

Pharmaco-botanologia: or, an alphabetical and classical dissertation on all the British indigenous and garden plants of the New London dispensatory ... Decad. II / [Patrick Blair].

Contributors

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PHARMACO-BOTANOLOGIA:

O R,

An Alphabetical and Clasfical

DISSERTATION

ON ALL THE

British Indigenous and Garden Plants

OF THE

New *London* DISPENSATORY.

In which

Their GENERA, SPECIES, *Characteristick* and *Distinctive* NOTES are Methodically described; the Botanical TERMS of ART explained; their *Virtues*, *Uses*, and *Shop-Preparations* declared.

With many CURIOUS and USEFUL REMARKS from proper Observation.

DECAD II.

By PATRICK BLAIR, M. D. of *Boston* in *Lincolnshire*, and Fellow of the ROYAL SOCIETY.

Miseri mortales qui Naturam ejusque artificium Abdunt, ubique diligentia patens, & Amplissimos solis radios Nubecula obfuscant.

Barth. Epist. ad Lyserum.

L O N D O N:

Printed for G. STRAHAN at the *Golden Ball* over-against the *Royal Exchange* in *Cornhill*; W. and J. INNYS at the West End of *St. Paul's Church-Yard*; and W. MEARS at the *Lamb* without *Temple-Bar*. M DCC XXIV.

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THE
P R E F A C E
TO THE
Second D E C A D.



THE Advantages of the Title of Dissertation given to this Treatise, and of the Manner of distributing the Plants in it, are evident in this Second Decad. For I am not confin'd to the bare Rules of a Botanical and Pharmaceutical History, by only giving the synonymous Names, the Description, Time of flowering, and Place of growing of the Plants, nor to a Recital of the ordinary Virtues, Uses, and Shop Preparations, but have the Liberty of adding what else concerns them, such as an Improvement of the different Sexes, their Generation, Vegetation, Structure and Nourishment, with the Circulation of the Sap, &c. And as to the Order of ranging them, I have chosen not to do it purely alphabetically, nor strictly methodically; for I add the Con-Geners, Brethren of the same Family, to whatever the Alphabet introduces, which is the reason that those two Decads have not yet quite exhausted the first Letter; this perhaps may make the unwary Reader afraid of the Work's being drawn to too great a Length, as indeed it would, should every Letter of the Alphabet take up as much room as the first; but if he considers how many Plants are already described, which, according to the Course of the Alphabet, must have been reserved for some of the subsequent Decads, how many Classes are explained, and how many general Ideas of Virtues are given, he will easily conclude that the Length of the two or three first Decads will leave less to be said upon each Particular hereafter, and consequently every Decad must contain a greater Number of Plants than at present.

I begin

The P R E F A C E.

I begin this Decad with Alchymilla, a particular Kind of apetalous Flowers. Alkekengi introduces the Bacciferous Tribe: as does Alliaria the Cross-like tetrapetalous Tribe. Allium serves to explain the Grass-leav'd bulbous rooted Plants, and Aloe gives a large Dissertation on the Structure and Manner of Nourishment of the succulent Plants. The Rosaceous Flowers come in with Alfine, where the Manner of Operation of moderate Astringents is explained. Amaranthus shews a doubtful Plant, whether polypetalous or apetalous, and discourses further on Astringents. Ammi and Amomum put me in mind of giving a general Idea of the Umbelliferous Tribe, which are numerous in this and the next Decad, and gives me an Opportunity of explaining some Technical Words, useful to be known. Amoris Pomum leads further into the Knowledge of the Bacciferous Plants, where the Solanum Tribe is discoursed upon, with their Virtues, some of which are more innocent, others more noxious; where is a memorable Instance of the Solanum Lethale, which had such Effects as to produce a signal Victory, and save a whole Kingdom from being conquer'd. The esculent Fruit Trees are brought in with Amygdalus, where the Vegetation of the Stone Fruit Trees in general is discoursed of. I conclude with explaining the Difference between the Anagallis and Veronica, and in the Veronica aquat. five Becabunga, is a Discourse of the Operation of the Antiscorbuticks in the Body.

E R R A T A in the first Decad.

PREFACE, Page xi. Line 5. read *to be known*. p. xiv. l. 14. r. *nothing*. Book, p. 6. l. 32. r. *that*. ib. l. 36. make a Period after *Consistence*. After *Prescriptions* a Colon. p. 8. l. 23. r. *teret*. l. 31. r. *Mas*. p. 11. l. 18. r. *redolens*. p. 17. l. 18. r. *grows in*. l. 31. for *Wast* r. *Coast*. p. 20. l. 26. r. *Goats*. p. 27. place the *Acetosa prat.* before the *arv. lanc.* the first Description belonging to the *Pratensis*. p. 29. l. 16. for *striped* r. *striated*. p. 37. l. 25. r. *Fellow* of the. p. 37. l. 25. r. *undivided*.

E R R A T A in this Decad.

PAGE 54. l. 30. r. *vulg.*



PHARMACO-BOTANOLOGIA:

OR, A

TREATISE

OF

DISPENSATORY PLANTS,

Alphabetically and Classically disposed.

DECAD II.

I. ALCHYMILLA.



1. *Alchymilla* vulg. C. B. P. 319. Tournef. Instit. 508. *perennis viridis* Maj. fol. ex *Luteo virescentibus* Moris. Hist. 2. 195. *Alchymilla* Raij Hist. 208. *Pes Leonis* sive *Alchymilla*, J. B. 2. 17. 398. 1. Boer. Ind. 202. Lady's Mantle or Lyons Paw.
2. *Alchymilla perennis incana argentea*, seu *sericea satinum* provocans, Moris. Hist. *Alpina Quinquifolij folio subtus argenteo* Tournef. *Tormentilla Alpina folio sericeo*, C. B. P. 326. *Alchymilla Pentaphylla*. Raij Hist. 209. *Pentaphyllum* seu potius *Heptaphyllum argenteum flore muscoso*, J. B. 2. 398. f. *Satin* or *Silver-leav'd Lady's Mantle*.
3. *Alchy-*

3. *Alchymilla minima montana* Column. p. 1. 146. Tourn. *Annua minima hirsuta folijs inferne candicantibus* Moris. Hist. *Charophyllo nonnihil similis*, C. B. 152. *Percepier Anglorum quibusdam*, J. B. 3. 27. 74. *Percepier Anglorum* Raij Hist. Parsleypiart.

The T R I B E.

This is the second of the *apetalous* Class in this Catalogue, it swerves from *Tournefort's* general Rule, by containing more than one Seed in the Seed-vessel, as himself owns, neither do's the *Perianthium* or Cover-Flower become the Seed-vessel.

The Description.

1. The first has a hard, black, fibrous *Root*, bottom *Leaves* at first appearance folded up like the Umbrella of Women, afterwards stretch'd forth upon long *Pedicles*, dispos'd in a Circle round like those of *Mallows*, of a yellow Green, more finely indented or notch'd, with for the most part seven *Veins* arising from the Center, and so many superficial Lobes, sometimes half round, at other times more pointed, especially those on the *Flowering-stalk*, which being round, thick, hairy, not above one Foot long, weak and lying on the Ground, is thick beset with gradually lesser *Leaves*, upon shorter *Foot-stalks* not much branch'd. The *Leaves* are seldom wet, but are bedew'd with drops of Water, as if the Surface were Oily. The *Flowering-stalk* and *Leaves* are still more yellowish as they ascend, supporting small herbaceous *Flowers* upon small *Foot-stalks*, with an inverse conical *Empalement*, enlarg'd into four larger and four lesser pointed alternate Segments (so as the one would seem to be the Coverflower to the other) with a short hollow Pointal, surrounded by four short Chives, and yellow Summits. The Seed-vessel which was never a part of the Flower, contains for the most part two Seeds.

2. The Second is in all Respects less than the other; its flowering Stem much smaller; its *Leaves* divided to the Center into five or seven blunt Segments, dark Green above, and of a Sattin or silky Silver colour below.

3. *Parsleypiart* is a small, low, annual Plant, has finely notch't, triply divided, alternate *Leaves*, narrow towards the *Stalk*, and broad at the End, somewhat lighter Green below, apetalous *Flowers*, with an *Empalement* only enlarg'd into four Segments.

The first grows frequently in dry Meadows, and Pastures; flowers early in the Spring, when its obvious by its yellow Green before the *Leaves* are at their full Bigness. The *Silver-leaf'd* is more rare; it seems to

to be a mountainous Plant, wash'd down to the low Countries by the rapid Winter Streams; for its often found in dry Water-Courses; it grows according to Mr. Ray in Rocks, not far from *Hurstwater* near *Perreth* in *Westmorland*, also in *Yorkshire*. I found it in a dry Water-course in the Wood of *Methuen* near *Perth*; also in the same Soil in *Athol* near the River *Tay* in *Scotland*, for the most part along with the *British Sorrel*. Being an agreeable, low, delicate Plant, its often transplanted and cultivated in Gardens.

Parsleypiart grows in dry Grounds, and pasture Fields, also among Corn.

Virtues and Uses.

Lady's Mantle is by all esteem'd a potent Astringent. Its therefore a great Vulnerary, by curbing the immoderate Efflux of the *Sanies*, and watrish Humours in some Wounds, and cacoethes Ulcers, and disposing them to a better Digestion, by incrassating the purulent Matter in Fomentations; when it also prevents the rising of proud Flesh. The Juice or dry'd Leaves in a Decoction, curbs the Milk, and firms the too relax'd Fibers in the Breasts of Women. *Simon Pauli* attributes other Virtues to it, as in the Margent, * from which as from the Figure of the Leaves its probably called the *Lady's Mantle*. Inwardly giv'n in Infusions and Decoctions, it stops the immoderate Flux of the *Menses* and *Fluor albus*; also its prescrib'd in vulnerary Potions for inward Bruises, spitting of Blood, bloody and common Flux. The Leaves are only in Use, and the dry'd Powder may be inwardly giv'n in the aforesaid Cases, it scarce enters any Shop-Preparations. The *Silver-leav'd* has the same Virtues, as also the *Parsleypiart* from the Taste, though it be generally esteem'd a potent Diuretick, and is either giv'n in boil'd Sallads, or eat as a Pickle for provoking of Urine, and expelling of the Stone, from whence 'tis call'd *Parsley Breakstone*; but I suppose this Conceit has proceeded from some Resemblance it has to *Parsley*, which is noted for these Virtues.

* Nonnullæ deflorata pudicitia virginum quæ ubi jugum passæ sunt solerter norunt Decocto *Alchymilla* *εὐνοχρεία* ac obsignata quasi natura mentiri illibatam castimoniam & floræ virginittatis. Aq. etiam *Alchymilla* distillata flaccidas mammas imbuunt ut iis pristinum virginale decus iterum restituant talesve hac arte reddant, S. Pauli Quadripartit. Bot. p. 17.

II. *Alkekengi*.

Alkekengi Offic. Tournef. Instit. 151. *Solanum Vesicarium* Dod. pempt. 454. C. B. P. 166. *Solanum Halicacabum* vulgare, J. B. 3. 34. 609. Raij Hist. 681. *Solanum Vesicarium vulgatius repens fructu & vesica rubro*, Moris. Hist. 3. 526. Boer. Ind. 2. 66. Winter Cherry.

The *T R I B E*.

This is the first *Bacciferous* or *Berrybearing* Plant in this Catalogue, so class'd by all Authors, whether they more especially have a regard to the *Flower* or *Fruit*; its near of kin to the *Nightshades*, with a monopetalous quinquifid Flower, and monophyllous quinquifid Empalement.

The *Description*.

It has a jointed very creeping *Root*, sending forth small *Fibers*; round, reddish, jointed, marrowy, upright *Stalks*, one or two Foot high; *Leaves* by Pairs, upon long Foot-stalks, from the Joints larger and darker, but of the same Figure with those of the common *Nightshade*, with even, not notch'd, Edges. The Flowers upon long, somewhat hairy, *Footstalks*, white, large, monopetalous, and open, divided into five pointed Segments, with a small, long Pointal, and a round Button; closely surrounded by five *Chives* with oblong yellow *Summits*. The loose *Empalement* is divided into five Segments. As the Flower decays, it is extended and puff'd up like a Bladder stretch'd beyond, and enclosing the Fruit, which being first Green, becomes afterwards a round, pulpy, pale-red Berry, hanging downward, about the bigness of a small Cherry, with many flat Seeds; it flowers in *July* and *August*, and ripens the Fruit in *September*. Its only cultivated in the *British* Gardens, but is a Native of *France*.

The *Virtues* and *Uses*.

The *Berries* are chiefly us'd, and are kept dry in the Shops, they are esteem'd potent Diureticks, and recommended for allaying the Acrimony of Urine, and making a plentiful Evacuation of it. They open the Pores, and reserate Obstructions, and therefore are good for the *Jaundice*, and other Diseases of the *Liver* and *Gall-Bladder*, proceeding from the want of a due Percolation of gross and viscid Humours in the minute
Glans

Glands, there by its attenating Parts, it also causes a plentiful evacuation of Waters in the *Dropsy*. *Tournefort* tells us, the Leaves are acrid and bitter, though they do not render the blew Paper so red as the Berries. An Infusion of the Leaves in Wine, may be drank in Hydropical Cases, and by Persons subject to the Gravel, an Emulsion may be made of the Seeds, or the green Juice may be drank in the forenam'd Cases; but the Syrup is the more advisable, because of the Acrimony of the crude Juice: In a Word, it seems to partake of the Virtues of most of the *Nightshades*, to which by its Characters its near of Kin, as may be seen when we come to treat of them. The Shop Preparations are *Trochisc. Alkekengi*, it enters the *Syr. de Cichor. cum Rheo.*

III. *Alliaria*.

Alliaria C. B. P. 110. J. B. 2. 21. 883. Raij Hist. 792. *Hesperis Allium redolens* Moris Hist. 2. 252. Tournef. Instit. 222. Boer. Ind. 2. 17. Sauce alone, or Jack by the Hedge.

The *T R I B E*.

Jack by the Hedge being the first that introduces the *Tetrapetalous* Class, I shall insist a little upon its constituent Characters. The *Tetrapetalous* Plants are of two kinds, each having *Siliculous* and *Siliquous* Fruits; the one with plain and similar Petals, the other Dissimilar, of different Shapes and Figures. The one called *Cruciformes* or *Cross-like* by *Tournefort*, because the Petals are plac'd two and two opposite to each other in form of a Cross; the other called *Papilionaceous* by *Cordus* a German, about two hundred Years ago, because of their resemblance to a Butterfly, of which hereafter.

These *Cross-like* Flowers of which we now treat, are variously to be considered. I. They are for the most part Annuals in their Duration, some Biennials, but few Perennials, except some of the Waterkind. II. Their Texture is for the most part soft and tender, the *Stalks* herbaceous, seldom or never Woody, frequently hollow, sometimes gross and thick, very pithy and marrowy. III. The *Leaves* frequently much larger in proportion to the bulk of the Plant, or bigness of the *Flower*, always Alternate, or quite surrounding the Stalk, seldom or never arising by Pairs from jointed Stalks. IV. The *Flowers* small in proportion to the Plant, chiefly indeterminately and irregularly plac'd in a long Spike upon the upper part of the Stalk and Branches, and but seldom in irregular Umbells or Tufts; the four Petals chiefly of a white, more rarely of a blewish or red, but frequently of a yellow Colour, falling off when the Fruit begins to en-

P

crease

crease along with a four Leav'd, for the most part oblong Empalement. V. The Pointal surrounded by five or six Chives becomes afterwards 1. a Fruit, not a Pod, but bicapsular, containing one single Seed; 2. a Sili- culous Pod, short, small or round, and bicapsular. 3. A filiquous and bicapsular Pod; 4. A Pod filiquous and articulated or jointed; and 5. an unicapular Pod. VI. Their Taste is frequently waterish and insi- pid, seldom bitterish, for the most part hot, especially the Waterkind. Those with carnos Roots are waterish tasted, mixed with a more or less penetrating hotness. VII. The Seeds are small, round, hot, bitterish, and very Oily. VIII. They are generally good attenuaters, reseraters of Obstruction, Diuretick, Lithonriptick, Antiscorbutick. The Olera- ceous Kinds very Nutritive, very few consisting of gross and astringent Particles.

The Description.

Alliaria is an annual freight Plant, arising one or two Foot high, with broad, light-green Leaves, notch'd in the Edges, larger and more round towards the Bottom; less and more Pointed, upon small Foot-stalks in the Ascent; small white tetrapetalous Flowers, to which succeed upon the top of the Stalk and Branches, small, oblong, bicapsular Pods with small round Seeds. The whole Plant has a Garlick Taste and Smell, from whence it has its Name. It flowers in *April* and *May*, and ripens the Seed in *June*, and grows at the sides of Ditches and Hedges.

Virtues.

The tender Leaves makes a good Pickle, its a good attenuater and provoker of Urine; the dry'd Leaves are said to be good against Poi- son: it cuts and incides gross and viscid Humours, its believ'd to have the same Virtues with *Scordium*, but more mild; its good in the Collick and Nephritick Pains. The Juice or Powder externally apply'd, cleanses sor- did and putrid Ulcers. 'Tis seldom us'd in the Shops.

IV. *Allium*.

Allium Sativum, C. B. P. 73. Tournef. Instit. 383. vulgu & *Sativum*, J. B. 2. 19. 554. Raij Hist. 1125. *Sativum porraceis foliis*, Moris Hist. 2. 387. common Garlick.

V. *Cepa*.

Cepa vulg. C. B. P. 71. Moris Hist. 2. 383. Tournef. Instit. 382. *Cape sine Cepa rubra & alba rotunda*, J. B. 2. 19. 547. Raij Hist. 1115. Dod pempt. 687. The Onion.

VI. *Porrum*.

Porrum Commune capitatum, C. B. 72. Tournef. *Porrum* J. B. 2. 19. 551. Moris Hist. 2. 390. Dod. pempt. 688. Raij Hist. 1126. common Leek.

The *T R I B E*.

Here is introduc'd a new Genus in several Respects, 1. They are Monocotyledones in respect of their Seed-Leaf, which is single. 2. They are Bulbosæ in regard to their Roots, and that Twofold; *Squamosæ nucleatæ*, and *Squamosæ non nucleatæ*, that is, the Garlick Root consists of several small Bulbs, each involv'd in a common Coat, and consisting of several proper Scales, each surrounding the other to the Center, whence the common Germen or Bud proceeds, and several Bulbs are incloas'd within one common Coat or Membrane. The Onion and Leek Roots are said to be *Squamosæ & Tunicatæ*, when one single Bulb consists of several spherical Scales to the Center, and surrounded with one Membrane, without any other Bulbs along with it. 3. In respect of their *Leaves* they are *Graminifoliæ* Grass-leav'd, arising broad from the Root, and still tapering towards the Point, either broad or narrow, and flat, or hollow and Fistulous. 4. In respect of their Flower, they are called by Morison *Hexapetalæ Tricapsulares*, in which he is followed by Herman and Volkhammer: and by Tournefort *Flores Liliacei*. These his *Lilly-flowers* he defines thus; that they are Flowers which are either Hexapetalous or Monopetalous, divided into six Segments, but whatever the Fashion of the Flower be (for some are large, some less, some Monopetalous, others Hexapetalous, and some Tripetalous) its all one to him if the Fruit be Tricapsular. Thus far I thought fit to give an Account of the *Bulbous*, *Grass-leav'd* and *Lilly-flower'd* Tribe, that I may refer to this Place, whatever may occur of these Tribes hereafter.

The *Description*.

IV. *Garlick* has a compound *Root*, consisting of several small Bulbs, included within one common *Tunicle* or *Membrane*, sending forth several small,

Small, round, white Threads from the lower Parts, by which it receives the Nourishment; these single Bulbs being planted early in the Spring, send forth several small, narrow, darkgreen, grassy *Leaves*, Concave without, and Convex within, or longitudinally Convex, and hollow like a Sword-blade, and sharp Pointed: Amidst these in the Autumn (or perhaps not till next Year upon the planting of the whole Root, without separating of the Bulbs) arises a small, round, smooth, straight *flowering Stem*, one or two Foot high, bearing on the Top a compact Globe, or Tuft of Flowers; first involv'd in a common Tunicle, which bursting as the Tuft increases, sends forth several little hexapetalous Flowers, upon very small, short Pedicles; the Petals whitish, or pale Blew pointed with six Chives, and a Pointal in the Middle, which afterwards becomes a three-square and tricapsular Fruit full of Seeds. *Boerhave* rightly observes, that these are for the most part Male-flowers, without any succeeding Fruit; but that there are several carnosus Bulbs in the Interstices, betwixt the Pedicles of the Flowers, and close adherent to the top of the Stalk, which being committed to the Ground, encreases as other bulbs of Roots do; he makes a doubt, whether these Bulbs are Impregnated by the Male-dust, as the Seed in Seed-vessels are; but I am of Opinion, these are truly Roots, and not Seeds, for its plain, that these Bulbs on the top of the Stalk do emit small Pedicles, which support the Male-flowers; and the reason why the Flowers are not Hermaphrodite, is, because there is so much Nourishment bestow'd upon the Bulbs, that the Pointal in the center of the Flower is starv'd, and the Fruit cannot swell so as to perfect the Seed. This happens to other Monocotyledones, as well as bulbous Plants. I have seen in the bosom of the Leaf, betwixt it and the Stalk in the Orange-lilly, several of these Bulbs burst forth, which when committed to the Ground, push'd forth small Fibers also, and became Roots. I have also observ'd in a very rainy Harvest, when they did not dare to cut down the Corns for fear of rotting on the Ground, that the ripe Wheat still on the top of the grown Stalk, has sprung forth after the same manner as Barley does in Malting; because of too great a supply of Moisture, we shall observe more of this when we come to *Arthanita*. *Garlick* Roots should be taken up in the Autumn, and the small Bulbs planted in the Spring, for if it remain in the Ground all the Winter, each of the Bulbs will spring forth, and so the Roots which are only in use, will be of no use at all.

V. The *Onion* grows like the former, its Root only consists of one Bulb, which sometimes encreases to a pretty bigness. The Leaves are Fistulous, which is peculiar to this Plant. It do's not flower the first Year, but in order to render the Root (which grows superficially in the Ground) the bigger they trample down the Leaves, and in the Autumn take up the Root,

Root, which being planted deeper, and near a Wall, in fat Ground next Spring, it then emits an hollow turbinated flowering Stem, supporting an umbel or tuft of Flowers like the former, but few or none of those Bulbs upon the top of the Stalk. The tricapsular Seed-vessel is perfected in September.

VI. The *Leek* grows like the former, the small white *Fibers* from the lower part of the *Root* are stronger, and more numerous. The *Root* a little enlarg'd below, is rather Cylindrical than *Bulbous*; the *Leaves* are much broader than those of *Garlick*, more blewish, flat, longitudinally Sulcated, or ridg'd, and pointed like those called hollow Sword-blades. Its of a flower growth than any of the former, it do's not require to be taken up in the Autumn, but remaining in the Ground, is only fit for Kitchen uses. The second Summer it flowers, but has not Bulbs so frequently interspers'd upon the top of the Stalk as the *Garlick*, its only manur'd in Kitchen Gardens.

Virtues and Uses.

Manur'd *Garlick* has an high Scent, and strong Taste, consisting of penetrating, subtile Particles; upon which account 'tis a potent *Attenuater*, great provoker of *Urine*, *Lithonriptick*, *Stomachick*, *discutient* and *expeller of Wind*. In *Gravelly* cases a Decoction of one or two *Garlick Heads* in a *Clister*, makes a plentiful evacuation of *Urine*, as does an Infusion of it in white Wine, and made in a *Possset*, drank warm in good quantity, prove effectual in violent fits of the Gravel from a stoppage of *Urine*. Some swallow whole Cloves of it, (*i. e.* the little Bulbs) to avoid the nauseous Taste, in a Morning fasting to excite the Appetite, and expel the Wind. The *Ung. Soleare Phar. Bat.* being a Decoction of the *Rad. Allij* with Hogs Lard over a gentle Fire, strain'd and spread forth when cold, being apply'd to the Soles of the Feet in Children, proves an effectual Remedy in the Chincough, its so penetrating, that even their Breath will smell strongly of it; its a good *Pectoral*. Being given among Oats, its much commended for the Cold in Horses. They eat it with Bread in the South of *France* and *Spain* for the ordinary Dyet, but being ungrateful to those in these Northern Climates, some substitute *Onions*, and others eat *Ramsons* or *Allium latifolium palustre*.

Onions are both good for the Pot, and for physical Uses; the tender Plant is a frequent Ingredient in cold Sallads. They are frequently boil'd in Broaths, but the *Noctambuli* and *Somniloquaces* had need to beware of them, for by Experience it has been found, that such as are addicted to walking or speaking in their Sleep, have been more giv'n to it upon the eating of *Onions*, and by boiling them (in a Rag for fear of Discovery) among

Broath some have discovered Secrets in their Sleep after the taking of the Broath, which they would not have told if awake ; *℞ Ceparum sub cineribus tostatum, ficuum pinguium, Ung. Basilici, S. Althææ ana ʒij. M. f. Cataplasma* is a potent Emollient for suppurating of hard, indurated, glandulous and schirrous Tumours, and an effectual Discutient if timely apply'd. *Roasted Onions* inwardly taken, when their Acrimony and hot Taste is destroy'd, are good Pectorals in Colds and shortness of Breath.

Leeks partake of the same Vertues, but are rather us'd in the Kitchen, than the Shops, where the other two supply their Place.

Alnus nigra Baccifera vide *Frangula*.

VII. *Aloe*.

The Plant *Aloe* comes next in course of the Alphabet, which though of little or no use in *Physick* in these Northern Climates, yet since the Gardens of the Curious have of late Years been so well stock'd with a great variety of its *Species*, since its *inspissated Juice* from the hotter Regions is so universally known in the *Druggists* and *Apothecaries Shops* ; and since there are several Things in it worthy of Observation, I have thought fit, 1. To give a general Description of the Plant it self, without determining the officinal Species. 2. To give an Idea of its Texture and Nourishment, and 3. To give some probable Conjectures concerning the Parts which afford, and the manner of procuring the inspissated Juice.

The *T R I B E*.

Its the first succulent Plant we meet with, and is justly said to be of kin to the *Seda*, being *Planta Succulenta, Semperuiva, Sempervirens & acaulis, flore tubuloso, liliaceo, oblongo, in sex partes Secto, staminibus senis, cum suis apicibus, fructu triquetra in tria Loculamenta diviso, seminibus planis*.

The *Description*.

It has a proportionally thick, hard, short *Root*, soon dispers'd into a great variety of small, numerous, hard *Fibers* ; the *Leaves* arise from the Root, circularly dispos'd, thin, membranous and flat at first, afterwards becoming more or less thick and juicy, or thin broad and fibrous, tapering sooner or later according to the bigness of the Plant, or length of the Leaves, with or without Prickles, terminating in a point of various Figures and Colours ; a proportional small, round, naked, for the most part weak and infirm flowering Stem, one or more, as there are circles of Leaves from the same Root, arises from the Center, supporting upon small, weak,

weak, thin dispos'd Pedicles, small, oblong, monopetalous Flowers, narrow and tubulous, somewhat bulg'd at the bottom, more or less deeply divided, and more or less expanded into six pointed Segments, with six Chives supporting so many horisontal, long Summits, and succeeded by a three-square Fruit, divided into three Pouches, large in proportion to the Flower, but both very little in respect of the bigness of the Plant, fill'd with a great many flat Seeds.

Structure and Manner of Nourishment.

The Structure, or rather Texture of the Leaves, is either more Vascular and Fibrous, more Vesicular and Cavernous, or equally both, tho' this third kind be less frequent.

The Vascular are those whose Leaves consist of a congeries of Paralel, Longitudinal Fibers passing from the Root to the Extremity. The Vesicular and Cavernous, when several large cavous *Tubuli* pass longitudinally along the outer part of the Leaf within the common Membrane, which deserves not the Name of Bark, and when all the inner Substance is filled up with a transparent Juice. The third kind is, when the outer Substance is compos'd of several rows of these paralel *Tubuli*, and this viscid Juice possesses the middle part of the Leaf.

By the Vascular Substance I understand those Leaves, which when wholly compos'd of these paralel, longitudinal Fibers, either bound up into *Fasciculi* or Bundles, or separately dispos'd along the sides of each other, do receive the Nutritive Particles from the Root, and convey them to the Extremity, and carry back what is Superfluous towards the Root again; and by other Fibers of the same Situation, in order undergoe a second, or as many subsequent Circulations as are requisite for encreasing the bigness, or preserving the Oeconomy of the Plant by attenuating the grosser, preparing the more *Resinous*, and separating the more *viscid* and *aqueous Particles*; and this is for the most part observable in the largest species of *Aloes*, whose Leaves are usually broad, flat, long, pointed, more or less prickly, and either of a pale Green, or speckled Colour.

The Vesicular and cavernous Kinds, receive the *nutritive Particles* from the Root, by the forementioned *Tubuli*, which are more cavous, and much larger than the former, not unfitly to be compar'd to the Pipes and Stops of an *Organ*; where the grosser and more *resinous Particles* still remain, and whence is discharg'd by the Extremities, the superfluous, *aqueous*, and *viscid Particles*, which by degrees distend the Vesicles and Bladders containing this viscid Substance, and render the *Leaves* of the lesser and least Species so very thick, round, square, triangular, and many other different Figures, with a white, sky-blew, blewish, or plain Green, agreeable transverse

verse variegation of Speckles, and plain, or with more or less numerous longer or shorter Prickles.

The Structure of the third kind, is when two, three or more rows of these cavous *Pipes* possess the external part of the side of the *Leaf* towards the Circumference, and its opposite side towards the *Center*; and when the middle Substance, which thickens the *Leaf*, is fill'd up with this viscid and limpid *Juice*: From this Idea of the Structure of these *Leaves*, I proceed to explain the several *Phænomena* of this Plant, such as 1. How it can live, being nourished by so small a quantity of Earth, that if of any Age it will even exceed the weight of the Earth, in which it grows. 2. How it comes to live in the Air without any supply of Earth at all. 3. Why of so slow a growth; and 4. How it comes to live to so great an Age.

For the first it is chiefly owing 1. To the strictness of the Pores of the external Membrane, by which none of the Particles it receives from the Earth, whether Nutritive or otherwise, are Evaporated. 2. To the viscosity of the Juice by which its incapable to perspire or pass through so very minute Pores; and 3. Its exceeding the weight of the Earth in which it grows, must needs proceed from certain extraneous Particles introduc'd into the Earth, when either the Earth or Plant is bedew'd with the Water; for let the Element of Water be never so Pure, there are always some active Particles fit for Vegetation convey'd along with it, which being once receiv'd into the Body of the Plant, and introduc'd into its Substance, and there being no Means to exhaust it, both bulk and weight of the Plant must by degrees be augmented. And I am credibly inform'd where the Aloes is Indigenous, it never Rains, but a balsamick Dew distills upon it every Night, and furnishes it with sufficient moisture for its Nourishment.

It may be justly called *Semper vivens, quia humanam ætatem superat*, for if any of these Plants be older than any Man alive can remember, and if it can live till he is dead in respect of such an one, it may be call'd Ever-living; and no doubt such Plants as are us'd for extracting the inspissated Juice, must have their *Leaves* very large to furnish such an abundance of it, and of a very old date before they can be so big, because of the slowness of Increase. We are inform'd, most of the *Aloes* have their native Soil by the Sea, and on Sea-coasts, a proper Climate for furnishing of this viscid Juice; for not to speak of the *Alge* and *Fuci*, which are all viscid, succulent, Sea-plants, the very Rocks where the Sea-water do's not reach, has a moist, viscid and lubricid Surface, proceeding from the viscid Steams arising from the Sea, which as is observ'd, falling upon the circumjacent Earth, and being receiv'd by the Pores at the extremities of the Fibers of the Root, become proper Nourishment to this Plant, and being no

wife

wife fucceptible of Evaporation, do by degrees augment its Bignefs, and even exceed the Weight of the circumambient Earth.

Semper virens, This is common to it, and a great many Trees and Shrubs, whose Surface is always Green, not to fay, that their Leaves laft perpetually, but that the old ones never decay, until they be fuccceded by new ones ready to fupply their Place; this alfo happens to the *Aloes* fufpended in the Air, for no fooner do the Leaves in the Circumference begin to decay, than fresh Leaves in the Center are push'd forth according to the feafon that the Leaves of the Ever-greens perifh, which is ufually in the Month of *April* and *May*, as I have obferv'd upon tryal of the Experiment, of hanging of an *Aloes* Plant in the middle of a large, well-air'd Room, with an old Cloath wrapt round its Root to prevent the Juice from Evaporating, and the Fibers from being dry'd up.

Its being of fo flow a Growth, muft proceed from the foregoing Hypothefes of the Vifcidty of the Particles, which when the Plant chanches to live in an impoverifh'd Earth, unable to furnifh any more nourifhing Particles, or when being depriv'd of the nourifhing Earth, by being fufpended in the Air, this Sap Circulates but very flowly, and with much ado is capable of keeping the Veficles and Veffels diftended, without being able to fretch them farther by an additional fupply of Nourifhment, which affords a good proof for the Circulation of the Sap in Plants, as well as of the Blood and Humours in Animals; for nothing is more plain, than if the Particles in the Sap-veffels in Plants, *fanguinary Veffels* in Animals; and *Tubuli*, which contain the Humours in the *Exanguis* kind once ceafe to move, the Fluid ftagnates, and the Subject dyes, becaufe there is a *Solutio continui*, a Diffolution and Separation of the Particles of the Liquor: the more grofs and vifcid frame the *Coagulum* and *Craffamentum*, and the more ferous paffing through the more narrow Channels, fuffer the more grofs to remain. This fhews what fpecial care ought to be had in the culture of the *Aloes* in thefe cold Climates, viz. That it be feafonably expos'd to the Heat, and Air in the Summer, timely taken into the Green-Houfe in the Autumn, conveniently bedew'd with Moisture, neither expos'd to too much Cold to congeal its vifcid Juice, nor too much Heat to rarifie its more fubtile Particles; neither muft it have too much Earth to furfeit it, nor too rich and fat to afford more nutritive Particles than its *Tubuli* are able to receive, for then its in hazard of being kill'd by a *Plethora*.

I proceed to a more narrow Confideration of the Confiftence of this Sap, which is twofold, *thick*, *whitish* or *yellowish*, and *bitterish*, or *thin*, *viscid*, *limpid* and *waterish* tafted. The firft is contain'd in the *parallel Tubuli*, and chiefly obfervable in the larger kinds with broad Leaves; the other is deposited into the *Celluls*, fituated in the middle of the leffer Species. Thefe

Celluls are a Contexture of so many longitudinal and transverse, thin, and delicate *Membranes*, which intersect each other, and seem to have an *Hia-tus*, by which this *limpid Sap* is convey'd from the one to the other. And here I cannot but observe an Analogy betwixt the Plant *Aloes*, and the *Spleen* in *Animals*. The *Spleen* has but one thin, flaccid, loose Membrane, with an *Artery*, which distributes more Blood into it than is requisite for its Nourishment: This *Artery* passes no further than the outer Coat, but discharges the Blood into the inner Substance, which being compos'd of an infinite variety of *Celluls*, the Blood passes from the one to the other, until it return to near the place where the *Artery* enter'd, and is there receiv'd by the *Veins* according to the different species of *Animals*, whence its convey'd to make up a Root of the *Vena porta*, before it enter the Liver. The use of the *Spleen* is reasonably suppos'd to be for Secretion of the *Lymph*, by the *Lymphaticks*, to be convey'd and mix'd with the *Chile* in the *receptaculum commune*, while the Blood is enliven'd by a large Nerve to quicken its Motion, and advance its Circulation when mix'd with the Blood from the other Roots of the *Vena porta*, the better to enable it to undergo the separation of the *Bile* in the *Liver*. The *Leaf* of an *Aloes* Plant on the other hand, receives its Sap by these external, large *Tubuli* in its fore and back part, and conveys it to the Extremity, where its discharg'd into these *Vesicles*, from whence tis convey'd from one to the other, until it return towards the Origine of the *Leaf*, where it undergoes a second lent Circulation, and soon. During which time the grosser and thicker Particles are separated, receive in, and adhere to the sides of these large cavous *Tubuli*, being unable to proceed farther, while the thin transparent Juice remains always in the middle-part of the *Leaf*, and the thick keeps still towards the Sides. The thick is the *resinous* Part, of which the inspissated Juice is compos'd; the thin is the *serous* Part which is evaporated by the Sun, while the Juice is a thickening; for the proof of what is asserted, I give the following Experiments.

1. A Plant of *Aloes* being three Years suspended in a large well air'd Room ev'ry Spring, the outer Leaves wither'd and decay'd, by which the Sap being deny'd access into the mortify'd Leaf, and being straitned in its ordinary Bounds, exerted it self more vigorously in the Center, and there push'd forth new Leaves, it had been suspended two Years before I had it. I observed it to decrease it its Weight, by the falling off of the dry'd Leaves, and having no new supply of Nourishment. It at last dy'd of a *Marasmus*, as it may be call'd.

2. A dark-green narrow-leav'd *Aloes* with long Prickles, in Dr. Udal of *Enfield's* Garden ev'ry Spring, distill'd clear Water from the Prickles, which had it been contain'd within the capacity of the *Tubuli*, must have choak'd the Plant.

3. A Plant of an Hedge-hog *Aloes* in Mr. Fairchild's Garden, was observ'd by his Wife, to be as wet as if dipt in a River, though in a dry Green-house, and complain'd of it to her Husband, suspecting it to be sick, which he found to be true, for before next Morning it was dead. That ingenious Gardiner is of Opinion, that had he cut off some of the Leaves, or made a small Incision in each of them, he might have sav'd the Plant, as we use to bleed in a *Plethora*. See Preface to my *Botanick Essays*.

4. Cut a Leaf of a Fibrous broad-Leav'd *Aloes* transversely, you may observe the outer part sweating a yellowish, the more inner a whitish, and the middle a limpid viscid Juice.

5. Cut the Leaf of a small, thick, succulent *Aloes* transversely, and look through it from one end to the other, and you will observe it transparent like Oil of Turpentine through a Bladder, or Varnish through a Phial.

6. Cut the same Leaf into a thin Slice, and by a Microscope you may observe the Cavous *Tubuli* in the outpart, and the thin longitudinal *Septa* making up the inside, in the appearance of so many dark Lines, N. B. the Juice in the outer *Tubuli* is yellowish, the inner Transparent.

7. If you cut the Leaf when growing, the Juice in the middle will be fluid, and ready to drop out, let it remain some time, it will be congeal'd like Blood in a Porringer.

8. Stretch the thin transverse slice with Pins, to preserve it from shrinking upon a white Paper, and you may observe when it is dry'd, these thin *Septa* like the Veins of a Leaf, while the intermediate Juice is Evaporated, and the transverse *Septa* transparent as the thinnest Bladder.

Concerning the manner of procuring the inspissated Juice.

I had made the foregoing Experiments some Years ago, before I had consulted *Muntingius* his *Aloidarium*, * and am glad to find that these my Experiments seem to agree so exactly with what he has asserted from *Columna*, who flourished in the latter end of the 16th and beginning of the 17th Centuries, and has the Character of one of the most curious Botanists of any former, and perhaps after Ages. Being desirous at *Naples* to find out the true Method of procuring the Gum, and doubting whether this was the Plant from which so noted a Simple in the *Materia Medica* was procur'd; he cut into small pieces a Leaf of the Plant, and some part of the Root he found nothing of that bitterish Juice, but a certain mucous Substance

* *Munting. Aloidarium*, p. 24. Amstel. 1682.

of an insipid Taste. Therefore having cut off several of the Leaves for Experiments sake, it came in his Mind, that this Juice might not proceed from the carnosus Part, or *Parenchyma*, but from the Veins (which I call the *Tubuli*) upon the Observation of which, tearing some of the Leaves fresh from the Root, he found a little of a yellow Juice to flow from the Orifices of each of these Veins, and saw it distill by so many drops. upon repeating the Experiment, he became assur'd that this must only be the yellow venal Juice, which being afterwards inspissated by the heat of the Sun, becomes what is called the *Gum Aloes*; wherefore having suspended several of these Leaves above a glas'd earthen Pot, he observ'd this yellow Juice to distil naturally from the Veins, and even he could press and squeeze it out with his Hands. Having thus obtain'd a sufficient quantity of Juice, and expos'd it three Days to the Sun, and stirring it so, as what thicker parts adher'd to the Sides, might be mix'd with the thinner part in the middle frequently in the Day time, and exposing it to the cool of the Evening, he found ev'ry Morning a friable compleatly thickned Juice. The Colour declin'd from an Orange, to a more dark, a little reddish, and at last quite black like a Liver.

This Experiment is so very answerable to my Opinion, that its the fibrous broad-leav'd *Aloes*, prickly or not prickly, that furnishes most of the Gum; that though these Veins in the lesser Species may contain a smaller quantity of this bitter purging Substance, yet their Thickness and Bulk is chiefly stuff'd with this lymph or gelly Substance fit for no Use; but that all the Species of *Aloes* according to the quantity of these Veins, afford more or less of this more useful concreted Substance.

VIII. *Alfine*.

Alfine Media, C. B. P. 250. Moris. Hist. 2. 550. vulg. *five Morfus Galline*, J. B. 3. 29. 363. *Minor* Dod. pempt. 29. Tournef. 242. Boer. Ind. 1. 209. Raij Hist. 1030. Common Chickweed.

The *T R I B E*.

This is the first *Rosaceous*, or *Rosy Flower* the Alphabet affords, whose Definition according to *Tournefort* (the Author of that Name) is, that they consist of several *Petals* disposed in a Circle round the *Stamina* or *Chives*, as in a *Rose*. Their Number is not necessary to be regarded, but their Disposition, for this is certain, that uncertain; they seldom consist of two *Petals* (of which there is only one, though not *Officinal*, viz. *Circea*) or four, as in *Papaver*: commonly of five. Those which exceed this Number, are called *Polypetalous*, with many *Petals*, as varying in the Number.

Alfine

Alfine is called, by *Morison* *pentapetalous*, and *unicapsular*: *enangiospermos*, and *vascular*, by *Ray*: and *monangiospermos*, by *Boerhave*; that is, whose *Seeds* are contained in a *Seed-vessel* with one *Pouch*; for according to the Number of the *Pouches* in the *Seed-vessels*, they are called *Monangia*, *Diangia*, *Triangia*, &c. According to the Number of the *Seeds*, they are called *Monosperma*, *Disperma*, *Tetrasperma*, &c. and according as they are *naked Seeds*, or included in a *Seed-vessel*, they are called *Gymnosperma*, or *Angiosperma*.

The Description.

It's a small *Plant*, with low, creeping, infirm, brittle, jointed *Stalks*; dispersing numerous *Branches*, not ascending (from a small annual fibrous *Root*) above half a *Foot* high, having two small, roundish, or pointed *Leaves*, arising by Pairs from each *Joint*; and several small *Rosaceous pentapetalous white Flowers* (the *Petals* are bifid, which Note distinguishes this *Genus* from *Spergula*, the *Petals* of which are entire) on the *Top* surrounding three, four, or more, *Chives* with double *Summits*, and contained in a five-leav'd, deep divided *Empalement*, to which succeeds a small oval or conical *unicapsular Fruit* or *Seed-vessel* opening at the *Top*, and shedding many small, round, brownish *Seeds*. It flowers all the *Summer*, and delights in moist *Places*, and fat *Ground* of well manur'd *Gardens*.

Virtues and Uses.

Chick-weed is probably so called, from the great delight *Chickens* have in it. It's so low, tender, and of so soft a taste, that they pick at it greedily, even from their breaking the *Egg shell*. It's moderately astringent, and therefore may be boyl'd with good Success in *Chicken-Broath* to consumptive Persons; for such *Plants* as consist of temperate, astringent and absorbent *Particles*, correct the *Acrimony*, curb the *Serum*, and more compactly unite the few balsamick *Parts* which remain in so sharp a *Blood* as consumptive, hectic and phthysical Persons are for the most part corrupted with. Hence it is, that these moderate Astringents may be justly esteem'd good *Vulneraries*, for externally apply'd to *Wounds*, they blunt and sheath those sharp and cutting *Salts* which are the causes of those acute *Pains* felt at the first and second *Dressing*. They restrict the capillary *Vessels*, so that the thin, serous, and ichorous *Matter* ceases to flow out in such abundance, and the balsamick parts of the *Blood* being only discharg'd into the *Wound*, is soon converted into what is called *Laudable Pus*; and inwardly given, they correct the acrimonious *Matter* especially in the *Lungs*, whose tender *Texture* is soon vitiated, and made capable

ble of Exulceration. Thus the distill'd Water of *Chick-weed*, or an Infusion of it in Wine, is much commended in hectick Cases; it's said to be good for the convulsive Fits in Children, by giving a Dram of the Powder frequently. By its moderate Astringency, it's capable to restrain the immoderate Flux of the Hæmorrhoids, and ease the Pain; the Juice is vulnerary and deterfive, and recommended for cleansing the Mouth in case of the *Apthæ*; apply'd to the Breasts, it dissolves grumous Milk, and curbs too great an abundance of it. In a Word, it performs the Office of most of the other temperate Astringents, but (whether because of its being so common I know not) it is but seldom used in Physick.

Althæa vide *Alcea*.

IX. *Amaranthus*.

Amaranthus simplicifolius, C. B. P. 121. Tournef. 235. *purpureus* J. B. 2. 23. 968. Raji Hist. 202. *Maj. paniculis surrectis rubris* Moris. Hist. 2. 602. *spicatus*, Boer. Ind. 98. Floramour or Flower-gentle.

The *T R I B E*.

Dr. *Morrison* seems to be the first who determin'd this a *pentapetalous* Plant, but look'd upon it as so near a kin to the *Apetalous*, that he places it the last among the *Pentapetale*; and the *Atriplex* the first among the *Apetala*. *Tournefort* makes it a *rosaceous* Flower; but neither *Ray* nor *Boerhave* have follow'd him in that. Indeed according to *Tournefort's* Rule, that the *Apetala* are *gymnomonosperma*, whose *Empalement* becomes the *Husk* to one naked *Seed*; this cannot be look'd upon as such, for 'tis plainly *Angiopolyspermos*, whose *Seed-vessel* contains many *Seeds*; but if we consider, that they are *petala non caduca*, since they do not fall off, it's a Matter indifferent whether they ought to be called *Petals* or *Leaves* of the *Empalement*, especially since they are not strictly speaking *colore insignes*; for it is not the *Flower* alone, but the whole *Spike* or *Coma* that becomes conspicuous, purple or red, or whatever other Colour. It's true, the like happens to the *Horminums*, but then they have regular *monopetalous* Flowers, and distinct *Empalements*, whereas here either the *Empalement* or *Petals* are wanting.

Description.

It's an annual Plant, arising to two Foot and higher, according to the Soil, with a streight, striated, branched Stalk, large, alternate greenish, and sometimes

times purplish *Leaves*, broad at the Base, and pointed at the Extremity; with equal Edges; the Stalk terminates in a pretty long Spike, in some Species erect, in others dependent, thick set with *rosaceous* or *apetalous* *Flowers*, consisting of five oblong, narrow, pointed *Petals* or *Leaves* of divers Colours along with the Spike. The *Chives* arise in the middle, united at the bottom of the Flower. The *Stylus* somewhat forked at the Top, becomes a round, inclining to an oval, *Seed-vessel*; opening transversely when ripe, and pouring out several redish or white shining *Seeds*. The *Spike* if early pull'd, will keep the Colour a long time without fading, neither do the *Petals* or *Leaves* of the *Empalement* ever decay when the *Seeds* are ripe. Its sown in Gardens, and flowers in July and August.

Though I have only given the *Synonima* of the *Amaranthus purpureus*, there are several other Species to be had among the Florists, all which serve for the same Purposes.

Virtues and Uses.

Floramour is but of little or no use in Physick, it's generally esteem'd a potent *Astringent*, and is capable of producing the Effects as such, (*viz.*) discussing of Tumours, and abating of Swellings, being apply'd either in Juice or Fomentations externally, and in *Diarrheas*, *Dysenterys*, spitting of Blood, *Hemorrhagies*, *Hemorrhoids*, and *fluxus mensium nimius* being internally given in Powders; it seems to partake of the same Virtues with *Plantain*, is fit for the same Uses, and may be look'd upon as near of kin to it by the *Spike*, by the texture of the *Flower*, (though the one be *monopetalous* and the other *polypetalous*) and by the *Fruetification*; the Figure and Manner of opening of both *Seed-vessels* being the same. This *astringent* quality is very discernable by the Taste, and by the Tenacity of the Colour, which like those artfully engrain'd by potent *Astringents*, is a long time before it fades, as we see in the *flores Balaustiorum*, so well known for its *Astringency*, and for the Durableness of its deep red Colour.

X. *Ammi*

Both by the Alphabet and *Tournefort's* Example, comes next to be considered, being the first of that large and conspicuous Tribe of *umbelliferous* *Plants*, early class'd together by Authors, especially *Cesalpinus*, and the two *Bauhini*; but first of all brought into a regular Distribution by the celebrated Dr. *Morison*, improv'd by Mr. *Bobart* his Successor, alter'd by Mr. *Ray*, *Rivini*, *Tournefort*, and brought to great Perfection by the assiduous and diligent *Boerhave*; and there is hopes this knotty Class will yet be

be more unfolded, when the long look'd for *Pinax* of the celebrated Dr. Sherard, which I hear is in great forwardness, shall see the Light.

Umbelliferous Plants may be consider'd either in a larger or stricter Sense, viz. As to the *Disposition* of the *Flower*, any Number of small *Flowers* placed in a *Tuft* upon the Top of a *Stalk*, each having its proper *Foot-stalk* all arising at the same Place from the common *flow'ring Stem*, and dispos'd in a *Circle*, may be call'd an *umbelliferous Plant*; but then *Tanacetum* a *corymbiferous Herb*, and *Sambucus* a *bacciferous Tree*, may be look'd upon as such. The word *umbelliferous* has a threefold Origin; 1. From *Umbrella*, with which Women use to defend themselves from the heat of the Sun, and from the Rain. This regards all *Tufts* with a plain, flat Surface. 2. From *Umbilicus* a Mans Navel, because several *Tufts* are concave or hollow in the middle as the *Daucus* or *Carrot*. 3. From *Umbo*, the Protuberance in the Center of a Target. All the globular and convex *Tufts*, may be derived from this, as *Angelica*, &c.

The more strict, genuine, and modern Notion of an *umbelliferous Plant* is, that it have a *pentapetalous*, small, (which *Tournefort* is pleas'd to call) *rosaceous Flower*, frequently gathered in a *Tuft* above without an *Empalement*, the *Petals* surround five *Chives* with proper *Summits*, they soon fall off, and are succeeded by two *naked Seeds* closely united while green, but separating by degrees as they ripen. The accurate *Boerhave* gives an agreeable account of the *flowering* and *Fructification* of this *Tribe*, which I deliver in his own Words; 'The Top of the flowering Foot-stalk, supports the ' *Ovarium* or *Seed-case*, consisting of the *Rudiments* of two *Seeds* strictly ' united when green, by a smooth, flat Surface, separating as they ripen, ' but still tied to small Threads, which arising from the Top of the *Foot-stalk*, lie hid betwixt the *Seeds*, and are inserted in their upper part, ' where there is a fungous *Balsamick*, and somewhat gross *Placenta* divided as the *Seed-case*; whence arise the *Tube*, *Stylus* or *Pointal* with a ' round *Button*. The *Seeds* (where united) are plain and smooth: On the ' outside gibbous, convex, striated or furrowed, sometimes round and globular; some are compress'd, more flat and smooth on both sides.

The *Petals* arise from the *Articulation* of the *Placenta* with the *Seed-case*, some white, others yellow, and a few red or purplish. 1. Small, oblong and pointed. 2. Narrow, bifid or forked. 3. Broader and Heart-like. 4. Uniform all of an equal Shape and Bigness. 5. Difform some larger, others less in the same Flower. 6. Bended inwards, or wrapt up like a Scroll, as in the *Foeniculum*. They have no *Empalement*, are endow'd with five *Chives* (with their proper *Summits*) arising betwixt the *Petals* and the afore-said *Articulation*; they are for the most part *Hermaphrodite*, but sometimes *Male flowers* are intermixt in the same *Tuft*.

Before I proceed, I think fit, by way of Digression, to explain some *Technical Words* in *Botany*, made use of by *Malpighi*, *Tournefort*, and especially the accurate *Boerhave*; since the Doctrine of the *Sexes* in *Plants* came to be so far advanc'd, as is to be seen in the fourth of my *Botanick Essays*. The Words are *Embryo*, *Placenta*, *Ovarium*, and *Testes*.

Embryo in *Animals* is the first *Rudiments* or *Lineaments* of a *Fœtus*, before the parts are perfectly form'd, or if form'd, before they can be well discern'd; and in the *Seeds* of *Plants*, they are the bare empty *Husks* of the same Shape with the future *Seed*, placed below the several *flourishes* and *half-flourishes* in the *Corymbiferous*, *Flosculous*, *Semisflosculous* and *Radiate Plants*, and when these decay, and the Dust is shed from the bifid Pointal (as has been observ'd when I discourse of the *Corymbiferous Plants*, Decad. I. p. 9.) these *Embryons* swell: the *Radicle* and *Plume*, with the other *Lineaments* of the *Fœtus* of a new *Plant* are form'd, become hard and firm, and the *Seed* is ripen'd; or in the *Pod* of the *papilionaceous* and *tetrapetalous Flowers*, where as soon as you can open it, you may observe the *Embryons* plac'd in due order at the back part, or betwixt the two *Valves* or *Sides* of the *Pod* where the first *Lineaments*, as soon as the *Pod* will admit of opening, only appear in the diminutive Shape of the *Seed*, and are (as it were) an empty *Shell*, until after *Impregnation* of the *Maledust*, the inner Substance is compleated, and all the *Lineaments* of the future *Plant* are form'd in the *Seed-Leaf*.

Placenta is not unknown to *Anatomist*, and other *Natural Historians*, to be that part of the *Secondine* in *Women*, which being coherent and contiguous to, but not continuous with the *Uterus*, is a preternatural Dilation of its *Capillaries*, which first forming an adventitious, carnous Substance, are again dispers'd from so many *Roots* to other larger *Trunks*, at last united into one *Umbilical Artery*, by which after the *Blood* has been diffused into the several parts of the *Fœtus*, the remainder is carry'd back by the *Umbilical Vein* to the *Placenta*, and from thence to the *Uterus*, there to partake of the common *Circulation* throughout the *Body* of the *Mother*. The Parallel is the same in the *Seeds* of *Plants*. In the forementioned *Corymbiferous*, &c. *Plants*, the *Placenta* is placed in the bottom of the *Flower* within the *Empalement* v. g. in *Dens Leonis*, and others of the *pappous lactescent* kind, (when the *Seeds* like a *Bird* ready to fly, have got their *Wings*) the membranous bottom of the *Flower* is as it were a *Nest* deserted, having several *Depressions* where the *Seed* had been seated, and from whence they had receiv'd their *Nourishment* convey'd by the several *Tubuli* from the common *Foot-stalk*. The sides of all the *Pouches*, *Cells*, or *Divisions* in the *Capsular*, or such *Plants* whose *Seeds* are contain'd in *Seed-vessels*, are so many different *Placenta's*, and no where are these *Placenta's* with their proper *Navel-strings* more observable than in the *Pods*

of *Peabloom Flowers*, where the *Umbilical Rope* consisting of several parallel Fibers running longitudinally from the *Pedicle* along the back part of the *Pod*, and at certain Distances sending forth a *Placenta*, to which the future *Seed* is to be annex'd, with which it's constantly adherent, by which it receives its Nourishment, and from which it never separates until needing no further Supply; it naturally falls off bearing an exact Analogy to the *Cotyledones* dispers'd at several Distances along the *Chorion* in the *Uterus* of *Cows*, and other *Quadrupeds*.

Testa is so called, from the *Teste* in Animals, which elaborate the *Male-seed*; for this *Testa* (one continued *Knob* frequently distinguished by a *Septum*, a Partition-Wall as it were) is for the most part divided into two *Celluls*, and therefore may be called *Testes* as in Animals, is variously situated upon the top of the *stamen* or *Chive* (some being *Horizontal*, others *Perpendicular*) and of various Figures (some being *round*, others *oval*, more *oblong*, *quadrangular*, &c.) contains that which is called *Farina Fœcundans* the *Male-dust*, which as soon as the Flower is blown, is shed from these *Teste*, which being then swell'd to their full bigness do burst, and thereby this *subtile Powder*, *Pollen* or *Dust*, is dispers'd over the *Ovarium* or *Vasculum Seminale*, where it emits its prolifick Virtue, and impregnates the *Ova*, which soon become *Embryones*, and which in a short time do encrease to a perfect ripe *Seed*. This has hitherto been called *Apex*, is frequently of a different Colour from the *Petals* or *Stamina*. In the sequel of this Discourse, I design to call it sometimes *Apex*, *Summit* or *Top*, and, as occasion requires, the *Testes*.

Ovum and *Ovarium*, Words frequently used by *Malpighi*, and from him by *Boerhave*, when obliged to express my self so for the farther Illustration of the Subject in hand, I chuse to call it *Seed-case*, which may seem improper here, when all the *Umbelliferous* are look'd upon as *naked Seeds*; but if we consider there is scarce any such as a *naked Seed*, for most of them have their *Rind*, *Bark* or *Coat* which is hard, and defends the inner Kernel from the Injuries of the Air, and therefore may be properly called the *Seed-case*, which is only an empty Husk before Impregnation, soon becomes a Nest for the *Embryon*, and still continues a distinct Body from the *Seed* when ripe; and therefore *Tournefort* observes in *Angelica*, and several other *Umbelliferous* Plants, *quod involucreum facile deponunt*, their outer Coat can soon be remov'd; and this not only obtains in those commonly called *naked Seeds*, but also in most *Capsular Seeds*; very observable in the larger kinds, as in *Pease*, *Beans*, and other *Leguminous Plants*: Indeed there are some of the *Cerealium* the *Corn* kind, where this outer Coat is more firmly adherent, as in *Wheat*, *Barley*, *Rye*, but these are so well guarded by the *Gluma* the Chaff, that to defend them more from the Air does not seem needful, but when

when they begin to bud, they quit this outer Coat, as a Chicken does an Egg-shell.

To conclude this Digression: When I am to use the word *Embryo*, I shall rather chuse to engross it into an *English Phrase Embryo*, as some others have done, than to call them the *Rudiments* or *Lineaments* of the *Seed*. When *Placenta* comes in the way, I shall retain the Name rather than *Mother-Bed* or *Couch*, for it will not admit of being call'd *Secundine*. *Ovum* shall always be call'd the *Seed* in *Plants* by me, and for *Testes* and *Ovarium*, the one shall be *Apex* or *Summit*, and the other may be better understood by *Seed-case*, than *Ovarium*. There is another kind of *Apex* different from that upon the *Top* of the *Stamina*, (*viz.*) that which terminates the *Stylus* or *Pointal* in the *center* of the *Flower*, which I shall distinguish by the name of *Button*; but of this we shall discourse more hereafter. See the first of my *Botanick Essays*.

There are several other *distinctive Notes*, by which the *Umbelliferous Plants* may be easily known, such as their *Roots*. 1. *Annual*, and *fibrous*, 2. *Biennial*, more *parenchymatous* or *carnous*, (I call that a *parenchymatous* or *carnous Root*, which is either *simple*, or *divided* into large, thick, gross *Portions* of a *soft*, and, as it were, *fleshy Substance*.) 3. *Perennial* with large *Roots*, sometimes hard and *knotted* as *Imperatoria*, but rarely; their *Leaves* are for the most part very large, and always *alternate* when they arise from the *Stalk*; few are, 1. *Simple*, most part *Compound*. 2. *Pinnata* having several pairs of *Leaves* joyn'd to a *mid-Rib*, always terminating in an odd one, which however divided and subdivided, still happens to the *Leaves* of *Umbelliferous Plants*. 3. *Trisariam divisa*, triply divided, and often subdivided. 4. *Lobata* variously divided into larger *Lobes* and *Portions*. 5. *Plurifariam & Multifariam divisa*, variously divided into lesser, broader, and shorter *Segments*. 6. *Fœniculacœa tenuissime divisa*, divided into long, narrow, small, thick or thinset *Segments*, like unto *Fennel*. Their *Surface* is for the most part *smooth*, sometimes of a *lighter*, but more frequently of a *dark Green*; the *Stalk* is generally *erected*, *striated*, *hollow* and *jointed*. The variety of their *Seeds* by which they are distinguished into *Method*, according to the different *Sentiments* of *modern Authors* shall be declared, when I come to *Discourse* of the separate *Plants*.

The last general Consideration is their *Virtue*. 1. They chiefly consist of *tenuous* and *subtile Particles*, are great *incisers*, *discutient* and *carminitive*, especially the *crested Seeds*, according to *Dr. Herman*, *Omnia semina striata sunt carminitiva*.

I have insisted more largely on this general *Idea* of an *Umbelliferous Plant* here, because the *Alphabet* leads me to treat of several of that *Tribe* in this *Decad*.

Ammi is so seldom us'd in Shops, and so rarely to be seen in Gardens, that were it not reckoned among one of the lesser hot Seeds in the Dispensatory, It might have been omitted here. *Dioscorides*, and his Contemporaries, were so superficial in their Description of *Plants*, that they only left it to their Successors to guess what they meant. Hence it is that the *Ammi veterum verum* is scarce, or not at all known at present, though *Mathiolus* *Epist. lib. v.* says it was found out in his Days, which we may suppose was about 1550 or 1560. for after having been Physician to *Ferdinand Archduke of Austria*, he dyed 1577. Now though *Tournefort* looks upon him as a very credulous Author, we are not to imagine he would have said, p. 190. *Epist. Ammi verum nemo jam fere est qui non noverit, revixit enim nostra etate, ejus imaginem ad vivum delineatam spectare quis poterit in nostris in Dioscoridem comment.* 'Every one says, he now knows what the *Ammi verum* is, for it was revived in our Age, and its Figure taken from the Life, is to be seen in our Commentary on the third Book of *Dioscorides*'; I say, none would look upon him to be so impudent as to assert this, without very good Reasons. This has moved me to treat in this Place of the *Ammi vulgare*, as recommended by the *London Dispensatory*, and either the *Ammi odore origani* or *Ammi parvum folijs feniculi*, C. B. P. delineated, *Bauh. in Mat.* 558. for the *Ammi verum*: though the genuine Seeds of the two last are rarely to be had in Shops; *Weykerus* says, it's shewn by some with Leaves finer than those of *Fennel*, and with very small Seeds like *Cumin*; but it does not in every Circumstance answer the Description of the Ancients'; *Renodeus* says, its Seeds smell much of *Origanum*, both which confirm what *Mathiolus* has said concerning them.

1. *Ammi Majus*, C. B. P. 159. *Tournef.* 304 *vulg. maj. fol. latioribus sem. minus odorato*, J. B. 3. 27. *Morif. Hist.* 3. 295. *Dod. pempt.* 301. *Raij Hist.* 455. *Annum vulg.* *Morif. Umb.* 21. *Boer. Ind.* 57. Common Bishops Weed.

2. *Ammi odore origani*, J. B. 3. 27. 25. *Hist. Oxon.* 3. 295. *alterum semine apij*, C. B. P. *Cret. Raij Hist.* 455. Bishops Weed of Candy.

3. *Ammi parvum fol. fenic.* C. B. P. *Bauhini in Math.* 558. *Hist. Oxon.* 3. 295. *verum Gesner. hort. perpusillum* *Lob. Icon.* 785. *Ger. Emac.* 1037. *Feniculum annum Origani odore*, *Tournef.* 312. *Ammoides* *Boer. Ind.* 1. 49. True Bishops Weed.

T R I B E.

These are class'd among the umbelliferous Plants, with variously divided Leaves, and small striated Seeds by Dr. *Morison*, among the smallest, striated, short, tumid Seeds by Mr. *Ray*. *Tournefort* is inconsistent by his Distribution

distribution : for the *Ammi Maj.* is class'd with those of a very small crested Seed, and the *Ammi fol. feniculi* among the *Fenicula*, as having a narrow, oblong, and pretty gross Seed, which is justly corrected by *Boerhave*, who calls it *Aminoides*, as partaking of both the *Ammi* and *Feniculum*. For by what I can observe, an *Ammi Leaf* has a *mid Rib*, and the *Pinnae* arising equally from it by Pairs, but a very small Flower, and fine small Seeds ; whereas a *Feniculum* has its fine, narrow, deep divided, long, thinset Segments, arising irregular from the *mid Rib* ; nor can this last be a *Feniculum*, because its *Petals* are plain, white, unequal in respect of each other with very small Seeds ; a *Feniculum* has yellow, wrapped up, equal *Petals*, with a long, narrow, large, striated Seed. *Rivini* says, they have solid, very small Seeds, somewhat hairy, the second is either neglected, or forgot by *Tournefort*, whether he has look'd upon it as the same with the *Ammi parvum fol. feniculi*, I know not ; but *Mathiolus* gives two quite distinct Figures of the Second and Third : *Rivini* gives a good Figure of the *Ammi maj.* and seems to delineate the *Ammi fol. feniculi* by the Title of *Ammi minus*.

The Description.

These Plants being hitherto unknown to me, I take their Description from the most approved Authors.

The first has long, *serrated*, or *crenated*, compound Leaves, divided chiefly into three pair of Segments ; those at the bottom broader, and encompassing the Stalk, the upper longer, narrower, and more deeply divided. On the upper part of a *strait, round, channel'd Stalk*, (two or three Foot high) and Branches are plac'd pretty large, flat Umbells with white Flowers, and unequal *Petals*, viz. two larger, three less, to which succeed small, crested, bitterish Seeds, about the bigness of those of *Smallage*, but more tumid. Its an annual Plant, and cultivated in Gardens.

The second has very much branched, striated, joynted Stalks ; the lower Leaves broad, the upper longer, more narrow, and much more finely divided ; the Umbells very numerous, and white Flowers very small ; the Leaves when rub'd have an high scent of *Origanum*, and the small, striated, tumid Seeds extreamly Aromatick and hot tasted, the Seeds are imported from *Syria*, and the Island of *Candy*.

The third arises one or two Foot high, with a small, brittle, *Fennel Stalk*, has variously divided Leaves like unto *Fennel* or *Dill*, but with deeper and finer Segments ; the small Umbells consist of very small white Flowers with unequal *Petals* ; the Seeds are extreamly fragrant, less than those of *Candy*, and of a somewhat weaker smell. The little Root is small and woody.

Virtues and Uses.

Ammi Seeds consist of tenuious and subtile Particles, by which they are attenuating, Discutient, and inciding; good in Collicks and other flatulent Distempers: they provoke Urine, and the *Menses*: formerly they were prescribed in most of the laborious *Antidotes* and *Opiates* of the Ancients, such as *Antidotus Matthioli*, *Aurea*, *Alexandria*, *Nicolai*, *Theriaca communis Augustana*, *Teyphera minor Mesues*, *Theriaca Andromachi*; but since they are all exploded except the last, its only upon that account they are kept in Shops, and we are allowed by Authors to substitute Anise or Cumine Seeds for them; but I would rather chuse *Sem. Cardamom. min.* having a pleasant, hot and not so high a Taft and Smell.

XI. *Sium* & *Sisarum*.

The same uncertainty remains concerning the *Amomum*, as about the *Ammi verum*; and therefore since that of the Ancients is lost, most of the *Dispensatories* now substitute the *Sison Dioscoridis* for the *Amomum Plinij*, to which I shall add *Sium Aquat.* five *Berula* and *Sisarum*, as being of the same Family.

1. *Sium Aromat. Sison Offic.* Tournef. Instit. 308. *Sison quod Amomum Officinis nostris*, C. B. P. 154. *Sison Dioscoridis* Moris. Hist. 3. 283. *Sison* Moris. Umb. 14. *Sison sive Officinarum Amomum*, J. B. 3. 27. 107. Raij Hist. 443. *Petroselinum macedonicum Fuchsj*, Dod. pempt. 697. Bastard stone Parsley.

2. *Sium sive apium palustre foliis oblongis*, C. B. P. Tournef. *Aquat. maj. latif.* Moris. Hist. 3. 282. *Umbellif.* 15. Raij Hist. 443. 106. *Sium Umbellif.* J. B. 3. 2. 27. 172. *Sium*. Dod. pempt. 589. Common Water-Parsnip.

3. *Sisarum Germanorum*, C. B. P. 155. Tournef. Instit. 309. Dod. pempt. 681. Raij Hist. 442. Moris. Hist. 3. 283. Umb. 12. J. B. 3. 27. 153. Boer. Ind. 54. *Elaphoboscum Dioscoridis*, Col. Phyto-basanos, 88, 89.

The *T R I B E*.

These three *Umbelliferous Plants* are by *Morison* said to be endowed with simple, lobed or pinnate *Leaves*, and oblong, striated *Seeds* of a middle bigness.

The Description.

The first is a *Water-plant*, with a running, jointed, fibrous Root, a straight, striated, jointed, hollow Stalk; pinnated or winged Leaves, consisting of several pairs of oblong, blunt Pinna or Wings, slightly dented in the Edges joined to a Midrib, with an impair or odd one at the Extremity; of a light, shining, green: large, flat Umbells of white Flowers on the Top of the Stalk and Branches, to which succeed oblong striated Seeds of a middle bigness.

The second has a fibrous Root with the former, its lower Leaves lying on the Ground in the Spring, consisting of seven or 9 Pair of oblong, blunt and crenated Wings with an odd one, concluding the Midrib; of a more grayish, and as it were hairy Colour; the Stalk one or two Foot high, is straight, striated, hollow, jointed, with a Leaf at each Joint, from whose Bosom the several Branches arise, especially at the upper part; the Umbells are small, white, and succeeded by several small, striated, very hot tasted Seeds.

Skirrets have Roots consisting of several fleshy parenchymatous knobs adherent to one Head, from whence arise in the Spring the Leaves, consisting of several Pairs of oblong, narrow-pointed, crenated, light-green Pinna, adherent to a Midrib with an odd one (sometimes interspers'd with a few small ones irregularly plac'd) amidst of these arises the flowering Stem straight, striated and branched; with white Umbells on the Top, to which succeed oblong, small, striated Seeds.

The difference among these three is so inconsiderable, that they can scarce be distinguish'd by any Description, though by the View they are very discernable: *Water-parsnip* grows in the bottom of the Ditches and Drains, with a jointed running Root, so that it is soon known by its Soil, also by its *Parsnip-Smell* and Taste, to which it is so like, that when placed together, only the hotter tast and figure of the Seed can determine it. The *Stone-parsley* may be soon known by the Colour, by the Soil, which is on sandy and chalky Banks, and by the hot taste of the Seed, which more resembles that of Parsley, than a Parsnip. The Skirrets by the delicious taste of the knobby Root; and the Smell, more resembling that of a Parsnip than Parsley.

The Virtues and Uses.

The *Water-Parsnip* is seldom us'd in Physick, its esteem'd a potent *Antiscorbutick*, *Diuretick*, good in *chronical Cases* for removing *Obstructions* in the *Viscera*, and rectifying of the *Mais* of Blood, and may be used in *Ptisans*, *Apozemes* and *aperient Dyet-drinks* to provoke the Urine. Its Leaves are

are chiefly us'd, and here it may be enquir'd, why Plants that delight in a watry Soil, are of an hotter Taste, have more active Principles, and consist of a more penetrating volatile Salt, than the Plants of the same kind, which affect a dry Soil? If we consider that stagnating Ditches and Drains, also the Currents from Well-springs, which are chiefly the Soil of these hot, water antiscorbutick Plants, are either the Drains to a Level, or situated in the Declivity, or at the bottom of a rising Ground, so that the Waters of the Winter-floods, or rainy Seasons are empty'd in them; by which they wash off from the surface of the Earth, all the fat loose Substance which is usually inherent in manurable Ground, or fat Pastures; which being thus convey'd by the impetuosity of the Waters, soon subsides and fattens the bottom of these Rivulets and Drains: We may easily suppose, the active Principles contain'd in this fat Sediment is most susceptible of ascending, especially if they can be convey'd upwards by proper Instruments or Vessels fit for their Reception, such as we may believe the Fibres of the Roots, and the proper Tubuli of the Sap-vessels of Water-plants are, and the rather, because aqueous Particles capable of entering the Pores of the Fibers of the Roots of these Water-plants, are the most convenient Vehicle for suspending of these penetrating, volatile and saline Particles; for the manner of the Operation of these hot, juicy, antiscorbutick Plants in the Body, I delay till I come to Discourse of the *Anagallis*, sive *Veronica Aquat. vel Becabunga*, a noted Antiscorbutick.

That this is not the *Amomum Plinij* is agreed on by all, nor do I believe it to be that of *Dioscorides*, but I am ready to think it has been first introduc'd into the Shops by the Germans, as *Fuchsius*, &c. and from thence come to be universally substituted for the true *Amomum*, however, by its hot taste it may be admitted into the *Theriaca* along with *Ammi*, and I know no other Use for which its required in Physick; Authors are generally silent as to any other Medicinal Virtue it may have.

The *Sisarum* is oftner cultivated in Kitchen, than Physick-Gardens; its Root has a delicious Taste, and is frequently brought to the Table in the Spring among the other esculent Pot-roots of that Season, and I doubt not but is very Nourishing.

XII. *Amoris Pomum.*

1. *Aurea mala*, Dod pempt. 458. *Solanum pomiferum fructu rotundo, striato, molli*, C. B. P. 167. *Mala Aurea odore fetido quibusdam Lycopersicon*; J. B. 3. 34. 620. *Lycopersicon Galeni*, Ang. 217. Tournef. 140. Moris. Hist. 3. 520. Raij Hist. 675. Apples of Love.

2. *Solanum* Offic. *acinis nigricantibus*, C. B. P. 166. Tournef. 148. *Hist. des Plants* 38. hort. *f. vulg. acinis nigris*, J. B. 3. 34. 608. *vulg.* Park. Morif. *Hist.* Raij *Hist.* 672. *Hort. Baccis nigricantibus* Dod. pempt. 453. *niger vulg.* Cord. *Hist.* 758. common Nightshade.

3. *Solanum scandens seu Dulcamara*, C. B. P. 167. Tournef. 149. *Dulcamara*, Dod. pempt. 402. *Solanum lignosum siue Dulcamara*, Park. Raij *Hist.* 672. *Synopf. Stirp. Brit.* 199. *Tourn. Hist. des Plants* 42. *Glycyphicos siue Amara dulcis*, J. B. 2. 15. 109. Woody Nightshade or Bitter-sweet.

4. *Solanum Lethale* Raij *Synopf. Stirp. Brit.* 150. *Hist.* 679. *μαλανόκερος* C. B. P. 166. *manicum multis siue Bella dona*, J. B. 3. 34. 611. Tournef. 77. *Solano congener flore campanulato vulgatus fol. latioribus*, Morif. *Hist.* 3. 532. deadly Nightshade.

The T R I B E.

Dr. *Morrison*, and all his Followers, who chiefly distribute the *Plants* according to their *Fruit*, give these the general Title of *Bacciferae*, *Berry-bearing Plants*. *Morrison* adds *Polypermae*, whose *Fruit* contains many *Seeds*. Mr. *Ray* says, they are *fructu magis sparso*, I should rather think they were *fructu aggregato* (if this Distinction were necessary) for the *Solanum vulgare* and *scandens* have their *Flowers* dispos'd in Clusters, upon the Top of short *Stalks*; which are soon dispers'd into separate *Foot-stalks* for each *Flower*. The several *Species* here united together (because they partake of the same *Virtues*) are distinguishable both by the *Flower* and *Fruit*. The first three have *Monopetalous*, *Star* or *Wheel-flowers*, according to *Tournefort* divided almost to the Center, into five pointed, largely spread forth *Segments*. The *Flower* of the first is twice as big as those of the two following, which are *Pendulous*, or hanging downwards from the several *Foot-stalks*, and whose *Segments* are bended backwards about Midday, and hang down, and are flat towards the Evening. They are plac'd upon a small *Empalement*, divided into five small, green, pointed *Segments*. They have a small round hole in the Middle, penetrated by the *Embryon* of the *Fruit*, fitted with a small *Pointal* and *Button*, lying hid amidst five very short *Chives*, and oblong, flat, erect, yellow *Summits*, full of the *farina fecundans*, arising from the Center of the *Flower* (which when it decays, falls off whole) around this Hole. The *Embryon* soon becomes a round, soft, pulposus *Berry*, full of flat *Seeds*. The fourth is distinguished by its large, long, tubulous *Flowers* (superficially divided into five pointed *Segments*) and by its *bicapsular Berry*, so that *Tournefort* is excusable when he places it among the *Bell-flowers* in the first, and the rest among the *Wheel-flowers* in the second Class.

The Description.

1. *Apples of Love* arises from the Seed, and soon runs out into large, infirm, very much branched, round, hollow, and somewhat hairy Stalks, spread on the Ground with alternate, compound *Leaves*; each consisting of three Pair of *Pinna* dented in the Margent with an odd one closing the Midrib, having several small *Leaves* interspers'd like the *Agrimonia*, or *Argentina*, but more narrow and pointed, not hairy, but smooth, of a light Green. The *Flowers* arise near to, but not from the bosom of the *Leaves*, and frequently from the Intervals at a middle Distance betwixt them upon a small *Stalk*, soon divided into separate *Foot-stalks*. They are of a pale yellow, much larger than the following, have deeper yellow *Summits* in the *umbo* or middle of the *Flower*. The *Embryon* becomes a round *Berry*, twice as big as a *Cherry*; of an agreeable, pale, yellow colour when ripen'd, distinguish'd longitudinally by six Lines, which mark out so many *Celluls* or double *Placenta's*, to which the many flat *Seeds* adhere, being lodg'd in a soft pulpy Juice; its rarely cultivated in Gardens. The Fruit ripens in the Autumn, and the Plant decays with the first Frost.

2. The common and woody *Nightshade* are very like to one another, the first is annual, arising late in the Spring, but making quick advances both to *Flower* and *Fruit* after *Midsummer*. Its very much spread forth with round narrow *Stalks* and *Branches*, each distinguish'd by four or five protuberant longitudinal *Lines*. The *Leaves* arise alternately, those below larger upon one Inch *Foot-stalks*, broad at the Base, sinuated and pointed, rough, dark Green, lighter below than above, with five Pair of protuberant *Veins* proceeding obliquely from the middle one; all which terminate in a Point. The small white *Flowers* (with yellow *Umbones*) arise irregularly from the *Stalk* and *Branches* like the former, being frequently surrounded with very small *Leaves*, especially towards the upper part of the *Plant*. The *Berries* round, uncapfular, purple, red, or yellow, in the several species. The flat *Seeds* adhere to the *Placenta* or *axis medius*. It grows in Dunghills and fat manur'd Ground, in Gardens its easily propagated by the Seed.

3. The bitter Sweet has a perennial, fibrous, woody *Root*, infirm, small, round *Stalks* lying on the Ground, or arising to two or three Yards high; when it grasps and climbs up any *Tree* or *Shrub*: the *Leaves* are oblong, smooth in the edges and pointed, having usually two Ears at the Base. The *Flowers* arise irregularly in Clusters, from five to eight, together with the former; of a purplish blew; yellow *Umbones*; an oval *Fruit* of the same bigness with the former; pale Red, and beautiful when ripe
full

full of flat Seeds. The *Root* endures all the Winter, and sometimes the woody *Stalks* in mild Weather. It grows on Ditch sides, and in moist shady Places.

4. *Deadly Nightshade*, is a tall, strong, bushy Plant, has several gross, straight *Stalks*, arising from a gross thick *Root*, and ascending sometimes to two or three Yards high, dividing into *Branches*: Alternate *Leaves* like the former, but thrice as large, not sinuated, but broad at the Base, and pointed; dark Green above, lighter below. The deep purple *Bell-flowers* indefinitely and alternately plac'd, are large, hollow and Tubulous, superficially divided into five pointed Segments, yellowish, and hairy towards the bottom, with five *Chives* somewhat hairy also, and white *Summits*, with the Pointal hanging without the Flower fitted with a green *Button*. The Flower is sustain'd by a five pointed *Empalement*, which afterwards contains a round, purplish, black, shining *Berry*, of the bigness of an ordinary black *Cherry*, but more round, with a longitudinal Depression, marking out its Division into two Celluls; full of a black, nauseous, fetid, sweet *Pulp*, in which are lodg'd several small *Seeds*.

It do's not grow wild very frequently, neither in *England* nor *Scotland*, and when it is found so, its usually so near to *Gardens*, or places where *Gardens* have been cultivated, that it looks rather like an *Ejectamentum*, than an *indigneous Plant*. Its said to grow wild in a *Church Yard*, and Lanes about *Fulborn* in *Cambridgeshire*, also at *Sutton Cowfield* in *Warwickshire*. In a Ditch at the end of *Goswel-street* in the Road to *Islington* from *London*, in *Cuck-stone* near *Rocheſter*, in *Kent*, where all the Roads and Yards are over-run with it; also it was observ'd by one of my Correspondents, betwixt *Cul-rofs* and *Toryburn* in *Scotland*. It seems to have been more frequent in that *Kingdom* 700 Years ago, than it is now, though it be still frequent in the *Gardens* there. I shall give a memorable Instance of its *Vires*, when I come to speak of its dismal Effects.

Virtues and Uses.

The first three *Solana*, as they agree much in their Characters, so in their Virtues, only in a more and less intense Degree. The *Apples of Love*, though pleasant to the Eye, yet they are not so to the Taste, for if you but put your Tongue or Lips to the Fruit, it will burn them so as to be ready to blister, by which it may be look'd upon as not fit for internal Use, nor indeed for External; though they are said to make a Pickle of it, or to eat it with Oil and Vineger in the hot Countries, as we do Cucumbers; but *Caveat Emptor*, there is a good variety of physical Plants, though we do not meddle with such edg'd Tools.

The common and woody *Nightshades* consist of very acrimonious, tenuous and subtle Particles, which its probable may be curb'd in boiling, as we see an hot *Onion* by roasting or boiling, come to have a smooth, oily and fatuous Taste. There is nothing more recommended in this Country for a sore Throat, than a Tea of the dry'd Leaves of the *Solanum vulgare*, which they call *murrain Grass*, and I have known it very successfully us'd. I have also prescrib'd a Decoction of the Leaves of *Dulcamara* to a good Advantage, in which a proportional quantity of *Theriaca* has been dissolv'd, as a potent Sudorifick in violent rheumatick and pleuritick Pains, when there has been an indication for Sweating; though the raw Berries of both, are much to be suspected for producing the same Effects with the *Solanum Lethale*, when Children are allur'd by the pleasant colour of the Berries, especially the *Dulcamara*, to taste and eat them; from which Parents use to frighten them by calling them *Dog*, and sometimes *mad Berries*. Their Juice is apply'd externally for Burnings, cancerous and cacoethes Ulcers, also to the *Erisipelas* or *St. Anthony's Fire*, though *Simon Pauli* dissuades from the use of it, and says, that even the *Aqua Solani* with *Litharge*, has produced bad Effects. Its Leaves and Juice enter the *Unguentum populneum* and *Diapompholigos*, but in such a quantity, as no great harm need be suspected. The *folia Dulcamarae* are chiefly us'd for the *Populneum*, because the Leaves of the other do not suit with the Season of the *Poplar Buds*.

The *Solanum Lethale* seems to have a quite different Operation; for instead of an hot Acrid, it has a sweet, luscious and disagreeable Taste, so that it seems to produce the same effects with the *Hyoscyamus*, *Cynoglossum*, and other intense *Narcoticks*, which usually before they affect the Person with Sleep, produce *delirious* and *maniacal* Symptoms; however, its an *Herb* of so pernicious a Nature, that scarce any Author who treats of it fails from proper Observation, or good Information to give dismal Instances of its bad Effects. *Simon Pauli* refers us to *Lobelius* his *Adversaria*, and *Bodeus* a *Stapel*. Mr. *Rays* account of what happen'd to a mendicant Friar, upon the taking a glass of the Infusion of it in *Mallow Wine*, gives a good account of the various Symptoms it produces. In a short time he became *delirious* after a little (*Cachinne*) a grinning Laughter like the *Risus Sardonicus* succeeded; after that several irregular Motions, and at last a real *Madness*, and such a Stupidity as those that are sottishly drunk have, which after all was cur'd by a draught of Vinegar. Mr. *Miller* mentions several Children at *Croyden*, who were not long since poison'd by the Berries. There is another Instance of its bad Effects in my *miscellaneous Observations* from my proper knowledge. It's worthy of the Recital what Mr. *Ray* tells us happen'd to a Lady of Quality of his Acquaintance, who having a small Ulcer a little below her Eye, which she suspected to be

cancerous, she applied a bit of the Leaf of this *Solanum*, which so relaxed the *Tunica Uvea* in one Night, that she could not contract the *Pupilla* the next Day, so that the *Pupilla* of the one Eye was four times as big as the other; and upon the removal of the Leaf the Fibres recover'd their muscular Tone by degrees; and lest this should seem to be meerly accidental, she repeated the Experiment three times, at which Mr. Ray himself was present.

But the most memorable Instance of the direful Effects of this Plant, is to be seen recorded by the celebrated *Buchanan* in his History of *Scotland*, by which we may observe how the Almighty God can convert the most deadly Poisons into the fittest Antidotes, for those whom he has a mind to preserve. This obliges me to make a Digression, not altogether unsuitable, since it gives the Botanical Description of a Plant, writ about 150 Years ago by one who himself was no professed Botanist; the Use made of it, and the wonderful Effects it produc'd.

In the Reign of *Duncan I. King of Scotland* (who was afterwards murder'd by *Macbeth* the Tyrant) *Harold* the Dane invaded *England*, not long before the Days of *King William the Conqueror*. *Sweno* his Brother at the same time invaded *Scotland*. Upon his landing in *Fife* he obtain'd a signal Victory, which obliged the King of *Scotland*, with the Remainder of his routed Forces, to retire to *Bertha* (an ancient Town of great Note situated on the River *Tay*, which was not long after destroyed by an Inundation) and out of whose Ruin the Town of *Perth* was built, and now stands upon the same River, two Miles nearer the Sea, and pursued them so

Missa magna vis panis & vini tum e vite, tum ex hordeo confecti, ac succo infecti herbae cujusdam venificae, cujus magna copia passim in Scotia nascitur. Vulgo *Solanum somniferum* vocant. CAULIS ei major bipedali in ramos superne diffunditur: FOLIA latiuscula, acuminata exteriori parte, ac languide virentia: acini praegrandes, ac nigri (cum maturuerunt) coloris, qui e caule sub axilla foliorum exeunt: sapor eis dulcis, & prope modum fatuus. SEMEN habent perexiguum, velut fici grana: vis fructui, radici, ac maxime semini, somnifera, & quae in amentiam si largius sumantur agat. Hac Herba cum omnia infecta essent, qui commeatus in castra vehebant, ne qua doli subesset suspicio, praegustabant, Danosque magnis poculis invitabant ad bibendum.

Duncanus, qui futurum sciret, ut vis potionis una cum somno & visceribus conciperetur, jam *Macbethum* cum suis per aversam ab hoste portam summo silentio in urbem receperat; compertoque per exploratores, somno & vino graves jacere hostes; *Banbonem* iterum aditusque in castra gnarum caeteris in insidiis collocatis, cum parte majore exercitus misit. Is ingressus castra, sublato clamore magno, opinione sua omnia negligentiora invenit. Pauci tumultu excitati cum velut amentes, temere discurrerent, ab obviis caeduntur. Reliquis fere mors cum somno continuata est: Rex, per Temulentiam velut mortuus, a paucis qui minus vinolenti erant, correptus, cum non modo viribus, sed etiam sensu careret instar oneris in jumentum forte oblatum injectus ad naves est delatus.

closely, that he laid siege to the Town both by Land and Water. The Scots were put to great Straits, not for want of Provisions, but for want of Men, to repel the Besiegers. King *Duncan* was a peaceable, unactive Man; he had sometime before committed the Government to the Management of *Bancho*, of a cunning and subtile Wit, and to *Mackbeth*, of a fierce, bold, aspiring Spirit. *Mackbeth* went to the Country to raise a Reinforcement, while *Bancho* treated with the Enemy, and first obtained a Cessation of Arms, and then spun out Time by framing of Articles of Peace. The Danes wanted Provisions, but abounded with Men; the Scots abounded in Provisions, but wanted Men. The Truce was equally acceptable to both, especially to the Danes, who for the present expected Plenty of all Things, and for the future the Conquest of a whole Kingdom. Care was immediately taken by the Scots to afford them all manner of Liquors, both Wine and Ale, and they contrived to mix with them a good Quantity of the deadly Nightshade (this *Solanum Lethale*, or *Somniferum*) of which we now treat. The Bait took, the Danes drank plentifully, and were all intoxicated, mad with this poisonous Juice, and asleep through Drunkenness. The Scots fell upon them, kill'd the most part, and with much ado a few remaining, got to their Vessels, while their besotted King was carried like a Sack-load upon a Beast down to the River, where there were scarce Sailors enough saved from the Slaughter to man the Vessels. This put an End to the Danish Attempts upon Scotland; for before they departed they swore they would never make a Descent upon that Kingdom any more. For farther Illustration of this noted Piece of History, I have thought fit to insert it in the Margin in the Author's own elegant way of Expression. *Rerum Scoticarum*, lib. vii. p. 112. fol. Edit. Edinb. 1715.

As for the external Use of this deadly Nightshade, it's much commended for dissolving of scirrhus and cancerous Tumours, for dissolving of curdled Milk in the Breast, and for cleansing of cancerous Ulcers; but as being given inwardly it's of very malignant Qualities, I dare not recommend it for any outward Application, lest perhaps this Virus, or some poisonous Particles, be introduc'd into the Blood. We are sensible that Opium being externally applied proves a great Anodyne, by easing of Pain, and a Narcotick or Soporifick, when perhaps its inward Use was not so safe, either upon account of the Weakness of the Patient, or when the Patient upon the taking of Laudanum and other Opiates has been rendred too watchful (a quite contrary Effect) and even delirious, both which Symptoms I have sometimes seen removed by external Applications when internal would not do; and nothing is more frequent with some of the Profession than to use Unction with Mercurials, in order to raise a Salivation (tho' Dr. Quincey in his *Prælect. Pharmacut.* p. 58. seems to be a Stranger to that way of doing.) I say, since 'tis evident that Medicines externally applied do produce considerable

Effects

Effects on the Blood, I dare not advise the external Application of a Plant, which being inwardly administred, proves that which they call a rank Poison. Before I leave these *Solana*, I have thought fit to add other two of that Family, the one not rarely cultivated in our Gardens, the other planted in the open Fields, both of more frequent Use in the Kitchens than in the Shops.

5. *Solanum Capsicum dictum.*

Capsicum filiquis propendentibus, Tournef. 152. *Capsicum Actuarii Caninum Zinziber Avicenna calecuticum sive piper Indicum majoribus filiquis*, Lob. Icon. 316. *Solanum urens Capsicum dictum*, Moris. Hist. 3. 528. *Solanum Capsicum Indicum vulgatissimum*, Hort. Lugd. Bat. 574. *Piper Indicum vulgatissimum*, C. B. P. 102. *Sive Calecuticum filiquosum* J. B. 2. 15. 180. Raii Hist. 676. Indian or Guinea Pepper.

The *T R I B E*.

This by its acrimonious hot Taste and Structure of the Flower is undoubtedly a *Solanum*, but its Fruit being rather a Pod than a Berry, and being divided into two or three Pouches, plainly distinguishes it from its Congeners.

The Description.

From an annual fibrous Root it arises with a rough, solid, jointed, branched, angular Stalk, about two or three Foot high; the Leaves from the Joints are smooth, long, narrow, dark green, and pointed, with equal Edges, upon long Footstalks; the Flowers sometimes from the Bosom of the Leaves, sometimes from the Divarications of the Branches, are placed upon long, channell'd, deep red Footstalks, white, like those of the common Nightshade (but much larger) with yellow Umbones, to which succeeds an oblong Fruit, about the bigness of a Man's Finger, of a deep red when ripe, juicy when first pull'd, divided into three Pouches, but soon, upon drying, becoming membranous, full of flat, extreemly hot tasted Seeds. It's sown in Gardens, sometimes produces the Pod, but seldom ripening the Seeds; it perishes with the first autumnal Frost.

Virtues and Uses.

The whole Plant is extreemly hot with the other *Solana*, but has no kind of Malignity, being rather of the Nature of the other Kinds of Pepper,

Pepper, to which it may be a *Succedaneum*, if they were not cheaper and more frequent. In *Italy*, *Sicily*, and other hot Regions, also in *England*, they pickle the green *Pods*, but they are so extreemly hot, that they are scarce eatable alone, tho' they may be mixed with pickled *Cucumbers*, *Purslane*, or other such as they call cold Pickles.

6. The *Solanum tuberosum esculentum*, or *Potato*, tho' no Dispensatory Plant, may be named here for its extraordinary nourishing Quality, by which it's so famous a Pot Root, and so frequent in the Kitchens. Tho' it agree with the other *Solana* in all the other Characters of *Flower* and *Fruit*, yet it has none of their acrimonious and malignant Quality. It seems to have been so rare in *Caspar Bauhinus's* Days, that he has taken the Pains to give a full Description and an exact Figure of it. † He justly observes that its compound dark green *Leaves* commonly consist of three, sometimes four Pair of *Pinnae*, and an odd one, and contrary to most of the conjugated or pinnated *Leaves*; the first Pair is least, the other two gradually larger, and the odd one largest of all, being broad, roundish, and somewhat pointed. The *Flowers* are larger than those of any other *Solana*, of a bluish red, and sometimes white. The *Empalement* is proportionally large, and *Berry* larger than the biggest Kind of *Cherry*. The *tuberous Root* is so well known that I need say nothing of it, only that it's so productive by its small *Bulbs* or *Childlings*, which soon increase to a great Bigness, that it is very easily propagated wherever 'tis planted, and it's but seldom raised from the Seed.

Caspar Bauhinus says this Root was first brought into *England* from *Virginia*, which must have been in *Queen Elizabeth's* Reign, from thence it was conveyed to *France*, and other Countries, and now it abounds so much both in *Britain* and *Ireland*, the latter especially, that it serves for the Bread and daily Food to many a poor Person there. *Bauhinus* says they made Bread of it in the *Indies*, which they call *Chunno*. They dry the *Roots* at the Sun, by cutting them in slices; being thus dry, they break, powder, and make Bread of them, which will last a very long time (*ex quibus eduluum Chunno Nuncupatum admodum diu durans conficiunt*) so that if Bisket were bak'd of it to be kept for long Voyages at Sea, since 'tis now so common, or may be propagated in so great an abundance, it might turn to a very good Account, and be had at as cheap and a cheaper Rate than either *Wheat*, *Rye*, or *Barley*. Who want to be farther satisfied about it may consult the forecited Author; I shall only add, that this is a singular Instance where the *Virtues* of *Plants* may disagree when they agree in their *Characteristicks*.

N. B. Upon writing of this I have been inform'd by an expert *Physician* that the *Leaf* of the *Solanum Lethale* being applied to the *Anus*, is an im-

mediate Cure for the *Tenesmus*, by asswaging the sharp, uneasy, fretting Pain, having tried the Experiment upon himself; and that he knows it to be an effectual Discutient of *schirrous Tumours*; however, it may happen, when the *Articula* on the one side, and the thin *Teguments* of the *Leaf* on the other, may prevent the more immediate Admission of its *poisonous Particles* into the Blood, yet I can by no means advise the Application of its Juice to *cancerous Ulcers*, lest its *Malignity* be too soon introduc'd into the Blood by the open Orifices of the *Cappillaries*, and then the Cure may prove worse than the Disease.

XIII. *Amygdalus*.

Is the first *Fruit Tree* (in common Acceptation) I meet with; for tho' all *Plants* bear a *Fruit* after their Kind, yet *Trees* more especially are distinguished into the *Barren* and *Fruit Trees*, that is, whose *Fruit* is *esculent*, or *eatable*, or *not*. The *Almond Tree* is only eatable by its *Kernel*, but there are others I shall join with it, whose *Fruit* is otherwise *eatable*, viz. by the *Pulp*: which leads me into the general Consideration of *Esculent Fruit*, and that in different Respects, according to their *Kinds*. 1. As to their *Bigness*; they are *Baccifera* Berry bearing; *Prunifera*, bearing *Plumbs*; and *Pomifera*, affording *Apples* or *Pears*, according to their *Kinds*. 2. As to their *Substance*, they are *Offiferous* or *pulpous*; the *Offiferous* are divided into the *Nuciferous*, the *Nut Kind*; and *Testaceous*, the *Stone-Fruit Kind*.

The *pulpous Kind* are divided into the *succulent Fruit*, such as most *Berries*, *Plumbs* and *Cherries*. The *Parenchymatous* are the *Apples* and *Pears*. Some of the *Testaceous*, or *Stone Fruits*, are *succulent*, as the *Cherries* and *Plumbs*; and some *parenchymatous*, as *Apricocks* and *Peaches*. Some approaching to the *Nuciferous*, as this *Almond* (of which we treat): and some of the *Pomiferous* are of the *succulent Kind*, as *Oranges* and *Lemons*, &c. of all which hereafter.

Amygdalus amara & dulcis.

Amygdalus sativa, C. B. P. 441. Raij Hist. 1519. *dulcis & amara* J. B. 1. 2. 174. Tournef. 627. Boer. Ind. 245. *Agric. de Agricultura*, P. 3. The sweet and bitter Almond.

XIV. *Malus Persica*.

Malus Persica, J. B. 1. 2. 157. Raij Hist. 1515. *Persica Molli carne & vulgaris, viridis & alba*, C. B. P. 440. Tournef. 626. Boer. Ind. 2. 243. The Peach Tree.

XV. *Malus Armeniaca*.

Armeniaca Malus fructu majore ex luteo rubescente, Hort. Lugd. Bat. 59. *Mala Armeniaca majora*, C. B. P. 442. *Armeniaca Mala majora*, J. B. 1. 2. 167. Raij Hist. 1514. *Armeniaca fructu majori*; *Nucleo amaro*, Tournef. 623. Boer. Ind. 242. The Apricot Tree.

Vegetation of an Almond, and other Stone Fruit Trees.

Tho' the sweet and bitter *Almonds* differ in their Taste, and grow on different *Trees*, yet are they no more to be esteemed different *Species* than that vast Variety of *Apples*, *Pears*, *Plumbs*, which, tho' they are distinct in *Bigness*, *Colour*, *Taste*, yet as to the *Wood*, *Bark*, *Flower* and *Leaf*, they are still the same. The *Almond* and *Peach-Kind* are so like to each other in *Leaf* and *Flower*, that they are only distinguishable by the different Substance of their *Fruit*. The *Apricot* is so like to the *Wall Plumb*, in *Leaf* especially, that it can be only distinguish'd by the Substance of the *Fruit*, to be nearer to the *Peach Kind*.

General Character.

All of them have a pale red Flower, with a monophyllous Empalement, deeply divided into 5 or 6 Segments, surrounding a rosaceous Flower, consisting of 5 or 6 Petals, so united in the bottom of the Empalement, as to make up an hollow Basin, endow'd with a great many Stamina or Chives, with round Summits, about 30 in Number.

The *T R I B E*

That I may trace these *Stone Fruit-Trees* (as it were) from the *Cradle* to the *Grave*, from the planting of the *Stone* in the *Ground* to the eating of the *Fruit* on the *Table*, I have thought fit to repeat what I have advanc'd elsewhere concerning the *Vegetation* and *Nourishment* of *Trees*, and to add some other Improvements made from the proper Observation of Dr. *Agricola* in his *Treatise de Agricultura*.

In my *Botanick Essays* quoted in a Letter from *Boccone* to *Tournefort* (*Essay* v. p. 334.) is asserted, 'That the little *Plant* generated in those cal-
'led *Seeds*, is either begot in that Part to which the *Pedicle* adheres, or
'in the opposite Part, or somewhere else. 2. That the Part to which
'the *Pedicle* adheres is stretch'd forth, in order to compose the *Pedicle*
'or *Fibre* of the *Root*, from whose upper Part or Top do proceed the
'Leaves.

‘ *Leaves.* 3. If it is generated towards the *Top*, the *Leaves* are stretch’d forth towards the *Pedicle*, and the *Root* towards the *Top*.” Dr. *Grew* seems to be the first who discover’d the *Hole*, by which the *Extremity* of the *Pedicle* is still continued with the *Point* of the *Radicle*, until the *Seed* be fully ripe, and the *Radicle* and *Seed-Leaf* is fully formed in the *Seed*. This *Hole*, and the *Point* of the *Radicle* opposite to it, is very observable at the *Eye* of a large *Bean*, especially if it has been some time soak’d in *Water*, and in the *Seed* or *Key* of the *Ash Tree*. Dr. *Agricola* makes a farther Improvement on this *Doctrine*. He compares an *Almond* to an *Egg*, with its *hard Shell*, and two *inner Membranes*. The *hard Shell* is indented near the *Top*, whence it makes an *Oval* along the *Sides* to the middle, where it begins to take the *Roundness* of the *Egg*, and terminates in a *Point*. The outside of the *Shell* is full of *Depressions* and little *Holes*, where the *Nerves*, *Glands* and *Tubes* communicate with the green *Covering*. The *Shell* is hard and unequal, being *thick* on the one side and *thin* on the other; and on the *thick* side, towards the *Top*, is lodg’d a *small Orifice*, which will admit of an *Hogs Bristle*, which reaches from the *Extremity* of the *Radicle* to the inclosed little *Bud*.

If this *Conduit* is carefully trac’d, the *Canal* may be observ’d interspersed with *Veins*, *Nerves*, and little *Tubes*, by which the *nutritious Juice* is convey’d to the interior and lower Part of the *Radicle*, where there is a *Receptaculum*, a *Repository* for such *Juice* or *Sap* as is fit for its *Nourishment*, whence it is absorbed, and drawn to it by the *Navel-string*, lodg’d in the first *Skin*, and thence to the *Placenta*, very remarkable on the *Top*. This *Juice* is return’d by the *Veins*, plainly observable throughout the *Skin*; and thus is the *Embryon* nourished.

The first *Skin*, of a brown Colour (which may be properly called the *Chorion*, or external Cover of the *Fœtus*) being removed, beneath it is a fine tender *Skin*, answerable to the *Amnios* or *inner Skin* of the *Egg*, which immediately incloses the *Fœtus*. It’s extremely thin and smooth towards the *Stalk* of the *Fruit*, and is always moist, by which the inclosed *Almond* is somewhat viscous in its Surface.

Next to this *second Skin* appears the white Substance of the *Nut* or *Kernel* (not unlike the Colour of that called *Almond-Milk*) which when drawn from its last *Skin*, the *Bottom* or *Tail* of the *Nut* or *Kernel*, the *Basin* or *Place* where part of the *Radicle* is inclosed, is plainly remarkable, where the *nutritious Juice* is absorbed, after having passed thro’ the *Navel-string*.

You next separate the *Lobes* of the *Almond*, and lay them open as the *Leaves* of a *Book*, and there you discover the *Plume* at the pointed End, which contains the whole Form of the *Tree*, and in the other End, towards the *bottom*, is to be remark’d a small *Slit*, where the two Parts

are

are united near the Radicle. They alter their white Substance by little into a green Colour, and produce what may be called the *minor Seed* of the *Plant*, from whence both *Root* and *Trunk* receive their *Nourishment*, until the *Juice* of the *larger Seeds Leaves* is quite spent, and then they decay and dwindle away.

When the *little Bud* is not pregnant it never opens, but no sooner does the *Principle of Vegetation* begin to act than it opens at the *top*, and another *little Spark* or *Flame* comes out afresh, and another Part, much shorter and thicker, of an oblong Figure, puts forth at the bottom, as a Body in Figure like half of an Egg, which terminates in a Point. In the first Part, or in the Plume, are contained the *Branches, Twigs, Leaves, Flowers* and *Fruit*, in some measure observable by a *Microscope*; and it is to be seen with the *naked Eye* how Nature has grafted the *Stem* with the *Root*, for it would seem as if the *Stem* and *Root* were not one continued *Body* at first, but two distinct Parts, until the *Vegetation* begin at the Center, and then both *Root* and *Stem* are united together. See *Philosophical Treatise of Agriculture, Page 7. Plate 1. Page 14.* I might have added other Observations suitable to this Purpose, and some other Experiments made in the Vegetation of Peaches by the foresaid ingenious and curious *Author*, but this (which to some may seem extrinsick from my Design) I hope will suffice.

The Description.

XIII. The *Almond* and *Peach Trees* are so like to each other as to their *Leaf, Flower* (as has been observed) and external Shape, that they are scarce distinguishable; both have oblong, narrow, sharp pointed, crenated, light green, shining *Leaves*, like those of the *Salix*; the *Leaves* of the *Almond* less proportionally than the *Peach*; the *Almond Flowers* are of a whitish, those of the *Peach* of a much deeper Red, proceeding before the *Leaves*, and springing forth without Footstalks from the larger and lesser *Branches*, rosaceous, with a great many *Chives* and *Summits* surrounding a strait *Stylus* and round *Button*. The *Fruit* of the *Almond* is flat, somewhat bended, with a thin outer green Coat, surrounding a rough *Shell* of the same Figure, and containing a large eatable *Fruit*, of a white Substance, and either sweet or bitter oily Taste.

XIV. The *Fruit* of the *Peach* is round, *parenchymatous* and *fleshy*, eats hard, unless well ripe, rough without, of a yellow Green, and of a pleasant Taste; the *Stone* is very rough, thick and hard, containing a Kernel like that of an *Almond*, but less, of a pleasant bitterish Taste.

XV. The *Apricock* or *Apricot Tree* is much like the *Peach*, its *Branches* are not so small the first Year (for those of the *Almond* are small, flexible, and

and Twig-like): Those of the *Apricot* groffer and stiffer; its *Leaves* are broad, large, more like a *Plumb-Tree* or *Black Poplar*; the *Fruit* with a Longitudinal Depreffion, like the other, not so rough; of a Taste like unto it, but a softer and more juicy or pulpy Substance. The Stone and Kernel do not differ much, save only in the Bigness proportional to the Fruit.

They are usually planted on *Garden-Walls*, and, if well manur'd, produce very plentifully here in *England*; but for their Culture, Management, different Kinds of Fruit, I leave that to the Care, the Art, and Mystery of the expert and curious Gardiners in and about *London*; and who from thence are sent forth as from a Nursery, to the Noblemens and Gentlemens Gardens all over the Country in such an Abundance, and endow'd with so much Experience in their Profession, that no Country in the Universe can produce so many knowing Gardiners as *England* can afford at this Time.

The *Almond-Tree* comes to a great Perfection with us, as to the Wood; but seldom perfects the Fruit here, as in the hotter Regions of *Upper Germany*, *France* and *Italy*: But one Reason may be, the Fruit it self not being eatable, and the *Almonds* are imported in so great Quantities from Abroad, and at so cheap a Rate, that it's not worth while to bestow so much Pains in pruning, cultivating, and manuring of them, as of the *Peaches* and *Apricots*; for I am persuaded, they who have come so great a length in rendering of *Peaches* fertile, could not fail to render the *Almond-Tree*, his Brother, as fertile as the other.

Virtues and Uses.

The Almond both sweet and bitter, consists of *Farinaceous*, *Nutritive*, and *oleaginous Particles*: They are much in use among the *Confectioners* for their *Sweet-Meat Entertainments*. They are of use in the *Kitchen* for nourishing Dishes; and in the *Apothecary's Shops* for *Emulsions* and *pectorale Compositions*, such as *Looch e pino*; *de Papavere*; *sanans*; *spec. diapienidion*, *Elect. pectorale*, *Diapersicon*, &c. The *Amygd.* is frequently us'd in most Distempers of the *Breast* and *Lungs*; it is either drank up alone with Sugar and White Wine, or it enters into *pectoral Linctus's* and *Electuaries*, &c. It's apply'd externally for beautifying of the Face; it is also prescribed in *emollient Liniments*. The *Oil of Bitter Almonds* is chiefly us'd, a little Cotton being dipp'd amongst it, or by being syring'd into the Ears of those who are deaf by the indurated Wax.

Peaches are not now much used in Medicine. The Old Dispensatory prescribes the *Syr. Fl. Persicorum* among the purging Syrrups, made of a strong Infusion, or rather the Juice of the *Peach-Flowers*; but it's not in use. It likewise enters the green *Apricots* among the *condita*; but these Preparations, however they may please the Palate, are not of much medicinal

Use: They frequently use the *Apricot* and *Peach-Stones* and *Kernels* bruised and infused in *Brandy*, to make that they call *Ratisia*.

N. B. During the Time of making my Observations, in order to publish my *Botanick Essays*, I had frequent Conferences with that ingenious and expert Gardner Mr. *Fairchild*, in whose Garden I first observed the Male and Female-Flowers on the *Orange* and *Lemon-Trees*. Mr. *Fairchild* told me, that above 20 Years he had observ'd those he call'd *barren* and *fertile Flowers* on the *Peach*; for until my Acquaintance with him, he had no Notion of the Sexes of Plants: We then observ'd the *Male-Flowers* more frequent on the *Almond-Tree* than the *Female*; and since that Time, I have observ'd the same *Male-Flowers* in most esculent *Fruit-Trees*, with a *Rosaceous Flower*, such as *Apples*, *Plumbs*, *Cherries*, &c. and that the *Male-Flowers* were the first both blossom'd and blown. The Way to discern is, by a grosser *Stylus* or *Pointal* on the one than in the other; also by a more tumid *Calix*. Now whether the Frequency of these *Male-Flowers* may proceed from a certain Weakness, or want of a sufficient Supply of *Nourishment*, to push forth and ripen the Fruit, or whether a more than ordinary Quantity of the *farina fecundans* be required for *Impregnation* of those which are after to become such *large, gross*, or such *hard, stony Fruits*, may be a Question. It thus far consists with my constant Observation, that the *Male-Flowers* are first blown, and that they are more frequent in dry, than moderately wet Seasons, when the Fruit, generally speaking, does not so much abound. See more of this, *Botanick Essays* 4. p. 291. &c.

XVI. *Anagallis Terrestris*.

1. *Anagallis Cæruleo Flore*. C. B. P. 252. Tournef. 142. Moris. Hist. 2. 569. Boer Ind. 1. 103. *Cærulea Fœm*. J. B. 3. 29. 369. Raij. Hist. 1024. *Fœmina* Dod. pempt. 32. Female Pimpernel.

2. *Anagallis Phœniceo Flore*. C. B. P. Tournef. Boer. Moris. *Phœnicea Mas*. I. B. *Mas*. Dod. Raij. Hist. Male Pimpernel.

XVII. *Anagallis aquat. f. Becabungæ & Veronica Mas, f. Be-tonica Pauli*.

1. *Anagall. min. aquat. fol. subrotundo*. C. B. P. 252. *Aquat. fl. purpureas cente fol. oblongo minor*. J. B. 3. 38. 780. *Veronica aquat. maj. fol. subrotundo*. Moris. Hist. 2. 323. Hort. Lugd. Bat. 622. Tournef. 145. Boerh. Ind. 225. *Anagallis rectius Veronica minor fol. subrotundo*. Raij. Hist. 852. *Berula* sic

sive Anagallis aq. Tabern. Icon. 719. vulg. Becabunga Park. Aq. sive Becabunga
 Ger. common Brooklime.

2. *Veronica Mas supina & vulgatissima. C. B. P. 246. Supina vulg. fol. serratis. Moris. 2. 318. Tournef. Boer. Raij. Veronica vulg. fol. Rotundiore. J. B. 3. 38. 282. Mas Serpens. Dod. pempt. 42. Male Speedwell, or Paul's Betony.*

The T R I B E.

Dr. Morison, Mr. Ray, and the other Botanick Authors, who preceded Tournefort, seldom consider'd whether a Flower were *monopetalous*, deeply divided into 4 or 5 Segments, or *tetrapetalous* and *pentapetalous*, consisting of so many Petals; chusing rather to class the Plants by the Fruit; but even in that there was a general Error concerning the *Anagallis*, until Dr. Morison discover'd that the *Anagallis aquat.* of the Ancients is a *Veronica*, whom Mr. Ray follows; and Tacito Authoris Nomine makes use of the Discovery as his own, as has been observ'd elsewhere. Though Dr. Morison himself fails in that he would have the *Anagallis* to be *pentapetalous* and *capsular*; and the *Veronica*, *tetrapetalous* and *filiculous*, which Mr. Ray, in his *Method. Emend.* has corrected, by calling them *Enangiosperme*. As to their Flower, he says, they are *Tetrapetaloid* and *Pentapetaloid*; and only says, *Anagallis* is *vascular*, but gives no Title to the Fruit of the *Veronica*. Tournefort gives but a general Account of both, when he says, *cujus pistillum abit in fructum siccum*. Nor is the accurate Boerhave very particular here, when he only says, the *Anagallis* is *Monangiospermos*; whereas he might have call'd it, *Monangiopolyspermos*, as the *Veronica* is *Diangiopolyspermos*.

XVI. The general Character then of the *Anagallis* is, that it has a *monopetalous Flower*, divided into 5 Segments, with a round *unicapsular Fruit*, opening transversely, and shedding several Seeds.

XVII. *Veronica* has a *monopetalous Flower*, divided into 4 Segments, with flat, heart-like Fruit, divided into 2 Pouches, having its *Septum*, or Mid-wall, placed perpendicularly across the Center, from which the Pouches on each side, upon ripening, shoot, and shed several small Seeds.

The Description of the *Anagallis Terrestris*.

Upon what the Ancients divided the *Anagallis* into Male and Female, I cannot guess. Mr. Ray says, they do not differ in the Leaf, but I have observ'd

observ'd the contrary ; for before they begin to flower, that with the blue Flower has a *Cessious* or blueish green Leaf, larger and more pointed than the other. The blue Flower is also larger, and the Fruit more oval : They are small, low Plants, with a small, fibrous, annual Root, sending forth a few infirm, triangular, or rather quadrangular jointed Stalks, with 2 or 3 small, oval, oblong, or pointed Leaves, without foot Stalks from each Joint. The Flowers are upon long, small Pedicles, arising singly from each Joint, *monopetalous*, divided into five Segments, deep Red, and less in the one ; Blue, with a purplish Bottom, in the other ; with five Chives and Summits, to which succeeds a spherical, *unicapsular* Fruit, about the Bigness of Coriander, opening transversely, and shedding several corner'd dusky Seeds, adhering to a Placenta or middle Axis : It flowers in June or July. The Red grows on the Way-sides in Arable Ground, and in Corn-Fields among the Corn, as does the Blue, but the Red is more frequent.

There is another Species belonging to this Family, which, though not *officinal*, having treated of it twice before, I have thought fit to name it here, *viz.* That which formerly was known by the Name of *Pyrola Alpinæ flore Europææ*, that it may be distinguish'd according to C. B. from the *Americana*. Mr. Ray, in his *Synop. Stirp. Britt.* places it among the *vasculifera pentapetaloidæ* ; but in his *Meth. Emend.* he makes it *incertæ sedis*, being unacquainted with its Fructification. This made me, upon Observation of its Fruit, as well as of the Flower, to refer it to this Genus : In my *Miscellaneous Observations*, I call it *Pyrola Unicapsularis*, since it had enjoy'd the Name of *Pyrola* so long ; but in my *Botanick Essays*, I have design'd it *Anagallis Unicaulis erecta* ; for it's only by its *unbranch'd* Stalk, and *erect* Position with a darker green Colour of the Leaf, and white Colour of the Flower, that it differs from its Brethren the *Anagallides* : It's very much like the *Pyrola Alpinæ flore maj.* C. B. *prodr.* p. 100. See its Description, *Botanick Essays*, p. 160.

The Description of the Veronica.

1. *Common Brooklime* has a round, smooth, juicy Stalk, creeping on the Ground, sending forth several small Fibers from the lower Part, by which it takes Root, and a Pair of oblong, light green, blunt, smooth Leaves, from the sides of each Joint ; from whose Bosom arises a small Spike, loaded with thin-set, small, blue Flowers, upon short foot Stalks, *monopetalous*, spread forth into four deep divided, blunt Segments ; one, for the most part larger, upon a *tetraphyllous* Empalement, with two obliquely ascending Chives, and proper Summits, to which succeeds a flat Heart-like Fruit, with small flat Seeds. It grows on the sides of Ditches, and marshy and watry Places, flowers most part of the Summer. There are several other

other Species of these Water *Veronica's*, which partake of the same Virtues; but this middle Species, as being more frequent, is most in use. I once found this Species, with the Variation of a *white Flower*, at the Mill of *Craigy*, near *Perth* in *Scotland*. I cultivated and improved it for several Years in my *Garden*. Its *Leaves* were less in Proportion, of a lighter Green, and more crenated. It could scarce endure the Winter Frost, and was chiefly propagated by some of its youngest and most tender Joints, which emitted radical Fibres, and overcame the Severity of the Cold, remaining until the Spring Season, as we see happens frequently to *Pulegium*, *Scordium*, &c.

Male Speedwell, or *'Paul's Betony*, is a small, low, frequently branched Plant, spread on the Ground, having, *Germander* like, somewhat notch'd *Leaves*, but less and lighter, a little hoary; the spiked *Flowers* on the upper part of the *Stalk* are small, dark Blue, upon short *Footstalks*, and succeeded by flat, furrowed, *Heart-like* and pouched *Seed Vessels*, containing small *Seeds*. The *Root* is small, fibrous, and *perennial*. It flowers and perfects the *Seed* all the Summer, growing in dry Meadows, Pastures, and not very fat moorish Ground, on Banks, and at the sides of Foot-Paths.

Virtues and Uses of Anagallis Terrestris.

Anagallis is so like to *Alfne media* in the Largeness of the Plant, Manner of growing (tho' it be not often so luxuriant) Figure, and Disposition of the *Leaves*, that I'm under no difficulty to pronounce their *Virtues* to be much alike. I have already, in Discourfing of *Alfne*, given an Account of the Operation of these moderate Astringents, (of which this *Anagallis* is, by all Authors, declared to be one) but more intense than the *Alfne*. It's therefore said to be *vulnerary*, *Alexipharmick*, good in the *Plague*, *pestilential Fevers*, against the *Bite* of a *Viper* and *mad Dog*, also in *Maniacal Cases*, for the *Epilepsy*, and griping of the *Guts* in new born Children. It is also recommended in *hectical* phthifical Cases, and other Diseases of the *Lungs*; all this may be tolerably well accounted for by its *Subastringency*, in compressing the Motion of the *Blood*, constricting of the *Pores* of the *Cappillaries*, by rendring more firm and compact the *Craffamentum*, and by blunting and absorbing the *acrimonious Particles* of the *Serum* of the *Blood*. It's also said to be good in *hydropical Cases*, and they even attribute to it the Virtue of *referating* the *Obstructions* of the *Liver* and *Spleen*, and *dissolving* of the *Stone*. Several Authors recommend it for *Phrenfies* and *Deliriums* in continued Fevers, being given in *Decoction*, in *Tincture*, with *Spirit of Wine*, or in *Extract*. The last of which fully shews its *Astringency* and *Fixedness* of its Parts; for no *Extract* ought to be made of a *volatile* or *aromatick Plant*, for then the most useful Parts

will be evaporated, and only the more unactive or *Caput Mortuum* will remain. *Simon Pauli*, after his tedious and prolix way of Expression, enters upon its being more especially made use of in that Country for asswaging of goutish Pains, being boiled into a *Cataplasma* with Urine. *Le-seleus* goes yet farther with its *Astringency*, and says it's so powerful a *Binder*, that if the *Plant* is kept in the Hand it will stop the Motion of the *Blood*. And from *Lonicerus*, Fol. 204. says, that at the opening of a Vein no Blood will flow out so long as the Herb is kept in the Hand. He recommends it for stopping of the *Fluxus mensium nimius*, by hanging it round the Neck, or by applying of it to the Heart-pit. He treats only of the *Anagallis Mas*, for it seems that with the blue Flower is not indigenous in *Prussia*, and it's probable the Red may be more intensely *astringent* than it, for in discoursing of the *Amaranthus*, I made a Conjecture that red Flowers are more durable, and have more *Astringency* than any Flower of a different Colour of the same Species of Plant. I doubt not but the *Amaranthus* with a deep red Spike is the most *astringent*. I should not look upon the *Flores Balauftiorum*, if there were any such of a white Colour, as so *astringent* as the common red Flowers in the Shops; and it's plain the Scarlet Rose is the most *astringent*, the pale Rose on the contrary is *laxative*, and the white Rose the more fragrant. Every one knows the *Fructus Prun. Sylv.* the common Sloe, is most *astringent*, especially if not fully ripe, and yet the white Sloe frequently sold in the Market here is so far from being *astringent*, that it's *laxative*, with the other Garden Plums. But notwithstanding what is said, the *Anagallis* is seldom used in Physick, for the Plant is so small, that it would take some time to gather any Quantity for common Use; so that there being others of the same Virtues, it's let alone.

Virtues and Uses of the Brooklime.

I have given the Reason (speaking of the Water Parsnip) why Water Plants, generally speaking, are of a hotter Taste, have more volatile active Principles than those of the same Family in a dry Soil; now I come to shew why such are for the most part potent *Antiscorbuticks*. When the Ancients came to give the *Rationale* upon the Operation of Medicines, they had recourse to the Quality, and their several Degrees, such as hot and dry, cold and moist in the first, second, third and fourth Degree; and they supposed that a cold Disease must be cured by an hot Medicine, like *Ovid's* Account of the Chaos; *Frigida pugnabant callidis*, &c. But how far they failed in this, their System may be soon considered in the Scurvy and its Antidotes; for if any Disease can be called hot, the Scurvy may, considering those inflamed and red Spots, those cutaneous Eruptions, those Scabings, Tettars, Scurfs, that Hardness and Driness in the Skin, even tend-

ing

ing to a *Leprosy*, and all attended with insufferable *Heat*, vehement Itchings, and acute Pains, and accompanied with *Bleedings*, *Erosions* of the *Gums*, loosening, sometimes dropping of the Teeth, with a Lassitude and Weariness over the whole Body. It cannot be reputed a cold Disease, and yet those deem'd the most potent *Antiscorbuticks*, may be justly called *potentially* and even actually hot. If we again consider the Consistence of the *Blood* in *scorbutick Persons*, and the *Texture* of the *Parts* in most *Antiscorbuticks*, especially those belonging to the *Vegetable Kingdom*, we shall not perceive such a Contrariety as the Operation would imply. The *Blood* in those tainted with the *Scurvy* consists in a gross, thick, and viscid *Coagulum* or *Crassamentum*, and a thin, sharp, acid, and even corrosive *Serum*. When the grosser *Parts* of this *Blood* arrive at the *Capillaries*, it's with much ado they can pass so narrow Channels, but being at last retarded, the more serous are separated, and being as it were unsheath'd, these acrimonious Particles make Havock upon the extream *Parts* of the Body, cut and tear wherever they go, being the cause of itching, and sometimes cutting Pains, those *Inflammations* and *cutaneous Eruptions*. The *antiscorbutick Remedies* again consist of a very *fix'd Salt*, intimately mix'd with gross and earthy *Parts*, and a very subtile, penetrating, *volatile Salt*, more disengag'd among the liquid and juicy *Part* of the *Plant*. This their *Texture* is very evident from the *Taste*, and other Experiments may be made upon such Remedies, for wherever there is an intense *Bitterness*, such *Plants* abound with a *fix'd Salt*, as in *Wormwood*, so united with the *Earth*, that nothing but *Calcination*, reducing the whole Mass to *Ashes*, will separate them; and if you affuse Water upon them, and thereby disunite the *saline Particles* (*Salia non saliant nisi in fluido*) the remaining *Earth* will be quite insipid; so that this bitter *Taste* must only proceed from an intimate Combination of the *fix'd Salt* with this *Earth*, which when separated, becomes the *Caput Mortuum*. The hot and more active *Taste* in the *Antiscorbuticks* proceeds from the penetrating and keen *saline Particles* not being so much clog'd with the earthy *Parts*, but swimming as it were freely among the serous and more fluid *Parts* of the *Plant*, do exert themselves with greater Activity wherever they go. Hence it is that these hot *Antiscorbuticks*, upon being dried, do lose their *Taste*, because the *volatile Salts* evaporate and fly away along with the *Serum*, and do soon communicate their hot *Taste* in Distillation, which the bitter *Plants* will not do. Upon this Reasoning it's easy to account why both these *fix'd*, bitter, and more volatile, hot tasted *Plants* are potent *Antiscorbuticks*; for the *fix'd Salts*, tho' slower in their Motion than the other, yet when they arrive at the obstructed *Part* they act more vigorously, attenuate and divide these more viscid *Parts* of the *Blood*, by which it's rendred more capable of Circulation, and these more penetrating *Salts*

of the Plants thus extricated, soon arrive at the ferous Part of the *Blood*, which being still much grosser than the acrimonious *Salts* of the *Blood*, as not so much attenuated by frequent Circulations, more powerful, and of different Texture, they destroy their too keen and sharp *Spicula*, by which they cannot produce such Effects upon the *Skin* as before, being dulcified, as we find the *corrosive Spirits* of *Nitre*, *Vitriol* and *Salt* are by the Affusion of *Spirit of Wine*, performing the Office of what the Chymists call the mixing of an Acid and Alkali, so that the gross Parts of the *Blood* attenuated by the fix'd, and acrimonious by their more volatile *Salts*, a regular Circulation is thus obtained, the *Blood* as it were is sweetned, and the bad Effects of its extraordinary Sharpness ceases.

The Herb of *Brooklime* is only us'd green; being eat as a cold Sallad along with *Water-Cresses* in the Spring Season every Morning, it's an effectual Remedy against the *Scurvy*. The *clarified Juice* may be drank in Glass-fulls every Morning in the same Case. The manner of clarifying it, and all other hot *antiscorbutick* and *Water Plants*, is, to heat the Juice over a gentle Fire till 'tis quick hot, then skim or strain out the grosser Parts, which swim a top, and the remaining Liquor will be as clear as when clarified with the White of Eggs. Take of the Juice of *Brooklime*, *Water-Cresses* and *Scurvygrafs*, of each an equal Quantity, mix them with *Sweet-worts*, let it be work'd up with *Yest* or *Bawm*, and after turn'd up and settled, drink half a Pint each Morning in the Spring Season for the *Scurvy*. Its Juice enters the *Aq. Raphani comp.* and may enter the Compositions of several other *distilled antiscorbutick compound Waters*, fit for those affected with the *Scurvy*. Four Spoonfuls of the Juice of *Brooklime*, *Water-Cresses* and *Scurvygrafs*, in equal Quantities, mix'd with two Spoonfuls of *Orange Juice*, and drank for ten Mornings together, is frequently prescribed in scorbutick Cases with great Success.

Male Speedwell is not much in modern Practice in Britain. It's recommended by *Tournefort* as *sudorifick*, *vulnerary*, *detersive*, *diuretick*, and good for attenuating the tough and viscid Matter in the Lungs. The *Spirit of Veronica Mas* distilled with *Theriaca* is esteem'd a potent *Sudorifick*. Its simple distilled *Water* is recommended for Diseases of the Lungs, the Stone, and Vapours. The Syrup and Extract is prescribed to sweeten the *Blood*, and for cutaneous Eruptions. The Skin may be wash'd with the distilled *Water*, mix'd with a little *Vitriol*. A Decoction of the Herb with *Sugar* is esteem'd good in a Collick, and a Sack-Poffet with it and *Chamemil Flowers* drank hot for the same Disease; a Tea of the Herb is recommended. In a word, it seems to be a moderate *Astringent*, and as such it seems to be *vulnerary*, *detersive*, and good in all the foresaid Cases.

Anchusa, vide *Borrago*.

Androsæmum, vide *Hypericum*.

APPENDIX

To the HISTORY of the

Lateral Operation

For the Stone.

Containing

Mr. C H E S E L D E N's

P R E S E N T M E T H O D

of Performing it.

By Dr. J A M E S D O U G L A S.



L O N D O N:

Printed for G. STRAHAN, at the *Golden-Ball*, over-
against the *Royal-Exchange* in Cornhill.

MDCCXXXI.

APPENDIX

To the Reader of the

Lateral Operation

For the Student

Containing

MR. C. H. S. E. A. D. E. W. S.

PRESENT METHOD

of Performing it

BY DR. JAMES DOUGLAS



LONDON:

Printed for G. STRAHAN, at the Golden-Ball, over-
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MDCCKXII



THE
P R E F A C E.



SOME may be apt to find Fault with the tedious Prolixity of the following Description, and with the needless repetition of a great many Particulars, which being common to Mr. *Chefelden's* Operation with all the other Methods of extracting a Stone out of the Bladder, are consequently to be found in almost every Book of *Lithotomy*; I think it necessary to acquaint my Reader, that this very long Account was unavoidable in the Plan I laid down when I first undertook this Description. The great
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and uncommon Success of Mr. *Chefelden's* new Method, became not only the Subject of all Conversation here at Home, but also very much alarmed the Surgeons Abroad, particularly those of *Paris*, from whence Mr. *Morand*, of the Royal Academy of Sciences, a most ingenious Lithotomist, made a Journey to *London* on purpose to see Mr. *Chefelden* cut for the Stone. Since that Time, they have not only endeavoured to introduce his Method in *Paris*, but have even published to the World several Accounts of the Manner of performing it: Of these I have seen three or four, which tho' they all contain many of the essential Parts of his Operation (for a Reason which none can be at a loss to guess, and which I need not to mention) yet there is something wanting in every one of them; I resolved therefore, for the Credit of the *English* Surgery, and of the Operation itself where-ever it may hereafter be put in Practice, to give, once for all, Mr. *Chefelden's*

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den's whole Method of proceeding in it, without distinguishing what he has in common with the other Ways, or what he has retained of his first Manner, from what he has thought fit to introduce in this.

AND, if I may judge from the Accounts which have hitherto appeared, this Detail will be of some Use even to the *Parisian* Surgeons themselves, notwithstanding they have the best Opportunities in the World of making the necessary Experiments for every Operation; but it must infinitely be more so to Surgeons of other Places, both at Home and Abroad, who have not such Advantages, or have them but seldom: Neither is this all, for tho', upon a transient View of my Description, many things may appear at first Sight to be the same, in this new Method, with what they are in the other Ways of Cutting; yet, on a more attentive Comparison of both, I believe

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lieve it will be found, that almost in every Step of the Operation, as well as of the Method of Cure, Mr. *Cheselden* has added some things of his own, which, tho' they may not all perhaps be looked upon as peculiar to his present Manner, ought, at least, to be regarded as Improvements of the old ones.

I NEED not mention how much I am obliged to Mr. *Cheselden* for the chief Materials of this Paper; it was impossible to draw it up to good purpose without him; and since he has been so kind as to communicate to me, with the greatest Readiness, and without Reserve, all the Particulars which I could not otherwise have come to the Knowledge of, I am confident, that none will pretend to dispute but what I here describe is his Operation, and his whole Operation.

THE

P R E F A C E.

THE particular Enumeration of the Parts concerned in Method; the Comparifon of it with the old Way, to fhew its Advantages; together with the Explanation of the Figures of his Instruments; are entirely my own, and, I hope, will need no Apology.



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show and say.



Mr. *CHESELDEN*'s
M E T H O D
 O F
Cutting for the **S T O N E.**



HE Learned Professor *Albinus*, having published an excellent Description of *M. Rau's* Method of Cutting for the Stone, which he was so good as to present me with, I drew up a short Abstract thereof, and communicated it to the Royal Society. From that Time, our Lithotomists beginning to think seriously about this Method, it became the Subject of frequent Conversations and Experiments amongst many of my ingenious Friends ; and this insensibly engaged

me to compile a particular Account of all that had been formerly done about it, which was soon after publish'd in a Treatise called, *The History of the Lateral Operation* ; in which I began by a Collection of all that I could meet with in Books concerning the famous *Frere Jacques*, and his Manner of Cutting. I next explain'd the Improvements thereof propos'd by the ingenious *M. Mery*, and afterwards those actually introduced by Professor *Rau* ; and I concluded with the Alterations made in it by Mr. *Chefelden*, when it came to be practised in our Hospitals. Since that Time Mr. *Chefelden* has, for very good Reasons, laid this Method aside, and substituted another, very different, in its Room, which he now practises with great Applause, and vast Success, having saved 50 Patients out of 52, whom he Cut successively in *St. Thomas's Hospital*. This new *Lateral Operation* is what I have here undertaken to describe ; and that under the following Heads, and in the same Order in which the like Chirurgical Operations are commonly described by Authors, *viz.*

I. A DESCRIPTION of the Instruments he makes use of.

II. THE Dressings, and every thing else that is to be got ready before the Operation begins.

III. THE Preparation of the Patient's Body.

IV. THE

IV. THE Way of performing the Operation it self.

V. THE Method of Cure.

To these I will add,

VI. A PARTICULAR Enumeration of all the Parts cut, or any other Way concerned in this Lateral Section.

VII. A COMPARATIVE View of this Operation with that of *Marianus*, now generally called the *Old Way*, founded chiefly on the Structure of the Parts; and from the different Management of these in each Method, I will endeavour to shew the numerous Advantages which must attend that of Mr. *Chefelden*.

I. *The* INSTRUMENTS.

HIS *Instruments*, which indeed he seems to have carry'd to a very great Perfection, whether we consider their small Number, their Lightness, their Simplicity, or how well they are fitted for their several Uses, are no more than Five in Number, *viz.*

1. A Staff, or grooved Catheter.
2. An Incision Knife.
3. A Gorgeret.
4. A Pair of Forceps : And,
5. A crooked Needle carrying a waxed Thread.

1. THE *Staff* consists of a Handle and grooved Part. The Handle is entirely strait, beginning by a smooth flat Plate in Form of a longish Heart, which, in one fitted to a Man full grown, for they are of different Sizes (as all the rest are) proportioned to the Age of the Patient, is near one Inch and an half in length, and an Inch in breadth at the Basis; the rest of the Handle is round and solid, four Inches and three quarters in length. To the Extremity of this, the grooved Part is joined, which by a Thread laid along it, measures five Inches and a half. The *Sulcus* or Groove is remarkably deep and wide, the Edges smooth and blunt; one End of it reaches a little way down on the Handle, and the other, ending in an obtuse Point, is without any Check, as is seen in your common Staffs. This Part may again be divided into a curved Portion and a strait *Rostrum* or Beak. The Curvature next the Handle not very great, and extends but a little way back from it; and from the Extremity thereof, the long *Rostrum* projects almost directly forward. He chuses to have his Staff made of Steel, because the rubbing of the Gorgeret against it is better felt by the Operator, than if it was of Silver, which is a softer Metal. Besides, a Steel Staff will allow of a larger Groove than a Silver one of the same Size, without being too much weakened thereby.

2. THE *Knife* is about seven Inches in length, of which a pretty thick and flattish wooden Handle takes
up

up four Inches and a quarter ; the Blade is divided into a blunt Shoulder and edged Part. The Shoulder is about half an Inch in Length, and something less in Breadth, being every where of an equal Thickness. The greatest Breadth of the edged Part is much the same with that of the Shoulder ; the Edge it self is gently convex, ending in a sharp Point, formed on the opposite Side by the sloping of the Back for about half an Inch next this End. The Back near this Point is made thin enough to run freely in the Groove of the Staff ; the rest is rounded and well polished, that it may slide the easier in the Groove when he has Occasion to use it that Way:

3. THE *Gorgeret* or *Gorget* is a smooth, thin Plate of Steel, consisting of a concave or hollow Part and an Handle. The deep, hollow, grooved Part, to which the Back or convex Side exactly answers, is an Inch in Breadth at the Handle, and from thence decreases regularly in Breadth all the way to the other End, which is narrow and rounded backward, being about three eighth Parts of an Inch towards the convex Side, but running down about as much more thro' the Middle of the Groove. The whole Length of the Groove is five Inches and a quarter, the upper wide Extremity goes sloping towards the Handle, which is fixed to the other Side at an obtuse Angle, that so it may lie out of the Way of the Operator's Hand and Forceps. This Handle is flat, increasing a little in Breadth towards its rounded Extremity,

Extremity, and is about two Inches and a half in Length.

4. THE Sizes of the *Forceps* are different, as well as of the Staff, and, for the same Reason, the longest that I have ever seen Mr. *Chefelden* use was about twelve Inches; the Chops of it are outwardly convex, both according to their Breadth and Length, and inwardly concave, or a little hollow, the Joint being so contrived, as to hinder the Chops from shutting close at the Ends, and so prevent the Danger of pinching the Bladder. The Insides of them are toothed for about one third of their Length, next the Extremity; the rest is smooth, that in case the Stone should be laid hold of thereby, it may more easily slip down to the rough Part, where it is both more firmly and more advantageously held: When the Forceps is shut, the greatest Circumference of the Chops is about three Inches. They increase a little in Breadth from the Joint to the rounded Ends, and are three quarters of an Inch at the broadest Place; their Length is three Inches and a half in a strait Line. The two Sides of the Handle are strait for above half their Length, from the Joint downward; then they divaricate outward in a bending manner, that they may be more firmly held, and terminate one in a Ring for the Operator's Thumb, the other in a deep kind of Hook for his Fingers.

IN a smaller Pair of Forceps which I measured, the Length was about nine Inches; that of the Chops near
three

three Inches ; Breadth half that of the largest Pair, and Circumference about an Inch and three quarters. This Pair he calls his favourite Forceps ; and it is but seldom that he is obliged to make use of any other.

5. THE crooked Needle is not much different from the common ; it is bent into an Arch that makes about the third Part of a Circle, that so it may pass the easier. The Thread with which he ties the Vessels, is of the same sort that the Shoemakers use, which being waxed, makes the smoothest and strongest Ligature.

		Ounces.	Drachms.	Grains.
The Staff	} weighs {	3i.	3iiiß.	—
The Knife		—	3vi.	—
The Gorgeret		3i.	3iii.	—
The Forceps		3xii.	3i.	—
The Needle		—	—	xvi.

N. B. The small Forceps weighs only six Ounces.

ALL these Instruments, being first duly prepared and fitted for Use, are laid in a broad, flat, earthen Dish, filled with warm Water, and placed on the Right-hand of the Operator, where an Assistant stands ready to deliver them to him as he calls for them, being first wiped dry, and to take them back as soon as he has done with them.

II. *The* DRESSINGS.

THE *Dressings* required to be got ready before the Operation, consist only of a few Pledgits, some of them spread with a Digestive made of equal Parts of common Turpentine and Linseed-Oil, and one third Part of yellow Bees-wax; Styptick-water in a Phial; Sweet-oil in a Saucer; a Bit of Sponge, and a Bundle of Tow. All these are laid in another flat earthen Dish set near the former.

III. *The* TABLE.

A convenient *Table*, upon which the Patient is to be Cut, is likewise to be got ready. It is made of a square, thick Piece of Wood, three Foot and a half in Length, and about two and a half in Breadth, supported sometimes only by two Tressels with three Feet, but most commonly, which is better, by a quadrangular Frame, three Foot high, fixed to the Floor in a good Light, and where the Assistants can easily stand round it. For this Purpose, it is best placed obliquely, pretty near a Window, so that the Rays may fall directly on the Left Side of the *Perinæum*, and the Operator's Hand not lie in his own Light. This Table is covered with several Doubles of a thick Blanket nailed to its Sides, over which a clean coarse Sheet is thrown and bound down by a Swathe cross its Middle;

Middle; at one End is laid a small Pillow, and over the other the Sheet hangs down, and upon it is commonly thrown another Cloth that is removed, and a clean one laid on, if he cuts more than one at a Time.

The Preparation of the Patient.

ALL the Preparation Mr. *Chefelden* thinks needful, is, to give the Patient a gentle Purge the Day before he is to be cut; and if it should not work sufficiently, he directs a common Clyster to be given in the Evening, to empty the lower wide Part of the Rectum, which being filled and distended with Fæces, might be in Danger of being hurt in the Operation.

The Operation itself.

EVERY thing necessary being in this manner got ready, the Patient, in a loose Night-Gown, his Head and Legs covered, but nothing tight about his Neck or Belly, is brought from the Cutting-Ward in the Hospital to the Theatre, for here I suppose the Scene of Action, and laid on the Table, his Head resting on the Pillow, and his Hips on its lower Edge. In this Situation he is tyed, as in the greater Apparatus, that is, his Wrists are gently brought down to the Out-sides of his Ancles, and secured there by proper Bandages, his Knees having first been bent, and his Heels brought

back near his Buttocks: then, his Thighs being raised and separated from one another, he is kept in this Posture by two Assistants (commonly Apprentices to some of the Hospital Surgeons) during the whole Time of the Operation, they holding his Ancles with one Hand, and his Knees with the other: there is one more standing at his Shoulders, in order to prevent his rising up or retiring from the Operator while he makes the Incision.

THEN Mr. *Cheselden*, standing before the Patient at the End of the Table, takes the Catheter, first dipt in Oil, and introduces it in the usual manner through the *Urethra* into the Bladder, where having searched for and discovered the Stone, he delivers it to one of his fellow Surgeons standing on his Right-hand, whom he desires first of all to satisfy himself whether there be a Stone or not; and then this Assistant, holding the Handle between his Fingers and Thumb, inclines it a little towards the Patient's right Thigh, drawing the convex Side close up to the *Os Pubis*, near the Commisfure or Joining of the Bones, to remove or bear up the *Urethra* as far as may be from the *Intestinum Rectum*, being frequently desired by Mr. *Cheselden*, not to push it down, nor make the convex or grooved Side thrust the Parts forwards or outwards towards the *Perinaeum*; for tho' by so doing the Place of the external Wound would in some measure be ascertained, and the Groove of the Catheter be more easily found in making the internal one; yet the Danger of bringing the *Ure-*
thra

thra nearer the *Rectum*, which, in that case, is more liable to be cut, does more than counter-balance these seeming Advantages. Besides, in his Method of operating, there can be very little Occasion for any such Contrivance, were it attended with no Inconveniency, the external Wound being very large and deep.

THE Staff being fixed in this Situation, and its grooved Part being turned outward and laterally, Mr. *Chefelden* sits down in a low Chair, and drawing the Patient nearer him, till his Buttocks reach a little over the Edge of the Table, his Feet being quite off from it, takes his Knife, which he sometimes arms with a little Tow rolled about it, to prevent his Fingers from slipping when it becomes wetted with the Blood, and holding it firm in his Right-hand, his Thumb on the Inside of the Blade, his Fore-finger on the Outside opposite to it, his Middle-finger on the Outside of the Handle, and the Extremities of the rest on its upper Edge. Then distending and keeping steady the Skin of the *Perinæum* with the Thumb and Fore-finger of his Left-hand, he makes the first or outward Incision, thro' the Integuments from above downwards, beginning on the Left-side of the *Raphe* or Seam, between the *Scrotum* and Verge of the *Anus*, almost as high up as where the Skin of the *Perinæum* begins to dilate and form the Bag that contains the Testicles; and from thence he continues the Wound obliquely outwards, as low down as the Middle of the Margin of the *Anus*, at about

half an Inch distance from it near the Skin, and consequently beyond the great Protuberance of the *Ischium*. The first or upper Part of this Incision is but superficial; after that he plunges his Knife much deeper by the Side of the *Rectum*, and finishes it by drawing his Knife obliquely towards himself; these three Motions may always be observed in his external Incision, but the last is performed pretty much at Random, there being here no Danger of doing any Mischief; and indeed I have, however, often observed that he is very little solicitous about the precise Place and Limits of the external Wound, for I have seen him sometimes cut the Skin much nearer the *Anus*; sometimes at a greater Distance from it; sometimes he begins the Incision very high up, at other times lower down (and all this Variety in Patients of the same Bigness or Size); but his Intention and principal Design is to make the Wound as large as he can with Safety, always avoiding to wound the vesicular Membrane of the *Scrotum*.

HAVING cut the Fat pretty deep, especially near the *Intestinum Rectum*, covered by the *Sphincter* and *Levator Ani*, he puts the Fore-finger of his Left-hand into the Wound, and keeps it there till the internal Incision is quite finished; first to direct the Point of his Knife into the Groove of his Staff, which he now feels with the End of his Finger, and likewise to hold down the *Intestinum Rectum*, by the Side of which his Knife is to pass, and so prevent its being wounded. This
inward

inward Incision is made with more Caution and more Leisure than the former.

HIS Knife first enters the Groove of the rostrated or strait Part of his Catheter, thro' the Sides of the Bladder, immediately above the *Prostata*, and afterwards the Point of it continuing to run in the same Groove in a Direction downwards and forwards, or towards himself, he divides that Part of the Sphincter of the Bladder that lies upon that Gland, and then he cuts the Outside of one half of it obliquely, according to the Direction and whole Length of the *Urethra* that runs within it, and finishes his internal Incision, by dividing the muscular Portion of the *Urethra* on the convex Part of his Staff.

WHEN he first began to practise this Method, he cut the very same Parts the contrary way; that is, his Knife enter'd first the muscular Part of the *Urethra*, which he divided laterally from the pendulous Part of its Bulb to the Apex, or first Point of the prostate Gland, and from thence directed his Knife upward and backward all the way into the Bladder; as we may read in the *Appendix* he lately published to the Fourth Edition of his Book of *Anatomy*. But some time after he observed, that in that Manner of Cutting, the Bulb of the *Urethra* lay too much in the way; the Groove of the Staff was not so easily found, and the *Intestinum Rectum* was in more Danger of being wounded.

A SUFFICIENT Opening being made, Mr. *Cheselden* rises from his Chair, his Finger still remaining in the Wound, and calling for the Gorgeret, he puts its Beak into the Groove of the Catheter, and so thrusts it into the Cavity of the Bladder, where he is often at once sensible of the Stone, which thus becomes a Direction to him when he uses his Forceps.

THIS done, he draws out the Staff, and holding the Gorgeret in his Left-hand, he introduces the Forceps, the flat Side uppermost, sliding them with great Caution along its concave Part, nicely observing when they pass the Wound into the wide Part of the Bladder, and then he withdraws the Gorgeret, and taking hold of the two Branches of the Forceps with both his Hands, he searches gently for the Stone; they being still shut, and having felt it, he opens them, and endeavours to get the undermost Blade under the Stone, that it may fall more conveniently into their Chops, and so be laid hold of; which being done, he extracts it with both Hands, one upon the Ends of the Forceps, the other about the Middle, but with a very slow Motion to give the Parts time to stretch and dilate, which he promotes by turning the Forceps gently in all Directions, taking all possible Care that it may not slip; of which if he perceives any Danger, he endeavours to recover it again without pulling his Forceps out.

IF the Stone is pretty large and smooth, and lies in that *Sinus* of the Bladder on the same Side with the Wound, he draws it out with the greatest Facility imaginable, in Subjects of all Ages. But when he observes that the Stone is either very small, or does not lie right to the Forceps, he immediately pulls them out, and introducing his Finger into the Bladder, he tries to turn it, and to disengage it from the Folds of the inner Membrane, in which it is sometimes entangled. Then he thrusts in his Gorgeret upon the upper Side of his Finger; which being drawn out, he turns the Gorgeret, and introduces his Forceps, and so extracts the Stone; but without any manner of Hurry or Precipitation.

To preserve a soft Stone from breaking during the Time of Extracting, he puts one or more of his Fingers between the Branches of his Forceps, to prevent any greater Pressure upon it, than what is just necessary to hold it together. But if notwithstanding all his Care, a soft Stone happens to break, or where there are more than one in the Bladder, he extracts the single Stones or Fragments one after another, repeating the Introduction of his Fingers and of the Forceps, either upon that when it can be done, or upon the Gorgeret, as often as there is Occasion. I have sometimes seen him extract two Stones, engaged in the Chops of the Forceps at the same time.

ONE needs not be surprized at the frequent Introduction of the Forceps and Fingers, which is absolutely necessary upon some Occasions; for it is never attended with any bad Consequence when cautiously manag'd, that is when due Care is taken not to thrust the Forceps so far in as to wound or bruise the Bladder, or to perforate the same (which is always mortal) in the opposite Side. We ought likewise to be very cautious that we don't pinch the whole Substance of the Bladder, or some of the *Plicæ* of its inner Coat only, which is very difficult to avoid, when some Fold of it lies very close to the Stone; in which case it may easily be torn off and drawn out together with it.

HE performs this Operation with so much Dexterity and Quickness, that he seldom exceeds half a Minute, unless when he is obliged to take up and tie the Vessels before the Stone is extracted, or when there happens to be something uncommon in the Stone it self.

The Method of CURE.

UNDER this general Head I comprehend,

I. THE Accidents that either happen immediately after the Operation is over, or before the Cure is finished.

II. THE

II. THE Method of curing the Wound.

III. THE Regimen or Dyet of the Patient during his Illness.

THE first Symptom or Accident that sometimes happens before the Person is put to Bed, is a Flux of Blood from the divided Arteries. As soon as Mr. *Chefelden* perceives this, he presently takes up the Vessels with the crooked Needle, and ties them with a Ligature made of waxed Thread, drying the Wound with a Bit of soft Sponge wrung out of warm Water, that so he may the more readily discover the Orifice of the Vessels, and see if any more bleed, which are afterwards to be ty'd separately one after another. It sometimes happens the Flux of Blood is so great upon making the external Wound, as to endanger the Patient, he is obliged to tie the Vessels before he extracts the Stone. But if from the continued Hæmorrhage or Flux, when all the external Vessels are secured, he apprehends that it must proceed from the Division of some of the arterial Branches that are ramify'd on the Membrane, which covers the *prostate* Gland, he thrusts up a small Pledgit or two dipt in a Styptic Liquor, which seldom fails to check it, tho' the Parts affected remain altogether free from Compression.

THE other bad Symptoms and Accidents that may happen after the Patient is carry'd to his Bed, whether from the Patient's ill Habit of Body, want of due Preparation, either in Dyet or any other Cause, are very numerous in all the Methods of *Lithotomy*, as may be seen in Authors who treat of that Subject. But as none of these are peculiar to Mr. *Chefelden's* Operation, I shall only mention a few of the most remarkable, and chiefly of such in Curing of which he has made some new Observation or successful Experiment.

IF there should be any Tension, Inflammation, or Swelling in the *Abdomen*, which has never yet happen'd to him in any considerable Degree, tho' it frequently happens to those that are cut the old Way, he thinks it would be very proper to throw up a Clyster; and if that does not answer, he would give a gentle Purge. But if these Symptoms should continue, and be attended with violent Pain, he says, a quieting Draught may be given. But what I would chiefly observe here is, that this is the only Case in which Mr. *Chefelden* does allow of an Opiate; because he says all Opiates or sleepy Medicines do not only hinder a regular Digestion, but even put a Check to it when begun.

IF either before or after the Suppuration appears, he perceives the Pulse to flag, or be too slow, he presently applies a Vesicatory to the Arms, which he says is likewise

wise of excellent Use to promote Digestion, by warming and increasing the Motion of the Blood; and he observes that it's but seldom attended with any Strangury or Pain in making Water.

IF he observes any great Foulness in the Wound, he mixes a little Verdegrease with the common Digestive, with which he dresses.

AND, in the last place, if the Wound becomes hard, callous, and fistulous, he dresses its Lips with a little Bit of blistering Plaster, which removes the Hardness and Dryness, and soon disposes the Wound to new Granulations, and in a short Time compleats the Cure.

II. THE Method of Curing the Wound is much the same as in all simple Wounds, for in this manner of Working there are no Bruises nor Contusions, (which always retard the Cure) to be taken care of.

BEFORE the Patient is removed from the Table, Pledgits, covered with the common Digestive, are applied to the Lips of the Wound, where they are secured and held on by the Hand of a Servant, who assists in carrying him to Bed, and afterwards very slight Bandages are only made use of to keep them on.

THESE Dressings are changed twice a Day, and continued without any great Variation till the Wound begins to cicatrize. Afterwards he applies a little dry Lint no bigger than the Wound, and over that the common Pledgit.

As to their Diet, that is only weak Broth, Sage-tea, Sack-whey, a Bit of Bread and Butter in a Morning, &c. This low Regimen is to be ordered for the first four or five Days; but as soon as laudable Matter is formed, and a good Digestion appears, a Bit of boiled Chicken may be allowed once a Day, and then any other sort of fresh Meat in a small Quantity.

To prevent being costive, Water-Gruel with Plumbs is good to keep the Body open: but if he has not had a Stool before the fifth Day, a Clyster may be given.

THE Suppuration commonly begins about the fifth Day, unless in a Patient of an ill Habit of Body, where the scalding of the Urine, especially in hot Weather, hinders it.

IN Children the Urine comes wholly by the *Urethra* about the 14th Day, and in Men about the 20th; but in both some Part of it passes that Way several Days sooner, the rest still coming thro' the Wound.

IN six Weeks Time adult Persons are often perfectly cured; and for Children, they are generally well in half that Time.

The P A R T S concern'd.

I COME now to the sixth Part of my Design, the Enumeration of the Parts concerned in this Section; these I have had several good Opportunities of examining in dead Subjects, upon which Mr. *Chefelden* was so kind as, at my Request, to perform his Operation: I once likewise opened the Body of a Patient who had been Cut by him for the Stone, in which I found the Parts divided in the very same manner in which they were Cut in the dead Bodies I had dissected.

THE Parts he Cuts are,

1. THE common Integuments of the *Perinæum*, and a little farther back between the Protuberance of the *Os Ischium* and Extremity of the *Os Coccygis*, that is, the *Cuticula*, *Cutis Vera*, and the *Membrana Cellularis* or *Adiposa*.

2. HE divides sometimes the subcutaneous Portion of the *Sphincter Ani*, that is spread for some space from its *Limbus* or Orifice, immediately under the true Skin, lying on the Fat.

3. NEXT

3. NEXT under the Integuments, if his Incision begins high, he cannot always avoid that lateral Part of the *Constrictor Urethrae*, that is closely joined to the *Erector Penis*, but he must always cut that Portion of the same Muscle that lies on the *Ligamentum transversum*.

4. THE *Musculus transversalis Urethra*, in passing over the last mentioned Ligament, in Subjects where that Muscle is found, must likewise suffer.

5. HE next divides that triangular, broad, tendinous, strong Ligament, which runs between the *Rami* of the *Ossa Pubis*, laterally, above it adheres to the Ligament that touches these Bones at their Commissure, but chiefly to the *Crura Corporis Cavernosi Penis*, and below, to the upper Part of the *Sphincter Ani*. In the Middle of this tendinous Kind of *Septum* there's a large round Perforation for the Passage of the membranous narrow Part of the *Urethra* covered with its Muscle; and from this Perforation or Hole it is divided obliquely all the way to its lower Edge.

6. UNDER this Ligament, upon Part of the *Levator Ani*, the *Prostatæ Inferiores* are situate, commonly known by the Name of *Cowper's Glands*; one of which, or, at least, the large Duct that goes from it,
and

and enters the membranous Portion of the *Urethra*, can never escape being Cut.

7. HE divides in a pretty oblique Direction a large Portion of the *Levator Ani*, that lies on the Inside of the *Ligamentum Pubis Transversum*. It is, however, possible to divide a good deal of the Prostate without Cutting this Muscle quite thro'; but if he enters the Substance of the Bladder first, it must be quite divided.

8. IN Cutting the Parts abovementioned, he cannot miss dividing several arterial Twigs that come from the great Vessel, called *Arteria Pudenda*, which parts from the *Arteria Iliaca interior*, within the *Pelvis*, but without the *Peritonæum*; whence, passing thro' the great Sinuosity of the *Ischium*, and over the sharp Process of that Bone, it is carried along the Inside of the *Ramus* of the *Os Pubis* to the *Dorsum Penis*, where it terminates near the Glans.

9. HE Cuts likewise some nervous Twigs, which proceed from a small Branch that proceeds from some of the Nerves that pass thro' the uppermost Hole in the Foreside of the *Os Sacrum*, and, together with more, constitute the great *Ischiatick* Nerve; this runs the same Way towards the Glans of the *Penis*, in close Conjunction with the Artery.

THESE, I believe, are all the Parts thro' which a large Passage is made to the *Iter Urinæ* or Canal that leads to the Cavity of the Bladder: But as Mr. *Chefelden* does not always make his outward Wound precisely in the same Place, some small Variety, that is no ways material, may happen with respect to some of them.

THE internal Wound is thro' the Bladder, prostate Gland and *Urethra*.

1. THE *Vesica Urinaria*, covered with the *Membrana Cellularis*, is cut in two Places, viz. first a small Portion of it a little above the prostate Gland, on the Left-side, where he enters the Knife first into the Groove of his Staff, and then Part of the Bladder which lies round the Orifice upon the upper Part of that Gland.

2. THE Substance of one half of the prostate Gland is likewise divided laterally from without, inwards in the Direction of the *Urethra* that lies within it, thro' the whole Length of that Part of the Canal.

3. THE *Iter Urinæ*, or Canal of the *Urethra*, is divided in two Places, and both laterally: First, the beginning of it, which runs thro' the Substance of the Prostate lengthways, at the same Time the Incision is made

made thro' it, and the *Urethra* into the Groove of the Staff.

THE next is the membranous Part of the *Urethra*, with the circular Muscle that surrounds it, beginning at the *Apex Inferior* of the Prostate, and ending a little beyond the Hole in the *Septum Tendineum*, under the pendulous Part of its Bulb.

4. WHEN the prostate Gland is divided near the *Rectum* or back Part of the *Pelvis*, a large, strait, arterial Branch can seldom escape the Knife; but the small Twigs that are ramified most plentifully on the Capsula of that Gland, are always divided where-ever the Wound is made.

5. THE nervous Twigs that accompany the Arteries, are likewise cut in this Place.

TO this short Enumeration of the Parts, one Observation may be added, which is, that if the Operator turns the Edge of his Knife too far backwards, and then raises it to cut, he can scarcely be able to avoid wounding the *Intestinum Rectum* pretty high, some Part of the *Vesiculæ seminales* next the Prostate, and the *Verum Montanum* within the *Urethra*, that runs thro' that Gland, together with a larger Portion of the *Levator Ani Anterior*, and of the *Ligamentum Suspensorium Vesicæ*, that closely embrace it. The
E lowest

lowest Part of the *Intestinum Rectum*, near the *Sphincter*, may likewise be cut. These therefore may be mentioned as Parts to be avoided in this Method of Cutting; but the Truth of the Matter is, none of them can be in any great Danger, while the Operation deserves the Name it now goes by, that is, while the Parts proposed to be cut are all divided laterally.

Mr. Cheselden's Method, compared with that of Marianus.

I COME, in the last place, to compare Mr. *Cheselden's* Operation with the *Apparatus Major*, or that of *Marianus*, in which the Incision is made in the *Perinæum*, on one Side the *Raphe*, and in the same Direction with it, ending a little above the *Anus*. The *Constrictor Urethræ* is next divided, together with an Elongation of the *Sphincter Ani*, and afterwards a Passage is opened into the *Urethra*, thro' its *Corpus Spongiosum* and Bulb, all the Way down to the beginning of the membranous Part, and this in the same Direction with the Wound in the Integuments, for which the grooved Catheter serves as a Guide, the Handle of it being held almost perpendicular to the Patient's Body by an Assistant.

THE Incision being finished, two Conductors, or a Gorgeret, are passed thro' it into the Groove of the Staff, and upon that are introduced thro' the long, narrow,
row,

row, crooked Canal of the *Urethra*, into the Cavity of the Bladder. Then the Staff being drawn out, the Forceps is thrust in upon the Gorgeret, or between the Conductors, which being afterwards removed, the Operator lays hold of, and extracts the Stone in the best manner he can.

IN this Operation therefore, the *Foramen* in the transverse Ligament, the membranous Part of the *Urethra*, covered with its Muscle, and that other Portion of it, which lies within the Prostate, the prostate Gland itself, and the Orifice, with the *Sphincter* of the Bladder, must be first excessively dilated, and afterwards, most commonly, if not always, dilacerated. These are likewise the principal Parts concerned in Mr. *Chefelden's* Operation; and therefore, in order to shew the Advantages thereof, it could not have been so well compared with the high Way, or that of Professor *Rau* (in both which the Parts concerned are vastly different) as with that of *Marianus*, because from the different Treatment of these Parts in each Operation, as well as from some other Considerations arising from thence, the Excellency of the one above the other will clearly appear.

THE first general Class of Advantages in Mr. *Chefelden's* Operation, above that of *Marianus*, arises from the Nature of the Wound made in both, that is, from its Size, Situation, and Distance from the Stone or Cavity

vity of the Bladder. In *Marianus's* Operation, the Wound being necessarily very small, the Management of the Instruments, and especially of the Forceps, must be much more difficult than in Mr. *Chefelden's*, where a large outward Incision affords Room enough to turn them in any Direction that can be desired. In the next place, the largest Stone will easily pass thro' Mr. *Chefelden's* Wound; but in the old Operation, a Stone larger than the Diameter of the Wound, as it frequently happens to be, must, when it is brought as far as the Skin, force that outwards along with it, and so, besides the Difficulty this causes in the Extraction, break and disorder the Texture of the cellular Membrane, immediately under or within it; the Consequence of which must be Obstructions and other Disorders, which being communicated to the *Scrotum*, dangerous Inflammations, Tumours, and even Mortifications, may happen in that tender Part. There are Instances, indeed, of very large Stones extracted in the old Way, but then, the Constitution of the Patient has been good enough to ward off the fatal Effects of the Accidents I have mentioned; or the Operator has ventured to enlarge the outward Wound by an oblique Incision thro' the Integuments, before he could draw out the Stone. In the third place, a large external Orifice mightily facilitates the Cure, by allowing free Room for a Discharge of Matter, and affording a larger Quantity of that Gleet, as it may be termed, which is the Fore-runner of Digestion; and likewise preventing the Danger of
a Mor-

a Mortification, always to be feared when the Orifice is small, whereby the Humours are pent up and checked in their Course.

THIS Discharge is very much promoted by the Situation, as well as by the Size of the Wound, in Mr. *Chefelden's* Operation, where it is much lower than in the other, and consequently the Orifice more depending, which is justly esteem'd a capital Advantage in the Cure of all Wounds, whether accidental or designed. Again, in Mr. *Chefelden's* Way, the Stone passes between the *Rami* of the *Ossa Pubis* and *Ischii*, near the great Protuberance of the last named Bone; and where they are most distant from one another, and consequently cannot create any Difficulty in extracting it, let it be never so large: Whereas in the old Way, the Situation of the external Orifice makes it necessary that the Stone should pass much nearer the Angle by which the *Ossa Pubis* are joined together, thro' a much narrower Space, so that a large soft, or brittle Stone must infallibly be broken in its Passage, and a hard one be forced lower down, to the great Detriment of the soft Parts concern'd; or there must be a Contusion of that strong ligamentary Substance, situated in the Angle formed by the *Ossa Pubis*, upon which the *Urethra* lies, and by which the *Thalamus Penis*, as it is termed by *Sanctorius*, is much enlarged. The same Accident may happen to a pretty large Nerve and arterial Branch in their Passage over this Ligament, up to the *Dorsum Penis*.

THE Distance between the Wound and Cavity of the Bladder where the Stone lies, and the Curvature of that Part of the *Urethra* that goes between these, in *Marianus's* Method, has been the Source of a new Train of melancholy Accidents. Thus in thrusting in the Gorgeret or Conductors, the membranous Part of the *Urethra* has often been perforated, and so the Way to the Bladder altogether lost, the Instrument passing on between the prostate Gland and *Intestinum Rectum*. The Consequences of this Accident, especially if not speedily perceived, are very obvious; but even after the Operator has discover'd his Mistake, and actually recover'd his Way into the Bladder, if his Instruments are much resisted in any Part of their Passage, especially at the Prostate and Orifice of the Bladder, the *Urethra* may be quite tore asunder at the perforated Part, and be intirely separated from that Gland. But as this Canal is manag'd in Mr. *Chefelden's* Way, all Possibility of this Accident is avoided. Again, there is so much Difficulty and Force required to thrust the Instruments into the Bladder, and withal so much Uncertainty how far they may safely go, that before the Operator can stop his Hand, he often wounds, and sometimes perforates the opposite Side of the Bladder, than which no Accident attending this Operation, can be more dangerous; but it is not much to be feared in Mr. *Chefelden's* Way, in which all these Difficulties and Uncertainties are taken off. When at length, the For-

ceps

ceps is safely got into the Bladder through a long, narrow, crooked Passage, which incumbers the Operator very much in the Management of them, he must often meet with more Difficulty than Mr. *Chefelden* ever can, in laying hold of the Stone at all; in laying hold of it in the most advantageous Manner; and in extracting it without breaking or letting it slip. He is likewise in much greater Danger of pinching the Bladder either with or without the Stone, especially when the Cries of the Patient augment the Pressure on its upper Side, and force it downwards; and accordingly, Experience has shewn, that by this Accident, the whole Bladder has been drawn out along with the Stone.

THE next general Series of Advantages arises from the different Treatment of the Parts that lie between the external Wound and Cavity of the Bladder, and that both in respect of the Facility and Safety of introducing Instruments, and extracting the Stone, and of the Consequences to be dreaded from the Contusion and Dilaceration of the Parts. In Mr. *Chefelden's* Operation, where all these Parts are divided by the Knife in the Manner already said, and the external Incision made very low down, a direct Passage is opened into the Bladder; whereas in *Marianus's* Way, where the Situation of the outward Orifice obliges the Operator to follow the whole Curve Direction of the *Urethra* round the Arcade of the *Os Pubis*, the Introduction of the Instruments must, upon that Account, be extremely difficult:

difficult: But that Difficulty is still very much augmented by the Size of the Instruments and Stone compared with the Narrowness of the Canal, the Resistance of the *Ligamentum Transversum*, prostate Gland, and Sphincter of the Bladder; all which being artfully divided in Mr. *Chefelden's* Way, this Resistance is taken off, and the Introduction of the Instruments, and Extraction of the Stone render'd perfectly easy. Again, in strong-contracted Bladders, whether from their natural Structure or Effect of the Disease, the Orifice surrounded by the *Prostata*, has been found to resist the Introduction of the Instruments so much, as that before it gives way, the longitudinal Fibres of the Bladder that arise from the *Ossa Pubis*, have been tore from their Origins, and so render'd incapable of acting ever afterwards; and likewise the tendinous Membrane that is spread from the *Ossa Pubis* over the *Prostata* and Bladder, very much disorder'd, but when the Orifice of the Bladder is previously divided, nothing like this can happen; neither is it ever to be feared, that the Sphincter Muscle should lose its Elasticity or Power of Contraction, and so remain paralytick, as often has been the Case, from its being too forcibly dilated in *Marianus's* Operation, by which an Incontinency of Urine is intailed on the Patient for Life; for in Mr. *Chefelden's* Operation, the Sphincter of the Bladder is cut in its natural State, and so will readily unite again; but in the *Apparatus major*, the Dilaceration thereof happens after the Fibres have been stretched and dilated to their utmost Extent, and

con-

consequently reduced to a State in which they can never recover themselves for the future.

Contusions and *Dilacerations* of the Parts come next to be consider'd. These are unavoidable in *Marianus's* Way, and the Dilaceration must not only always be made at Random, but often in different Places at once, of the same Part: The Canal of the *Urethra*, for Instance, being first dilated by the Instruments to its utmost Extent, must afterwards break in the weakest Part, on whatever Side that lies; and if it be all equally strong, and equally dilated, it will be tore in two or more opposite Places at the same Time; whereas in *Mr. Cheselden's* Way, could any such Dilaceration happen, it must always be on the wounded Side only. And indeed this new Operation is principally founded on the Difference of Wounds by Incision, and those by Rupture or Dilaceration, the latter being, according to *Celsus's* Maxim, by far the most dangerous. And from hence it is, that in *Marianus's* Operation the Cure is rendered much more tedious and uncertain, because of the previous Suppuration that is required, and the Danger there is of a Mortification before that can be brought on; but when the same Parts are cut with the Knife, they unite again very speedily, and the Wound is cured almost by the first Intention. Another Accident which may happen from this Contusion and Tearing of the Parts, is, that they may be so far shattered and broke, as that a considerable Loss of Substance must necessarily

attend the Suppuration, and the Wound never afterwards uniting, the Sides growing callous and hard, a Fistula remains, and from thence an Incontinency of Urine. *Multo patientiorem Fistulam habiturus est*, says Celsus, *rupta cervice quam habuisset incisa*. From this same Source of Contusions, the Ducts of the *Vesiculæ seminales*, that enter and run thro' the Back-side of the prostate Gland, and open into the *Urethra*, may be so far disordered, as never to be able to recover themselves, upon which Impotency must ensue. But none of these Accidents can happen in Mr. Cheselden's Operation, except from such gross Mistakes which every Operator must be supposed always incapable of falling into.

ON all these, and perhaps several other Accounts, Mr. Cheselden's Operation is preferable to that of *Marianus*; but it must be further observed, that the Inconveniencies attending this last are not all of the same Kind; some of them arise from the very Nature of the Operation, and are such as no Operator can possibly prevent: Others are more accidental, but then all the Accidents here taken notice of, are such as have actually happen'd, and to which this Method must always be much more liable than that of Mr. Cheselden. I will not, however, deny, but that the *Apparatus Major*, in its turn, may have some seeming Advantages over the new lateral Way.

OF these, two have been mentioned; the first, that in the old Way the Operator holds the Staff himself, and so may direct and humour it better for his own Purposes than an Assistant can possibly do. But this Advantage loses much of its Force when it is considered, that in Mr. *Cheselden's* Way the Staff is kept fixed and immovable till he extracts it himself; this any Assistant can do as well as the Operator, who being freed from this Incumbrance, is more at Liberty to go thro' the Operation, especially to make the inward Wound, in which both Hands are required.

THE other Disadvantage will appear much more considerable. In *Marianus's* Operation, when the Blood Vessels retain their common Course, none are liable to be cut that can occasion an Hæmorrhage of any Consequence, being only the small Twigs ramified in the *Corpus Cavernosum* and Bulb of the *Urethra*; but in the lateral Way several arterial Branches, both external and internal, are divided, and a large Flux of Blood most commonly caused thereby. This is undoubtedly an Inconveniency; but I have not heard that any bad Accident has hitherto happened upon it, to any Patient cut by Mr. *Cheselden*; the Flux from the external Branches being easily stop'd by Ligature, as that from the internal one has hitherto always been by him, by the use of a proper Styptick.

P O S T S C R I P T.

THROUGH the whole of this Appendix I have avoided saying any thing concerning the History of Mr. *Chefelden's* Operation, neither have I at all endeavoured to determine how far the Discovery thereof is to be attributed to him, or how far it may be ascribed to some other; my Design leading me no farther, than to recommend his present most successful Manner of Cutting for the Stone, and to describe it with all the Accuracy I was capable of, that others may thereby be enabled to perform it. However, to give some Satisfaction to those who are curious of such historical Affairs, and at the same Time to obviate the Cavils, Objections, and Misrepresentations of the Ignorant or Invidious, I shall here set down a few Matters of Fact, together with the Consequences arising from them, as far as they relate to Mr. *Chefelden*.

IN his Operation the external Incision is in no material Circumstance different from that directed long ago by *Paulus Ægineta*, *Albucasis*; and, indeed, by all the Authors (*Brunus* and a few others of the darker Ages excepted) who have wrote since *Celsus*, whose Incision was quite different, concerning the *Apparatus minor*, or Cutting on the Gripe, as we now call it. And even the Advantage of a large outward Orifice, in
order

order to facilitate the Discharge of Matter from the Wound, is mentioned by *Ægineta* and *De Franco*, and particularly applied to the Operation of Lithotomy; yet I am well satisfied none of these were so large as those made by Mr. *Cheselden*.

CONCERNING the internal Incision, we must likewise observe, that several Authors, who describe the outward Wound as already said, have also proposed that some of the Parts, thro' which an immediate Passage is opened by Mr. *Cheselden* into the Cavity of the Bladder, should be divided laterally. Of these, the most antient that I know of, is *Petrus Franco*, the celebrated Author of the *Hypogastrick Section*, which we now call the *High Operation*; and likewise the first Lithotomist who joined the *Apparatus major* and *minor* together in one Operation; but then from the Figure of his Catheter especially, and from the Directions he gives, it is very evident that he could divide the *Urethra* no farther than the *Apex* of the Prostate; that Gland, the *Urethra* within it, and the Orifice of the Bladder being in this Operation left untouched by the Knife. So that the whole Improvement made by *De Franco*, consisted in Cutting the *Urethra* about one Inch further than was done in *Marianus's* Method, for it is now above thirty Years ago that Mr. *Mery* told us, that in the *Apparatus major* the Incision was so far from reaching into the Cavity of the *Vesica*, that it really went no farther than the very beginning of the mem-

membranous Part of the *Urethra*, just under its Bulb. Mr. *Thevenin*, a Surgeon in *Paris*, has made the very same Observation in a Book of Surgery, which he published in the Year 1658. This Way of Cutting is likewise mentioned by the judicious *Hildanus*, both he and *Franco* having actually performed it on living Bodies: And I am very much of Opinion that it has been frequently practised of late, both here and elsewhere, by those who have attempted to cut after Mr. *Cheselden's* Manner.

A THIRD Author, who has very strenuously recommended a Method like this of *De Franco's*, but, as far as I can learn, never put it in Practice, is Monsr. *Mery*, of the Royal Academy of Sciences; he proposes that the membranous Portion of the *Urethra* alone should be cut, the Neck and Body of the Bladder being left intire, that is, in plain *English*, that the Incision ought to reach only to the nearest Part of the Prostate, called its *Apex*, as was done by *De Franco* 140 Years before him. All that this accurate Anatomist has added, to what is to be found in that Author, and in *Hildanus*, is only a longer and more curved Catheter and a much better Description of that Part of the *Urethra* which lies between its *Corpus Cavernosum* and prostate Gland, together with the manner of using a particular kind of *Bistouri*, with a pointed Stilet fixed to it, which is not very easily understood, and will, I cannot help saying, never be used by any Body.

I MIGHT have added something concerning Mr. *Chefelden's* Instruments, and his Way of Imploying them, as for Instance, that *De Franco's* Gorgeret and the Point of the Razor which he used for an Incision Knife, are something like his in their Shape and Figure; but waving these Trifles, as being of very small Consequence to the main Point in Question, I think it is evident from what I have said, that the Continuation of the internal Wound thro' the Side of the Prostate, thro' that Portion of the *Urethra* which lies within it, that Part of the Bladder which lies upon it, with a small Portion thereof above the Gland, thro' which his Knife first enters into the Groove of the Staff, are Improvements owing to Mr. *Chefelden*, having never been proposed by any Lithotomist before him that we know of; upon all which the Excellency and Success of the Operation depends. It is true indeed, that, as I have related at full Length in my History of the Lateral Operation, that Mons. *Mery* mentions one Experiment, made by the famous *Frere Jacque*, on a dead Body, and which he afterwards open'd, in which the very same Parts were divided as in Mr. *Chefelden's* present Way; but all this was meerly accidental, owing to the Ignorance of the Monk, and his want of Attention, which made him often thrust his Knife at Random, quite out of the Way by which he always purposed to get into the very Body of the Bladder. But what is still more surprising is, that tho' Mr. *Mery* was extreamly pleased at this Appearance, and
 seemed

seemed then to ground his Approbation of *Frere Jacque's* Method principally upon it, yet, in the Amendments which he afterwards contrived, he declares himself to be of Opinion, that none of these Parts, except the membranous Portion of the *Urethra*, ought to be cut. This Author therefore can have no Title to the Discovery of any Part of Mr. *Cheselden's* Operation; the main Advantages of which, consisting in artfully dividing these very Parts that must be dilated, contused and dilacerated, not only by the *Apparatus major*, (as is well observed by that excellent Surgeon Mr. *Le Dran*, who, in my Opinion, has lately given us the best Treatise that ever was written on *Lithotomy*) but also by that Method proposed by *De Franco*, and improved by Mons. *Mery*; it is but reasonable to suppose, that it was the Consideration of these Advantages, founded on *Celsus's* Doctrine about the Difference of Wounds by Incision, and these made by Rupture or Contusion, and not by any Hints that he might have had from them, which led him to the Discovery of it. But the whole Truth of the Matter is this;

Mr. *Cheselden* had often observed, that the reason why fewer Women died after the Extraction of the Stone, than Men who were cut the old Way, was entirely owing to the different Texture of the Parts thro' which the Stone is drawn, and to the wrong Management of these Parts, much after the same manner in both Sexes.

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FROM whence he very judiciously inferred, that if he could once bring the Parts in a Male, to an Equality in Disposition with those that are dilated in a Female, he should not at all doubt of having the same Success; and indeed the Event has abundantly answered his Expectation. Now, in order to bring this about, he resolved for the future, previously to divide the Parts that were capable of giving any Resistance, and very subject to be torn; that is, he cuts with his Knife, and divides laterally the membranous Part of the *Urethra*, which is much narrower than in Women; the transverse Ligament, which is vastly stronger than in Women; and the prostate Gland, which in some Subjects is very hard and firm, but in all is cased round by a tendinous Membrane of a very compact Texture; and besides, as a Capsula, binds its whole Substance very close together. Thus, all the Resistance being taken off, the Parts readily yield, and the Operation becomes equally safe in both Sexes; and thus this new Method is free from some Inconveniencies, which, even in Women, must arise from too great a Dilatation, and tearing the *Urethra* and Orifice of the Bladder; the Sides of which he divides in Men, and thereby prevents the Danger.

THUS it plainly appears that Mr. *Chefelden's* Operation, as now practised by himself, is not to be found altogether or complete in any one Writer extant.

BUT, to conclude, Mr. *Chefelden* is much less solicitous for the Credit of being an Inventor, than he is to have his Operation understood and practised in a right Manner, for the Good of the Publick. However, as his Success in it, has been vastly greater than can be pretended to by any one, in any Method whatsoever, it is but just that the World should know to whom it owes so great an Improvement in the Art of Surgery; which, as it affords great Comfort to Mankind, so does much Honour both to himself and to our Country.

Covent-Garden,
July 25. 1731.





T H E

E X P L A N A T I O N

O F

Mr. *Cheselden's* Instruments

F O R T H E

S T O N E.

F I G. I.

Represents the *Catheter incurvus, sulcatus*, or crooked Staff with a Groove.

a. *The Manubrium or Handle.*

b. *The Shank.*

c. *The bent or crooked Part.*

d. *The Rostrum or Beak, which is strait.*

G 2

F I G. II.

F I G. II.

Exhibits the flat Side of the Handle, all the Shank, and some of the hollowed, deep Part of the Staff.

- a. *The Handle, with the Mark of that excellent Workman Mr. Cooke in Lombard-Street.*
- b. *The Shank.*
- c. *As much of the grooved Part as can be seen in this View.*

F I G. III.

Shews a Portion of the strait Beak near the Extremity.

- a. *The Edges which are blunt and very smooth.*
- b. *The Extremity which is open, whereas formerly it was made always shut, the Edge being continued quite round.*

F I G. IV.

Represents the Incision Knife, whose Point is just in the Middle of the Blade.

F I G. V.

F I G. V.

Gives a View of the whole hollow Part of the Gorget.

- a. *The Manubrium or Handle turned to one Side, for the easier Introduction of the Forceps.*
- b. *The hollow concave Part.*
- c. *The Edge of the Button at the narrow End.*

F I G. VI.

Represents the Handle of the Gorget in its whole Breadth and Length.

F I G. VII.

Shews the flat Side of the Button, at the End which enters the Groove of the Staff.

F I G. VIII.

Represents the great Pair of extracting Forceps.

- a. *The Screw Rivet in the Joint.*

b. *The*

b. *The Blades.*

c. *The strait Part of the Handle or Shank.*

d. *The crooked Part of the same.*

e. *The open Bow in which the Shank ends.*

f. *The close Bow.*

FIG. IX.

Shews the hollow Inside of one of the Blades, commonly called its Chops, with a great Number of Teeth or Points turned backwards.

FIG. X.

This gives a View of the small Pair of Forceps, which he commonly makes Use of in most of his Operations.

a. *The Blades don't shut close at the Ends, because they are contrived to press upon the Joint which hinders them.*

FIG. XI.

Shews the Inside of one of the Chops, toothed like the former.

FIG. XII.

F I G. XII.

Represents the Needle in three Views.

The 1. Shews the whole Needle lying edgeways.

The 2. The Inside, near the Point, which is a little raised in the Middle.

The 3. The Outside, which is quite flat.



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THE History of the *Lateral Operation*; or, An Account of the Method of extracting a *Stone*, by making a *Wound* near the great *Protuberance* of the *Os Ischium*, through the common *Integuments* and *Levator Ani*, into the Side of the *Bladder*, without touching the *Urethra*, *Prostate Glands*, *Vesiculæ Seminales*, or any other of the *Urinary* or *Seminal Vessels*; first attempted by *Frere Jacques*, in *France*, and afterwards successfully perform'd by Professor *Rau*, in *Holland*; with a Postscript, concerning the Introduction and Improvement of this Method here in *London*. By *James Douglas*, M. D.

Lilium Sarniense; or, A Description of the *Guernsey Lily*: To which is added, the *Botanical* Dissection of the *Coffee-Berry*, with Figures. By *James Douglas*, Honorary Fellow of the Royal College of Physicians of *London*, and Fellow of the Royal Society.

Index Materiae Medicæ; or, A Catalogue of *Simple Medicines*, that are fit to be used in the Practice of *Physick* and *Surgery*: Containing 1st. The *Officinal Name* of each, in *Latin*. 2d. A short *Botanical* Description of the *Species* commonly used. 3d. The Name in *Greek* and *English*. 4th. The Part that is most in Use. And 5th. The Names of the *Dispensatory* or *Shop-Preparations* and *Compositions*; to which are added two Tables, in the First the *Simple Medicines* are reduced under general Heads, and in the Second they are classed according to their principal Virtues.

Pharmaco-Botanologia; or, An *Alphabetical* and *Classical* Dissertation on all the *British Indigenous* and *Garden Plants* of the new *London Dispensatory*; in which their *Genera*, *Species*, *Characteristick*, and *distinctive Notes*, are methodically described; the *Botanical* Terms of Art explained; their *Virtues*, *Uses*, and *Shop-Preparations* declared from proper Observations. By *Patrick Blair*, M. D. & F. R. S.