And that which comes nearer, the Heart in all Creatures, having the like continual motion, is of a Red Colour.

The Guts are of different length and bigneſs, not always proportionable to that of the Bird, but the nature of the Meat. So thoſe of a *Caſowary*, though it be neceſſary, that they ſhould contain Meat enough for ſo great a Body: yet not, that the Meat, which is very nutritive,ſhould make any long voyage. Yet is it needful there ſhould be a *Connivent Valve* before the *Rectum*, for the guarding of ſo open a paſſage. And ſo with Variety in other Birds, according as they feed on *Worms*, *Seeds*, *Fruits*, *Flys*, or *Shell'd Inſects*,requiring a longer, or more open paſſage, for their more deliberate, or ſafer Tranſmiſſion to the *Anus*.

The *Indentures* alſo ſeem to be made, and with variety, to the ſame Intent: *ſc.* That the Guts hereby receiving the greater Contraction and Dilatation,may ſo much the more forceably detrude the Meat, or more eaſily give way to it; as it is ſofter, or mixed with Shells, Stones and the like.

The *Cæca*,eſpecially where large, and made for a further Concoction of the Meat; for the better Retention hereof, where they open into the *Rectum*, are very ſtraight. And for the ſame reaſon, alſo thinner and leſs *Muſcular* than the

other Guts: that so the Meat therein may lie the more quiet.

The ampliation of the *Rectum*, chiefly in *Wild Fowls*, amongst other Reasons, is, I suppose, That the Dung lying there in good quantity, may be as a *Counter-poise* to the Head, to keep it up in flying.

CHAP. X.

Of the Stomachs and Guts of FISHES.

IN so many as I have open'd, two Things are more generally observable, *viz.* That many of them have no Stomach, that is one that is not Belly'd; as in the *Salmon*, *Jack*, *Tench*, *Barble*, *Breme:* or very little, as in the *Place*. And many more, instead of One *Cæcum*, as in some *Quadrupeds*; or Two, as in most Birds; have three or four, as the *Pearch*; nine or ten, as the *Rochet*; many more, as the *Trout*, above thirty; the *Whiting*, above forty; the *Salmon* many more.

The Stomach of a *Place* shaped almost like the *Echinus* of a Bird. Bounded at the bottom with a *Connivent Valve*. The Guts two only. The upper end of the first, hath two little extuberant Parts, the use whereof may be answerable to one use of the *Cæcum*, *&c.* To divert the Meat, left upon any Inverted Motion of the Gut, it should regurgitate into the Stomach, or strain the *Valve*. The bottom of this Gut is separated from the *Rectum*, by another pretty *Connivent Valve:* both which, and the visible Texture of the *Fibers*, are shewed in the last *Table*.

The Stomach of a *Salmon* is only like a wide Gut. He hath about fourscore *Cæca*, hanging on the great Gut, almost like the *Mane* upon the *Neck* of a *Horse*. Being ty'd altogether with small Vessels, and the Vessels hid with Fat; they have been mistaken by some for a *Pancreas*. The *Rectum* is guarded with about thirty *Annular Valves*.

The *Whiting* hath a large Stomach, which is a distinct Bag or Belly. And numerous *Cæca*, not standing as in the *Salmon*, but all in a Ruck. The Stomach and Guts of a *Cod* are very like.

Some

Some NOTES upon the TABLES.

TAb. 1. Deſcrib'd, *p.* 9, 14, 19, 27. The Stone only, drawn after the life.

Tab. 2. Deſc. *p.* 11, 13, 21, 24, 25, 29. All but the Ram's Horns, after the life.

Tab. 3. Deſc. *p.* 36, 38.

Tab. 4. Deſc. *p.* 42, 50.

Tab. 5. Deſc. *p.* 63, 64, 67.

Tab. 6. Deſc. *p.* 78, 80. The double Egg drawn after the life.

Tab. 7. Deſc. *p.* 87, 104, 108, 110, 113, & 114.

Tab. 8. D. *p.* 115, 117, 121, 123.

Tab. 9. D. *p.* 126, 127, 128.

Tab. 10. D. *p.* 130, 131.

Tab. 11. D. *p.* 133, 135, 136, 137, 140.

Tab. 12. D. *p.* 140, 141, 142, *line* 9. *p.* 146, 148. *line* 1. *p.* 149.

Tab. 13. D. *p.* 154. *line* 13. *p.* 156, 158, 161, 163, 165, 166.

Tab. 14. D. *p.* 188. *line* 13, 23, & 30. *p.* 189, 190. *line* 18, 33, & 40, 191.

Tab. 15. D. *p.* 197, 198.

Tab. 16. D. *p.* 201, 202, 203, 204, 205, 206.

Tab. 17. D. *p.* 185, 216, 229.

Tab. 18. D. *p.* 233, 243, *line* 22, *p.* 244. *line* 37. *p.* 245, *line* 33.

Tab. 19. D. *p.* 254, 255, 256. *line* 33, 263. *line* 35. *p.* 264. *line* 3, & 19.

Tab. 20. D. *p.* 267, 268, 273, 276, 291, 297, 302, 303.

Tab. 21. D. *p.* 305, 306, 307. *line* 23. *p.* 308, 312.

Tab. 22. D. *p.* 315, 323, 326. *line* 34. *p.* 329, 330.

The reſt belong to the *Anatomical Part.*

Tab. 23. In which the Stomach and Guts of a *Fox*, are ſuppoſed to be turned inſide outward, to ſhew the Glands.

Tab. 24. In which all the Guts are ſuppoſed to be inverted, to ſhew their Glands and inward Structure.

Tab. 25. Where ſome Faults are to be rectify'd by the Deſcriptions. To which the *Reader* is deſired always to have regard.

Tab. 26. In which the Stomach and Guts of a Sheep ſuppoſed to be Inſide outward.

Tab. 27. In which the width of the *Caſowary's* Guts is ſomewhat above the *Scale.*

Tab. 28. In which the *Gizard* of the *Dunghill-Cock* is not ſo well drawn, as in the following *Table.* The *Pigeons* Crop drawn Inſide outward, to ſhew the Glands both in that, and in the *Echinus.*

FINIS.

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